

Consolidated Financial Statements  
(Expressed in U.S. dollars)

**BALLARD POWER SYSTEMS INC.**

Years ended December 31, 2019 and 2018

# MANAGEMENT'S REPORT

## Management's Responsibility for the Financial Statements and Report on Internal Control over Financial Reporting

The consolidated financial statements contained in this Annual Report have been prepared by management in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board. The integrity and objectivity of the data in these consolidated financial statements are management's responsibility. Management is also responsible for all other information in the Annual Report and for ensuring that this information is consistent, where appropriate, with the information and data contained in the consolidated financial statements.

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external reporting purposes in accordance with IFRS. Internal control over financial reporting may not prevent or detect fraud or misstatements because of limitations inherent in any system of internal control. Management has assessed the effectiveness of the Corporation's internal control over financial reporting based on the framework in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and concluded that the Corporation's internal control over financial reporting was effective as of December 31, 2019. In addition, management maintains disclosure controls and procedures to provide reasonable assurance that material information is communicated to management and appropriately disclosed. Some of the assets and liabilities include amounts, which are based on estimates and judgments, as their final determination is dependent on future events.

The Board of Directors oversees management's responsibilities for financial reporting through the Audit Committee, which consists of eight directors who are independent and not involved in the daily operations of the Corporation. The Audit Committee meets on a regular basis with management and the external and internal auditors to discuss internal controls over the financial reporting process, auditing matters and financial reporting issues. The Audit Committee is responsible for appointing the external auditors (subject to shareholder approval), and reviewing and approving all financial disclosure contained in our public documents and related party transactions.

The external auditors, KPMG LLP, have audited the financial statements and expressed an unqualified opinion thereon. KPMG has also expressed an unqualified opinion on the effective operation of the internal controls over financial reporting as of December 31, 2019. The external auditors have full access to management and the Audit Committee with respect to their findings concerning the fairness of financial reporting and the adequacy of internal controls.

"RANDALL MACEWEN"

"TONY GUGLIELMIN"

RANDALL MACEWEN  
President and  
Chief Executive Officer  
March 4, 2020

TONY GUGLIELMIN  
Vice President and  
Chief Financial Officer  
March 4, 2020



**KPMG LLP**  
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## Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors  
Ballard Power Systems Inc.:

### *Opinion on the Consolidated Financial Statements*

We have audited the accompanying consolidated statements of financial position of Ballard Power Systems Inc. (the Corporation) as of December 31, 2019 and 2018, the related consolidated statements of loss and comprehensive income (loss), changes in equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Corporation as of December 31, 2019 and 2018, and the results of its operations and its cash flows for the years then ended, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Corporation's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated March 4, 2020 expressed an unqualified opinion on the effectiveness of the Corporation's internal control over financial reporting.

### *Change in Accounting Principle*

As discussed in Note 3(a) to the consolidated financial statements, the Company has changed its accounting policy for leases as of January 1, 2019 due to the adoption of IFRS 16, *Leases*.

### *Basis for Opinion*

These consolidated financial statements are the responsibility of the Corporation's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Corporation in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

## *Critical Audit Matter*

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

### *Evaluation of the estimate of costs to complete engineering and technology transfer services for long-term fixed-price contracts*

As discussed in Notes 4(j), 5(a) and 21 to the consolidated financial statements, the Corporation recognizes engineering and technology transfer service revenues from long-term fixed-price contracts over time by multiplying the expected consideration from the contract by the ratio of the cumulative costs incurred to date to the sum of incurred and estimated costs for completing the contract. Engineering and technology transfer service revenues from long-term fixed-price contracts are inherently uncertain in that revenue from these contracts is fixed while the estimates of costs required to complete these contracts are subject to significant variability. Engineering and technology transfer service revenues from long-term fixed-price contracts totaled \$59.1 million for the year ended December 31, 2019.

We identified the evaluation of the estimate of costs to complete engineering and technology transfer services for long-term fixed-price contracts as a critical audit matter. A higher degree of auditor judgment was required to evaluate the key assumptions used to estimate costs to complete the contracts, including the labour hours and cost of materials to complete the contracts.

The primary procedures we performed to address this critical audit matter included the following. We tested internal controls over the Corporation's process to estimate costs to complete the contracts, including controls related to the development of the key assumptions noted above. We evaluated the Corporation's ability to estimate costs to complete the contracts by comparing actual labour hours and cost of materials incurred to satisfy the performance obligation to historical estimates prepared by the Corporation. For a selection of customer contracts, we interviewed operational personnel of the Corporation to evaluate progress to date, the estimate of costs to complete the contracts, and factors impacting the amount of labour hours and cost of materials to complete the contracts. We evaluated contract progress by inspecting correspondence between the Corporation and the customer and evaluated the labour hours and cost of materials to complete the contracts for consistency with the status of delivery and the underlying contractual terms. We compared the Corporation's current estimate of costs to complete the contracts to those estimated in prior periods and investigated changes during the period. We compared labour hours and cost of materials incurred subsequent to the Corporation's year-end date to assess the consistency with the estimated costs for the period.

## **//s// KPMG LLP**

We have served as the Corporation's auditor since 1999.

Chartered Professional Accountants

Vancouver, Canada  
March 4, 2020



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## Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors  
Ballard Power Systems Inc.:

### *Opinion on Internal Control Over Financial Reporting*

We have audited Ballard Power Systems Inc.'s (the Corporation) internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated statement of financial position of the Corporation as of December 31, 2019 and 2018, the related consolidated statements of loss and comprehensive income (loss), changes in equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements), and our report dated March 4, 2020 expressed an unqualified opinion on those consolidated financial statements.

### *Basis for Opinion*

The Corporation's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying "Management's Responsibility for the Financial Statements and Report on Internal Control over Financial Reporting". Our responsibility is to express an opinion on the Corporation's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Corporation in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

### *Definition and Limitations of Internal Control Over Financial Reporting*

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

**//s// KPMG LLP**

Chartered Professional Accountants

Vancouver, Canada  
March 4, 2020

**BALLARD POWER SYSTEMS INC.**  
Consolidated Statement of Financial Position  
(Expressed in thousands of U.S. dollars)

	Note	December 31, 2019	December 31, 2018
<b>Assets</b>			
Current assets:			
Cash and cash equivalents		\$ 147,792	\$ 192,235
Trade and other receivables	7	49,316	38,524
Inventories	8	30,098	29,311
Prepaid expenses and other current assets		2,320	1,523
Total current assets		<u>229,526</u>	261,593
Non-current assets:			
Property, plant and equipment	9	42,836	21,620
Intangible assets	10	5,687	8,285
Goodwill	11	40,287	40,287
Investments	12	21,647	13,994
Other non-current assets		336	321
Total assets		<u>\$ 340,319</u>	<u>\$ 346,100</u>
<b>Liabilities and Equity</b>			
Current liabilities:			
Trade and other payables	14	\$ 31,427	\$ 21,154
Deferred revenue	15	20,156	16,681
Provisions and other current liabilities	16	10,488	9,243
Current lease liability	17	2,445	631
Total current liabilities		<u>64,516</u>	47,709
Non-current liabilities:			
Non-current lease liability	17	17,306	5,064
Deferred gain on finance lease liability	17	2,150	2,566
Provisions and other non-current liabilities	16	1,688	3,862
Employee future benefits	18	4,396	4,299
Total liabilities		<u>90,056</u>	63,500
Equity:			
Share capital	19	1,182,660	1,174,889
Contributed surplus	19	290,640	291,260
Accumulated deficit		(1,223,850)	(1,184,400)
Foreign currency reserve		813	851
Total equity		<u>250,263</u>	282,600
Total liabilities and equity		<u>\$ 340,319</u>	<u>\$ 346,100</u>

See accompanying notes to consolidated financial statements.

Approved on behalf of the Board:

"Doug Hayhurst"  
Director

"Jim Roche"  
Director

**BALLARD POWER SYSTEMS INC.**Consolidated Statement of Loss and Comprehensive Income (Loss)  
For the year ended December 31

(Expressed in thousands of U.S. dollars, except per share amounts and number of shares)

	Note	2019	2018
<b>Revenues:</b>			
Product and service revenues	21	\$ 106,327	\$ 96,586
Cost of product and service revenues		83,732	66,912
Gross margin		<u>22,595</u>	<u>29,674</u>
<b>Operating expenses:</b>			
Research and product development		26,928	27,039
General and administrative		13,212	14,760
Sales and marketing		7,915	8,068
Other expense	23	1,933	605
Total operating expenses		<u>49,988</u>	<u>50,472</u>
Results from operating activities		(27,393)	(20,798)
Finance income (loss) and other	24	2,851	(449)
Finance expense	24	(1,434)	(503)
Net finance income (loss)		<u>1,417</u>	<u>(952)</u>
Loss on sale of assets	25	(1,995)	(4,049)
Equity in loss of investment in joint venture and associates	12 & 27	(11,059)	(1,154)
Loss before income taxes		<u>(39,030)</u>	<u>(26,953)</u>
Income tax expense	26	(20)	(370)
<b>Net loss</b>		<u>(39,050)</u>	<u>(27,323)</u>
<b>Other comprehensive income (loss):</b>			
<i>Items that will not be reclassified to profit or loss:</i>			
Actuarial gain (loss) on defined benefit plans	18	(400)	305
		<u>(400)</u>	<u>305</u>
<i>Items that may be reclassified subsequently to profit or loss:</i>			
Foreign currency translation differences		(38)	647
		<u>(38)</u>	<u>647</u>
<b>Other comprehensive income (loss), net of tax</b>		<u>(438)</u>	<u>952</u>
<b>Total comprehensive loss</b>		<u>\$ (39,488)</u>	<u>\$ (26,371)</u>
<b>Basic and diluted loss per share</b>			
Loss per share		<u>\$ (0.17)</u>	<u>\$ (0.15)</u>
<b>Weighted average number of common shares outstanding</b>		<u>232,820,675</u>	<u>185,836,596</u>

See accompanying notes to consolidated financial statements.



**BALLARD POWER SYSTEMS INC.**

## Consolidated Statement of Changes in Equity

(Expressed in thousands of U.S. dollars except per share amounts and number of shares)

Ballard Power Systems Inc. Equity							
	Number of shares	Share capital	Contributed surplus	Accumulated deficit	Foreign currency reserve	Total equity	
Balance, December 31, 2017	178,062,667	\$ 986,497	\$ 290,536	\$ (1,157,382)	\$ 204	\$ 119,855	
Net loss	—	—	—	(27,323)	—	(27,323)	
Private placement (note 19)	51,831,659	183,672	—	—	—	183,672	
DSUs redeemed (note 19)	154,752	356	(792)	—	—	(436)	
RSUs redeemed (note 19)	149,980	338	(802)	—	—	(464)	
Options exercised (note 19)	945,022	2,592	(964)	—	—	1,628	
Warrants exercised (note 19)	747,563	1,434	—	—	—	1,434	
Share-based compensation (note 19)	—	—	3,282	—	—	3,282	
Other comprehensive income:							
Defined benefit plan actuarial gain	—	—	—	305	—	305	
Foreign currency translation for foreign operations	—	—	—	—	647	647	
Balance, December 31, 2018	231,891,643	\$ 1,174,889	\$ 291,260	\$ (1,184,400)	\$ 851	\$ 282,600	
<b>Net loss</b>	—	—	—	<b>(39,050)</b>	—	<b>(39,050)</b>	
<b>RSUs redeemed (note 19)</b>	<b>387,686</b>	<b>548</b>	<b>(1,582)</b>	—	—	<b>(1,034)</b>	
<b>Options exercised (note 19)</b>	<b>2,234,997</b>	<b>7,223</b>	<b>(2,599)</b>	—	—	<b>4,624</b>	
<b>Share-based compensation (note 19)</b>	—	—	<b>3,561</b>	—	—	<b>3,561</b>	
Other comprehensive loss:							
<b>Defined benefit plan actuarial loss</b>	—	—	—	<b>(400)</b>	—	<b>(400)</b>	
<b>Foreign currency translation for foreign operations</b>	—	—	—	—	<b>(38)</b>	<b>(38)</b>	
<b>Balance, December 31, 2019</b>	<b>234,514,326</b>	<b>\$ 1,182,660</b>	<b>\$ 290,640</b>	<b>\$ (1,223,850)</b>	<b>\$ 813</b>	<b>\$ 250,263</b>	

See accompanying notes to consolidated financial statements.

**BALLARD POWER SYSTEMS INC.**  
Consolidated Statement of Cash Flows  
For the year ended December 31

(Expressed in thousands of U.S. dollars)

	Note	2019	2018
<b>Cash provided by (used in):</b>			
<b>Operating activities:</b>			
Net loss for the year		\$ (39,050)	\$ (27,323)
Adjustments for:			
Depreciation and amortization		7,514	5,015
Impairment loss on trade receivables	23	1,787	98
Unrealized (gain)/loss on forward contracts		(805)	570
Equity in loss of investment in joint venture and associates	12 & 27	11,059	1,154
Loss on sale of assets	25	1,995	4,049
(Gain) loss on decommissioning liabilities		119	(85)
Amortization of deferred lease inducement		—	(476)
Employee future benefits	18	208	226
Employee future benefits plan contributions	18	(511)	(536)
Share-based compensation	19	3,561	2,902
		<u>(14,123)</u>	<u>(14,406)</u>
Changes in non-cash working capital:			
Trade and other receivables		(14,494)	(11,702)
Inventories		(787)	(12,932)
Prepaid expenses and other current assets		(812)	426
Trade and other payables		11,083	(5,573)
Deferred revenue		3,475	8,607
Warranty provision		1,428	3,892
		<u>(107)</u>	<u>(17,282)</u>
Cash used in operating activities		<u>(14,230)</u>	<u>(31,688)</u>
<b>Investing activities:</b>			
Additions to property, plant and equipment	9	(13,934)	(9,854)
Net proceeds on sale of property, plant and equipment	25	2,137	1,345
Investment in joint venture and associates	12	(20,949)	(14,606)
Cash used in investing activities		<u>(32,746)</u>	<u>(23,115)</u>
<b>Financing activities:</b>			
Principal payments of lease liabilities	17	(2,053)	(598)
Net proceeds on issuance of share capital from share option exercises	19	4,624	1,628
Net proceeds on issuance of share capital from warrant exercises	19	—	1,434
Net proceeds on issuance of share capital from private placement	19	—	183,672
Cash provided by financing activities		<u>2,571</u>	<u>186,136</u>
Effect of exchange rate fluctuations on cash and cash equivalents held		(38)	647
<b>Increase (decrease) in cash and cash equivalents</b>		<b>(44,443)</b>	<b>131,980</b>
<b>Cash and cash equivalents, beginning of year</b>		<b>192,235</b>	<b>60,255</b>
<b>Cash and cash equivalents, end of year</b>		<b>147,792</b>	<b>192,235</b>

Supplemental disclosure of cash flow information (note 28).

See accompanying notes to consolidated financial statements.

**BALLARD POWER SYSTEMS INC.**

## Notes to Consolidated Financial Statements

Years ended December 31, 2019, and 2018

(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**1. Reporting entity:**

The principal business of Ballard Power Systems Inc. (the "Corporation") is the design, development, manufacture, sale and service of proton exchange membrane ("PEM") fuel cell products for a variety of applications, focusing on the power product markets of Heavy-Duty Motive (consisting of bus, truck, rail and marine applications), Portable Power / Unmanned Aerial Vehicle ("UAV"), Material Handling and Backup Power, as well as the delivery of Technology Solutions, including engineering services, technology transfer and the license and sale of the Corporation's extensive intellectual property portfolio and fundamental knowledge for a variety of PEM fuel cell applications. A fuel cell is an environmentally clean electrochemical device that combines hydrogen fuel with oxygen (from the air) to produce electricity.

The Corporation is a company domiciled in Canada and its registered office is located at 9000 Glenlyon Parkway, Burnaby, British Columbia, Canada, V5J 5J8. The consolidated financial statements of the Corporation as at and for the year ended December 31, 2019 comprise the Corporation and its subsidiaries (note 4(a)).

**2. Basis of preparation:****(a) Statement of compliance:**

These consolidated financial statements of the Corporation have been prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board ("IASB").

The consolidated financial statements were authorized for issue by the Board of Directors on March 4, 2020.

Details of the Corporation's significant accounting policies are included in note 4.

This is the first set of the Corporation's annual financial statements in which *IFRS 16 Leases* and *IFRIC Interpretation 23 Uncertainty over Income Tax Treatments* have been applied. Changes to significant accounting policies are described in note 3.

**(b) Basis of measurement:**

The consolidated financial statements have been prepared on the historical cost basis except for the following material items in the statement of financial position:

- Financial assets classified as measured at: amortized cost; fair value through other comprehensive income (FVOCI) or fair value through profit or loss (FVTPL); and
- Employee future benefits liability is recognized as the net of the present value of the defined benefit obligation, less the fair value of plan assets.

**(c) Functional and presentation currency:**

These consolidated financial statements are presented in U.S. dollars, which is the Corporation's functional currency.

**(d) Use of estimates:**

The preparation of the consolidated financial statements in conformity with IFRS requires the Corporation's management to make estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in any future periods affected.

**BALLARD POWER SYSTEMS INC.**

## Notes to Consolidated Financial Statements

Years ended December 31, 2019, and 2018

(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**2. Basis of preparation (cont'd):**

## (d) Use of estimates (cont'd):

Significant areas having estimation uncertainty include revenue recognition, asset impairment, warranty provision, inventory provision, impairment loss (recoveries) on trade receivables, employee future benefits, and income taxes. These estimates and judgments are discussed further in note 5.

## (e) Future operations:

The Corporation is required to assess its ability to continue as a going concern or whether substantial doubt exists as to the Corporation's ability to continue as a going concern into the foreseeable future. The Corporation has forecast its cash flows for the foreseeable future and despite the ongoing volatility and uncertainties inherent in the business, the Corporation believes it has adequate liquidity in cash and working capital to finance its operations. The Corporation's ability to continue as a going concern and realize its assets and discharge its liabilities and commitments in the normal course of business is dependent upon the Corporation having adequate liquidity and achieving profitable operations that are sustainable. There are various risks and uncertainties affecting the Corporation including, but not limited to, the market acceptance and rate of commercialization of the Corporation's products, the ability of the Corporation to successfully execute its business plan, and general global economic conditions, certain of which are beyond the Corporation's control.

The Corporation's strategy to mitigate these risks and uncertainties is to continue its drive to attain profitable operations that are sustainable by executing a business plan that continues to focus on revenue growth, improving overall gross margins, maintaining discipline over operating expenses, managing working capital requirements, and securing additional financing to fund operations as needed until the Corporation does achieve profitable operations that are sustainable. Failure to implement this plan could have a material adverse effect on the Corporation's financial condition and or results of operations.

**3. Changes in accounting policies:**

The Corporation has consistently applied the accounting policies set out in note 4 to all periods presented in these consolidated financial statements, except as described below. The Corporation has adopted *IFRS 16 Leases* and *IFRIC Interpretation 23 Uncertainty over Income Tax Treatments*, effective January 1, 2019. The effect of applying *IFRS 16 Leases* had a significant impact on the financial statements which is detailed below, whereas the adoption of *IFRIC Interpretation 23 Uncertainty over Income Tax Treatments* did not have a significant impact on the Corporation's financial statements. A number of other new standards and interpretations are also effective from January 1, 2019 but they did not have a significant impact on the Corporation's financial statements.

Due to the transition methods chosen by the Corporation in applying these standards, comparative information throughout these financial statements has not been restated to reflect the requirements of the new standards.

(a) *IFRS 16 LEASES*

The Corporation has adopted *IFRS 16 Leases* using the modified retrospective approach from January 1, 2019, and therefore has not restated comparatives for the 2018 reporting period, as permitted under the specific transitional provisions in the standard. The reclassifications and the adjustments arising from the new leasing rules are therefore recognized in retained earnings at January 1, 2019. There was no adjustment to retained earnings as a result of this change in accounting policy.

The Corporation has elected not to reassess whether a contract is, or contains a lease at the date of initial application. Instead, for contracts entered into before the transition date the Corporation relied on its assessment made applying *IAS 17 Leases* and *IFRIC 4 Determining Whether an Arrangement Contains a Lease ("IFRIC 4")*. The definition of a lease under *IFRS 16 Leases* was applied only to contracts entered into or changed on or after January 1, 2019.

**BALLARD POWER SYSTEMS INC.**

## Notes to Consolidated Financial Statements

Years ended December 31, 2019, and 2018

(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**3. Changes in accounting policies (cont'd):****(a) IFRS 16 LEASES (cont'd)**

On adoption of *IFRS 16 Leases*, the Corporation recognized lease liabilities in relation to leases which had previously been classified as "operating lease" under the principles of *IAS 17 Leases*. These liabilities were measured at the present value of the remaining lease payments, discounted using the Corporation's incremental borrowing rate as of January 1, 2019. Right-of-use assets are measured at an amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments.

The Corporation used the following practical expedients when applying *IFRS 16 Leases* to leases previously classified as operating leases under *IAS 17 Leases*:

- Applied a single discount rate to a portfolio of leases with reasonably similar characteristics;
- Relied on previous assessments on whether leases are onerous;
- Applied the exemption not to recognize right-of-use assets and liabilities for leases with less than 12 months of lease term;
- Excluded initial direct costs for the measurement of the right-of-use asset at the date of initial application;
- Applied hindsight in determining the lease term where the contract contains options to extend or terminate the lease.

For leases previously classified as finance leases, the Corporation recognized the carrying amount of the lease asset and lease liability immediately before transition as the carrying amount of the right-of-use asset and the lease liability at the date of initial application. The measurement principles of *IFRS 16 Leases* are only applied after that date.

Under *IFRS 16 Leases*, the Corporation is required to assess the classification of a sub-lease with reference to the right-of-use asset, not the underlying asset. On transition, the Corporation concluded that sub-lease contracts previously classified as operating leases under *IAS 17 Leases* are also operating leases under *IFRS 16 Leases*.

Under *IFRS 16 Leases*, the Corporation continues to account for the sale-and-leaseback transaction for the manufacturing, research and office facility in Burnaby, BC completed in 2010 as a sale-and-leaseback transaction. At the time of the transaction, it was concluded that the building component of the sale-and-leaseback qualified as a finance lease and the land component was bifurcated and treated as an operating lease. As such, there is no adjustment to the right-of-use asset and the related lease liability of the building component upon transition. However, as the land component now meets the definition of a right-of-use asset under *IFRS 16 Leases*, the land component of the sale-and-leaseback transaction has now been accounted for as a finance lease with the land component now recognized as a right-of-use asset with a related lease liability recognized.

On transition to *IFRS 16 Leases*, the Corporation recognized additional right-of-use assets and lease liabilities, and reduced prepaid expenses, accrued liabilities and deferred lease inducements. The impact on transition is summarized below.

	January 1, 2019
Right-of-use assets	\$ 11,434
Prepaid expenses	(20)
Accrued liabilities	282
Deferred lease inducements	2,292
Lease liability	(13,988)

**BALLARD POWER SYSTEMS INC.**

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(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**3. Changes in accounting policies (cont'd):**

When measuring lease liabilities for leases that were classified as operating leases, the Corporation discounted lease payments using its incremental borrowing rate at January 1, 2019. The weighted-average rate applied is 7%.

	January 1, 2019
Operating lease commitment disclosed as at December 31, 2018	\$ 17,770
Discounted using the lessee's incremental borrowing rate as at the date of initial application	14,110
Add: Finance lease liabilities previously recognized as at December 31, 2018	5,695
Less: Short term leases not recognized under IFRS 16	(122)
Lease liability recognized as at January 1, 2019	\$ 19,683

**(b) IFRIC INTERPRETATION 23 UNCERTAINTY OVER INCOME TAX TREATMENTS**

*IFRIC Interpretation 23 Uncertainty over Income Tax Treatments* provides guidance on the accounting for current and deferred tax liabilities and assets in circumstances in which there is uncertainty over income tax treatments. The Interpretation requires:

- An entity to contemplate whether uncertain tax treatments should be considered separately, or together as a group, based on which approach provides better predictions of the resolution;
- An entity to determine if it is probable that the tax authorities will accept the uncertain tax treatment; and
- If it is not probable that the uncertain tax treatment will be accepted, measure the tax uncertainty based on the most likely amount of expected value, depending on whichever method better predicts the resolution of the uncertainty.

The adoption of *IFRIC Interpretation 23 Uncertainty over Income Tax Treatments* did not have a significant impact on the Corporation's financial statements.

**4. Significant accounting policies:**

The accounting policies set out below have been applied consistently to all periods presented in these consolidated financial statements, unless otherwise indicated. Certain prior year comparative figures have been reclassified to comply with current year presentation.

**(a) Basis of consolidation:**

The consolidated financial statements include the accounts of the Corporation and its principal subsidiaries as follows:

	Percentage ownership	
	2019	2018
Guangzhou Ballard Power Systems Co., Ltd.	100 %	100 %
Ballard Hong Kong Ltd.	100 %	100 %
Ballard Unmanned Systems (formerly named Protonex Technology Corporation)	100 %	100 %
Ballard Services Inc.	100 %	100 %
Ballard Fuel Cell Systems Inc.	100 %	100 %
Ballard Power Systems Europe A/S	100 %	100 %
Ballard Power Corporation	100 %	100 %

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(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**4. Significant accounting policies (cont'd):****(a) Basis of consolidation (cont'd):**

The Corporation also has a non-controlling, 49% interest, in Weichai Ballard Hy-Energy Technologies Co., Ltd ("Weichai Ballard JV") and a non-controlling, 10% interest, in Guangdong Synergy Ballard Hydrogen Power Co., Ltd ("Synergy Ballard JVCo"). Both of these associated companies are accounted for using the equity method of accounting.

Subsidiaries are entities controlled by the Corporation. The Corporation controls an entity when it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases. Intercompany balances and transactions are eliminated in the consolidated financial statements.

**(i) Weichai Ballard JV**

On November 13, 2018, the Corporation, through Ballard Hong Kong Ltd ("BHKL"), entered into an agreement with Weichai Power Co., Ltd ("Weichai Power") to create a new limited liability company based in China called Weichai Ballard Hy-Energy Technologies Co., Ltd ("Weichai Ballard JV"). The purpose of Weichai Ballard JV is to manufacture the Corporation's next-generation liquid-cooled fuel cell stack ("LCS") and LCS-based power modules for bus, commercial truck and forklift applications with certain exclusive rights in China. Under the agreement, Weichai is to contribute RMB 561,000,000 (\$80,560,000 equivalent at December 31, 2019 exchange rate) and the Corporation is to contribute RMB 539,000,000 (\$77,976,000 equivalent at December 31, 2019 exchange rate) representing 51% and 49% of the registered capital in Weichai Ballard JV, respectively. The parties will make these contributions in cash over a four year period and are not obligated to contribute any additional capital in excess of the amounts noted above.

During 2018, the Corporation made an initial capital contribution of \$14,286,000 (RMB 98,000,000 equivalent). During 2019, the Corporation made two additional capital contributions totalling \$20,944,000 (RMB 143,325,000 equivalent). Weichai Power and the Corporation are committed to fund pro rata shares of Weichai Ballard JV based on an agreed business plan. Weichai Power holds three of five Weichai Ballard JV board seats and the Corporation holds two, with the Corporation having certain shareholder protection provisions. Weichai Ballard JV is not controlled by the Corporation and therefore is not consolidated. The Corporation's 49% investment in Weichai Ballard JV is accounted for using the equity method of accounting.

**(ii) Guangzhou Ballard Power Systems**

On January 10, 2017, the Corporation incorporated Guangzhou Ballard Power Systems Co., Ltd. ("GBPS"), a 100% wholly foreign-owned enterprise ("WFOE") in China to serve as the Corporation's operations entity for all of China.

**(iii) Ballard Power Systems Europe**

On January 5, 2017, the Corporation purchased the remaining 43% interest in its European subsidiary, Ballard Power Systems Europe A/S ("BPSE"), held by Dansk Industri Invest A/S for a nominal value, thus resulting in the Corporation now owning 100% of BPSE.

**(iv) Synergy Ballard JVCo**

On September 26, 2016, the Corporation, through BHKL, entered into a joint venture agreement with Guangdong Nation Synergy Hydrogen Power Technology Co., Ltd ("Synergy") to create a new limited liability company based in China called Guangdong Synergy Ballard Hydrogen Power Co., Ltd ("Synergy Ballard JVCo"). The purpose of Synergy Ballard JVCo is to manufacture fuel cell stacks utilizing the Corporation's FCvelocity®-9SSL fuel cell stack technology for use primarily in fuel cell engines assembled in China to provide propulsion power for zero-emission fuel cell electric buses and commercial vehicles with certain exclusive rights in China.

**BALLARD POWER SYSTEMS INC.**

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(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**4. Significant accounting policies (cont'd):**

## (a) Basis of consolidation (cont'd):

## (iv) Synergy Ballard JVCo (cont'd)

In setting up the joint venture, as specified in the Equity Joint Venture Agreement ("EJV") dated September 26, 2016, Synergy contributed RMB 60,300,000 (\$9,000,000) and the Corporation contributed RMB 6,700,000, (\$971,000) in March 2017 representing 90% and 10% of the registered capital in Synergy Ballard JVCo, respectively. The parties made their contributions in cash and the Corporation is not obligated to contribute any additional capital in excess of the amounts noted above. Synergy Ballard JVCo is not controlled by the Corporation and therefore is not consolidated. The Corporation's 10% investment in Synergy Ballard JVCo is accounted for using the equity method of accounting.

## (v) Ballard Hong Kong Ltd

On July 19, 2016, the Corporation incorporated Ballard Hong Kong Ltd ("BHKL"), a 100% owned holding company in Hong Kong, China.

## (vi) Ballard Unmanned Systems

On October 1, 2015, the Corporation acquired Ballard Unmanned Systems (formerly named Protonex Technology Corporation ("Protonex") prior to January 1, 2019), a designer and manufacturer of advanced power management products and portable fuel cell solutions.

## (b) Foreign currency:

## (i) Foreign currency transactions

Transactions in foreign currencies are translated to the respective functional currencies of the Corporation and its subsidiaries at the exchange rate in effect at the transaction date. Monetary assets and liabilities denominated in other than the functional currency are translated at the exchange rates in effect at the balance sheet date. The resulting exchange gains and losses are recognized in earnings. Non-monetary assets and liabilities denominated in other than the functional currency that are measured at fair value are translated to the functional currency at the exchange rate at the date that the fair value was determined. Non-monetary items that are measured in terms of historical cost in other than the functional currency are translated using the exchange rate at the date of the transaction.

## (ii) Foreign operations

The assets and liabilities of foreign operations are translated to the presentation currency using exchange rates at the reporting date. The income and expenses of foreign operations are translated to the presentation currency using exchange rates at the dates of the transactions. Foreign currency differences are recognized in other comprehensive income.

## (c) Financial instruments:

## (i) Financial assets

The Corporation initially recognizes loans and receivables and deposits on the date that they originated and all other financial assets on the trade date at which the Corporation becomes a party to the contractual provisions of the instrument. The Corporation derecognizes a financial asset when the contractual rights to the cash flows from the asset expire, or when it transfers substantially all the risks and rewards of ownership of the financial asset.



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## Notes to Consolidated Financial Statements

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**4. Significant accounting policies (cont'd):**

## (c) Financial instruments (cont'd):

*Financial assets at fair value through profit or loss*

Financial assets are classified as measured at: amortized cost; fair value through other comprehensive income ("FVOCI") or fair value through profit or loss ("FVTPL"). The classification of financial assets is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. Derivatives embedded in contracts where the host is a financial asset in the scope of the standard are never separated. Instead, the hybrid financial instrument as a whole is assessed for classification. The Corporation's financial assets which consist primarily of cash and cash equivalents, trade and other receivables, and contract assets are classified at amortized cost.

The Corporation also periodically enters into foreign exchange forward contracts and platinum futures contracts to limit its respective exposure to foreign currency rate fluctuations and platinum price fluctuations. These derivatives are recognized initially at fair value and are recorded as either assets or liabilities based on their fair value. Subsequent to initial recognition, these derivatives are measured at fair value and changes to their value are recorded through profit or loss.

## (ii) Financial liabilities

Financial liabilities comprise the Corporation's trade and other payables. The financial liabilities are initially recognized on the date they are originated and are derecognized when the contractual obligations are discharged or cancelled or expire. These financial liabilities are recognized initially at fair value and subsequently are measured at amortized costs using the effective interest method, when materially different from the initial amount. Fair value is determined based on the present value of future cash flows, discounted at the market rate of interest.

## (iii) Share capital

Share capital is classified as equity. Incremental costs directly attributable to the issue of shares and share options are recognized as a deduction from equity. When share capital is repurchased, the amount of the consideration paid, including directly attributable costs, is recognized as a deduction from equity. Repurchased shares are classified as treasury shares and are presented as a deduction from equity. When treasury shares are subsequently reissued, the amount received is recognized as an increase in equity, and the resulting surplus or deficit on the transaction is transferred to or from retained earnings.

## (d) Inventories:

Inventories are recorded at the lower of cost and net realizable value. The cost of inventories is based on the first-in first-out principle, and includes expenditures incurred in acquiring the inventories, production or conversion costs and other costs incurred in bringing them to their existing location and condition. In the case of manufactured inventories and work in progress, cost includes materials, labor and appropriate share of production overhead based on normal operating capacity. Costs of materials are determined on an average per unit basis.

Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and selling expenses. In establishing any impairment of inventory, management estimates the likelihood that inventory carrying values will be affected by changes in market demand, technology and design, which would impair the value of inventory on hand.

**BALLARD POWER SYSTEMS INC.**

## Notes to Consolidated Financial Statements

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(Tabular amounts expressed in thousands of U.S. dollars, except per share amounts and numbers of shares)

**4. Significant accounting policies (cont'd):**

## (e) Property, plant and equipment:

## (i) Recognition and measurement

Items of property, plant and equipment are measured at cost less accumulated depreciation and any accumulated impairment losses. The cost of self-constructed assets includes the cost of materials, costs directly attributable to bringing the assets to a working condition for their intended use, and the costs of dismantling and removing items and restoring the site on which they are located. If significant parts of an item of property, plant and equipment have different useful lives, then they are accounted for as separate items (major components) of property, plant and equipment.

Any gain or loss on disposal of an item of property, plant and equipment is recognized in profit or loss.

## (ii) Subsequent expenditures

Subsequent expenditures are capitalized only if it is probable that the future economic benefits associated with the expenditures will flow to the Corporation.

## (iii) Depreciation

Depreciation is calculated to write-off the cost of items of property, plant and equipment less their estimated residual values using the straight-line method over their estimated useful lives, and is generally recognized in profit or loss.

The estimated useful lives of property, plant and equipment for current and comparative periods are as follows:

Computer equipment	3 to 10 years
Furniture and fixtures	5 to 10 years
Leasehold improvements	The shorter of initial term of the respective lease and estimated useful life
Production and test equipment	4 to 15 years

Leased assets are depreciated over the shorter of the lease term or their useful lives unless it is reasonably certain that the Corporation will obtain ownership by the end of the lease term.

Right-of-use asset - Property	2 to 15 years
Right-of-use asset - Office equipment	2 to 5 years
Right-of-use asset - Vehicle	5 years

Depreciation methods, useful lives and residual values are reviewed at each reporting date and adjusted if appropriate.

## (f) Leases:

*IFRS 16 Leases* introduced a single, on-balance sheet accounting model for lessees. As a result, the Corporation, as a lessee, has recognized right-of-use assets representing its rights to use the underlying assets, and lease liabilities representing its obligation to make lease payments. Lessor accounting remains similar to previous accounting policies.

The Corporation has applied *IFRS 16 Leases* using the modified retrospective approach and therefore the comparative information has not been restated and continues to be reported under *IAS 17 Leases* and *IFRIC 4*. The details of accounting policies under *IAS 17 Leases* and *IFRIC 4* are disclosed separately if they are different from those under *IFRS 16 Leases* and the impact of changes is disclosed in note 3.

**BALLARD POWER SYSTEMS INC.**

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**4. Significant accounting policies (cont'd):**

## (f) Leases (cont'd)

*Accounting policy applicable from January 1, 2019*

At inception of a contract, the Corporation assesses whether a contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. To assess whether a contract conveys the right to control the use of an identified asset, the Corporation assesses whether:

- the contract involves the use of an identified asset - this may be specified explicitly or implicitly, and should be physically distinct or represent substantially all of the capacity of a physically distinct asset. If the supplier has a substantive substitution right, then the asset is not identified;
- the Corporation has the right to obtain substantially all of the economic benefits from use of the asset throughout the period of use; and
- the Corporation has the right to direct the use of the asset. The Corporation has this right when it has the decision-making rights that are most relevant to changing how and for what purpose the asset is used. In rare cases where all the decisions about how and for what purpose the asset is used are predetermined, the Corporation has the right to direct the use of the asset if either:
  - the Corporation has the right to operate the asset; or
  - the Corporation designed the asset in a way that predetermines how and for what purpose it will be used.

This policy is applied to contracts entered into, or changed, on or after January 1, 2019.

*i. As a Lessee*

The Corporation recognizes a right-of-use asset and a lease liability at the lease commencement date. The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term. The estimated useful lives of right-of-use assets are determined on the same basis as those of property and equipment. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain remeasurements of the lease liability.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the Corporation's incremental borrowing rate. Generally, the Corporation uses its incremental borrowing rate as the discount rate.

**4. Significant accounting policies (cont'd):**

## (f) Leases (cont'd)

Lease payments included in the measurement of the lease liability comprise:

- Fixed payments, including in-substance fixed payments;
- Variable lease payments that depend on an index or a rate, initially measured using the index or rate at the commencement date;
- Amounts expected to be payable under a residual value guarantee; and
- The exercise price under a purchase option that the Corporation is reasonably certain to exercise, lease payments in an optional renewal period if the Corporation is reasonably certain to exercise an extension option, and penalties for early termination of a lease unless the Corporation is reasonably certain not to terminate early.

The lease liability is subsequently measured at amortized cost using the effective interest method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Corporation's estimate of the amount expected to be payable under a residual value guarantee or if the Corporation changes its assessment of whether it will exercise a purchase, extension or termination option. When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

The Corporation presents right-of-use assets in 'Property, plant and equipment' and lease liabilities in 'Lease liability' in the statement of financial position.

The Corporation has elected not to recognize right-of-use assets and lease liabilities for short-term leases of properties, equipment and vehicles that have a lease term of 12 months or less. The Corporation recognizes the lease payments associated with these leases as an operating expense on a straight-line basis over the lease term.

*ii. As a Lessor*

When the Corporation is an intermediate lessor, it accounts for its interests in the head lease and the sub-lease separately. It assesses the lease classification of a sub-lease with reference to the right-of-use asset arising from the head lease, not with reference to the underlying asset, and makes an overall assessment of whether the lease transfers to the lessee substantially all of the risks and rewards of ownership incidental to ownership of the underlying asset. If this is the case, then the lease is a finance lease; if not, then it is an operating lease. As part of this assessment, the Corporation considers certain indicators such as whether the lease is for the major part of the economic life of the asset.

The Corporation recognizes lease payments received under operating leases as income on a straight-line basis over the lease term in operating expense.

The accounting policies applicable to the Corporation as a lessor in the comparative period were not different from *IFRS 16 Leases*. However, when the Corporation was an intermediate lessor the sub-leases were classified with reference to the underlying asset.

*Accounting policy applicable before January 1, 2019*

Leases where the Corporation assumes substantially all the risks and rewards of ownership are classified as finance leases. Upon initial recognition the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to that asset. Other leases are operating leases and not recognized in the statement of financial position.

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**4. Significant accounting policies (cont'd):**

## (f) Leases (cont'd)

Minimum lease payments made under finance leases are apportioned between finance expense and reduction of the outstanding liability. Finance expense is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability.

Payments made under operating leases are recognized in income on a straight-line basis over the term of the lease. Lease incentives received are recognized as a reduction to the lease expense over the term of the lease.

## (g) Goodwill and intangible assets:

## (i) Recognition and measurement

Goodwill	Goodwill arising on the acquisition of subsidiaries is measured at cost less accumulated impairment losses.
Research and development	Expenditure on research activities is recognized in profit or loss as incurred. Development expenditure is capitalized only if the expenditure can be measured reliably, the product or process is technically and commercially feasible, future economic benefits are probable and the Corporation intends to and has sufficient resources to complete development and to use or sell the asset. Otherwise, it is recognized in profit or loss as incurred. Subsequent to initial recognition, development expenditure is measured at cost less accumulated amortization and any accumulated impairment losses.
Intangible assets	Intangible assets, including patents, know-how, in-process research and development, trademarks and service marks and software systems that are acquired or developed by the Corporation and have finite useful lives are measured at cost less accumulated amortization and any accumulated impairment losses.

## (ii) Subsequent expenditure

Subsequent expenditure is capitalized only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditures, including expenditures on internally generated goodwill, are recognized in profit or loss as incurred.

## (iii) Amortization

Amortization is calculated to write-off the cost of intangible assets less their estimated residual values using the straight-line method over their estimated useful lives, and is recognized in profit or loss. Goodwill is not amortized.

The estimated useful lives for current and comparative periods are as follows:

Internally generated fuel cell intangible assets	3 to 5 years
Patents, know-how and in-process research & development	5 to 20 years
ERP management reporting software system	5 to 10 years
Trademarks and service marks	15 years
Domain names	15 years
Customer base and relationships	10 years
Acquired non-compete agreements	1 year

Amortization methods, useful lives and residual values are reviewed at each reporting date and adjusted if appropriate.

**4. Significant accounting policies (cont'd):**

## (h) Impairment:

## (i) Financial assets

An 'expected credit loss' ("ECL") model applies to financial assets measured at amortized cost and debt investments at FVOCI, but not to investments in equity instruments. The Corporation's financial assets measured at amortized cost and subject to the ECL model consist primarily of trade receivables and contract assets.

In applying the ECL model, loss allowances are measured on either of the following bases:

- 12-month ECLs: these are ECLs that result from possible default events within the 12 months after the reporting date; and
- lifetime ECLs: these are ECLs that result from all possible default events over the expected life of a financial instrument.

The Corporation has elected to measure loss allowances for trade receivables and contract assets at an amount equal to lifetime ECLs.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating ECLs, the Corporation considers reasonable and supportable information that is relevant and available without undue cost or effort. This includes both quantitative and qualitative information and analysis, based on historical experience and informed credit assessment and including forward-looking information.

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that we expect to receive). ECLs are discounted at the effective interest rate of the financial asset. At each reporting date, we assess whether financial assets carried at amortized cost are credit-impaired. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred. Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets. Impairment (losses) recoveries related to trade receivables and contract assets are presented separately in the statement of profit or loss.

## (ii) Non-financial assets

The carrying amounts of the Corporation's non-financial assets other than inventories are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. For goodwill and intangible assets that have indefinite useful lives, the recoverable amount is estimated annually.

The recoverable amount of an asset or cash-generating unit is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Fair value less costs to sell is defined as the estimated price that would be received on the sale of the asset in an orderly transaction between market participants at the measurement date. For the purposes of impairment testing, assets that cannot be tested individually are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other groups of assets.

The allocation of goodwill to cash-generating units reflects the lowest level at which goodwill is monitored for internal reporting purposes.

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**4. Significant accounting policies (cont'd):**

## (h) Impairment (cont'd):

## (ii) Non-financial assets (cont'd)

An impairment loss is recognized if the carrying amount of an asset or its cash-generating unit exceeds its estimated recoverable amount. Impairment losses are recognized in net loss. Impairment losses recognized in respect of the cash generating units are allocated first to reduce the carrying amount of any goodwill allocated to the units, and then to reduce the carrying amounts of the other assets in the unit on a pro-rata basis.

An impairment loss in respect of goodwill is not reversed. In respect of other assets, impairment losses recognized in prior periods are assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

## (i) Provisions:

A provision is recognized if, as a result of a past event, the Corporation has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risk specific to the liability. The unwinding of the discount is recognized as a finance expense.

*Warranty provision*

A provision for warranty costs is recorded on product sales at the time the sale is recognized. In establishing the warranty provision, management estimates the likelihood that products sold will experience warranty claims and the estimated cost to resolve claims received, taking into account the nature of the contract and past and projected experience with the products.

*Decommissioning liabilities*

Legal obligations to retire tangible long-lived assets are recorded at the net present value of the expected costs of settlement at acquisition with a corresponding increase in asset value. These include assets leased under operating leases. The liability is accreted over the life of the asset to the ultimate settlement amount and the increase in asset value is depreciated over the remaining useful life of the asset.

## (j) Revenue recognition:

The Corporation generates revenues primarily from product sales, the license and sale of intellectual property and fundamental knowledge, and the provision of engineering services and technology transfer services. Product revenues are derived primarily from standard product sales contracts and from long-term fixed price contracts. Intellectual property and fundamental knowledge license revenues are derived primarily from standard licensing and technology transfer agreements. Engineering service and technology transfer services revenues are derived primarily from cost-plus reimbursable contracts and from long-term fixed price contracts.

Revenue is recognized when a customer obtains control of the goods or services. Determining the timing of the transfer of control, at a point in time or over time, requires judgment. On standard product sales contracts, revenues are recognized when customers obtain control of the product, that is when transfer of title and risks and rewards of ownership of goods have passed and when obligation to pay is considered certain. Invoices are generated and revenue is recognized at that point in time. Provisions for warranties are made at the time of sale.

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**4. Significant accounting policies (cont'd):****(j) Revenue recognition (cont'd):**

On standard licensing and technology transfer agreements, revenues are recognized on the transfer of rights to a licensee, when it is determined to be distinct from other performance obligations, and if the customer can direct the use of, and obtain substantially all of the remaining benefits from the license as it exists at the time of transfer. In other cases, the proceeds are considered to relate to the right to use the asset over the license period and the revenue is recognized over that period. If it is determined that the license is not distinct from other performance obligations, revenue is recognized over time as the customer simultaneously receives and consumes the benefit.

On cost-plus reimbursable contracts, revenues are recognized as costs are incurred, and include applicable fees earned as services are provided.

On long-term fixed price contracts, the customer controls all of the work in progress as the services are being provided. This is because under these contracts, the deliverables are made to a customer's specification, and if a contract is terminated by the customer, then the Corporation is entitled to reimbursement of the costs incurred to date plus the applicable gross margin. Therefore, revenue from these contracts and the associated costs are recognized as the costs are incurred over time.

On long-term fixed price contracts, revenues are recognized over time using cumulative costs incurred to date relative to total estimated costs at completion to measure progress towards satisfying performance obligations. Generally, revenue is recognized by multiplying the expected consideration by the ratio of cumulative costs incurred to date to the sum of incurred and estimated costs for completing the performance obligation. The cumulative effect of changes to estimated revenues and estimated costs for completing a contract are recognized in the period in which the revisions are identified. In the event that the estimated costs exceed the expected revenues on a contract, such loss is recognized in its entirety in the period it becomes known.

Deferred revenue (i.e. contract liabilities) represents cash received from customers in excess of revenue recognized on uncompleted contracts.

**(k) Finance income and expense:**

Finance income comprises interest income on funds invested, gains on the disposal of available-for-sale financial assets and changes in the fair value of financial assets at fair value through profit or loss. Interest income is recognized as it accrues in income, using the effective interest method.

Finance expense comprise interest expense on capital leases, unwinding of the discount on provisions, changes in the fair value of financial assets at fair value through profit or loss and impairment losses recognized on financial assets. Foreign currency gains and losses are reported on a net basis.

**(l) Income taxes:**

The Corporation follows the asset and liability method of accounting for income taxes. Under this method, deferred income taxes are recognized for the deferred income tax consequences attributable to differences between the financial statement carrying values of assets and liabilities and their respective income tax bases (temporary differences) and for loss carry forwards. The resulting changes in the net deferred tax asset or liability are included in income.

Deferred tax assets and liabilities are measured using enacted, or substantively enacted, tax rates expected to apply to taxable income in the years in which temporary differences are expected to be recovered or settled. The effect on deferred income tax assets and liabilities, of a change in tax rates, is included in income in the period that includes the substantive enactment date. Deferred income tax assets are reviewed at each reporting date and are reduced to the extent that it is no longer probable that the related tax benefit will be realized.



**4. Significant accounting policies (cont'd):**

## (m) Employee benefits:

*Defined contribution plans*

A defined contribution plan is a post-employment benefit plan under which an entity pays fixed contributions into a separate entity and will have no legal or constructive obligation to pay further amounts.

Obligations for contributions to defined contribution pension plans are recognized as an employee benefit expense in profit or loss in the periods during which services are rendered by employees. Prepaid contributions are recognized as an asset to the extent that a cash refund or a reduction in future payments is available. Contributions to a defined contribution plan that are due more than 12 months after the end of the period in which the employees render the service are discounted to their present value.

*Defined benefit plans*

A defined benefit plan is a post-employment pension plan other than a defined contribution plan. The Corporation's net obligation in respect of defined benefit pension plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods; that benefit is discounted to determine its present value. Any unrecognized past service costs and the fair value of any plan assets are deducted. The discount rate is the yield at the reporting date on AA credit-rated bonds that have maturity dates approximating the terms of the Corporation's obligations and that are denominated in the same currency in which the benefits are expected to be paid. The calculation is performed annually by a qualified actuary using the projected unit credit method.

When the calculation results in a benefit to the Corporation, the recognized asset is limited to the total of any unrecognized past service costs and the present value of economic benefits available in the form of any future refunds from the plan or reductions in future contributions to the plan. In order to calculate the present value of economic benefits, consideration is given to any minimum funding requirements that apply to any plan in the Corporation. An economic benefit is available to the Corporation if it is realizable during the life of the plan, or on settlement of the plan liabilities.

The Corporation recognizes all remeasurements arising from defined benefit plans, which comprise actuarial gains and losses, immediately in other comprehensive income. Remeasurements recognized in other comprehensive income are not recycled through profit or loss in subsequent periods.

*Other long-term employee benefits*

The Corporation's net obligation in respect of long-term employee benefits other than pension plans is the amount of future benefit that employees have earned in return for their service in the current and prior periods; that benefit is discounted to determine its present value, and the fair value of any related assets is deducted. The discount rate is the yield at the reporting date on AA credit-rated bonds that have maturity dates approximating the terms of the Corporation's obligations. The calculation is performed using the projected unit credit method. Any actuarial gains and losses are recognized in other comprehensive income or loss in the period in which they arise.

*Termination benefits*

Termination benefits are recognized as an expense (restructuring expense recorded in other operating expense) when the Corporation is committed demonstrably, without realistic possibility of withdrawal, to a formal detailed plan to either terminate employment before the normal retirement date, or to provide termination benefits as a result of an offer made to encourage voluntary redundancy. Termination benefits for voluntary redundancies are recognized as an expense if the Corporation has made an offer of voluntary redundancy, it is probable that the offer will be accepted, and the number of acceptances can be estimated reliably. If benefits are payable more than 12 months after the reporting period, then they are discounted to their present value.

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**4. Significant accounting policies (cont'd):**

## (m) Employee benefits (cont'd):

*Short-term employee benefits*

Short-term employee benefit obligations are measured on an undiscounted basis and are expensed as the related service is provided.

A liability is recognized for the amount expected to be paid under short-term cash bonus or profit sharing plans if the Corporation has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee, and the obligation can be estimated reliably.

## (n) Share-based compensation plans:

The Corporation uses the fair-value based method of accounting for share-based compensation for all awards of shares and share options granted. The resulting compensation expense, based on the fair value of the awards granted, excluding the impact of any non-market service and performance vesting conditions, is charged to income over the period that the employees unconditionally become entitled to the award, with a corresponding increase to contributed surplus.

Fair values of share options are calculated using the Black-Scholes valuation method as of the grant date and adjusted for estimated forfeitures. For awards with graded vesting, the fair value of each tranche is calculated separately and recognized over its respective vesting period. Non-market vesting conditions are considered in making assumptions about the number of awards that are expected to vest. At each reporting date, the Corporation reassesses its estimates of the number of awards that are expected to vest and recognizes the impact of any revision in the income statement with a corresponding adjustment to contributed surplus.

The Corporation issues shares and share options under its share-based compensation plans as described in note 19. Any consideration paid by employees on exercise of share options or purchase of shares, together with the amount initially recorded in contributed surplus, is credited to share capital.

## (o) Earnings (loss) per share:

Basic earnings (loss) per share is computed using the weighted average number of common shares outstanding during the period, adjusted for treasury shares. Diluted earnings per share is calculated using the treasury stock method.

Under the treasury stock method, the dilution is calculated based upon the number of common shares issued should deferred share units ("DSUs"), restricted share units ("RSUs"), and "in the money" options, if any, be exercised. When the effects of outstanding stock-based compensation arrangements would be anti-dilutive, diluted loss per share is not calculated.

## (p) Government assistance and investment tax credits:

Government assistance and investment tax credits are recorded as either a reduction of the cost of the applicable assets, or credited against the related expense incurred in the statement of comprehensive loss, as determined by the terms and conditions of the agreements under which the assistance is provided to the Corporation or the nature of the expenditures which gave rise to the credits. Government assistance and investment tax credit receivables are recorded when their receipt is reasonably assured.

## (q) Segment reporting:

An operating segment is a component of the Corporation that engages in business activities from which it may earn revenues and incur expenses, including revenues and expenses that relate to transactions with any of the Corporation's other components. Segment results include items directly attributable to a segment as well as those that can be allocated on a reasonable basis. Unallocated items comprise mainly corporate assets, head office expenses, and income tax assets and liabilities.

**5. Critical judgments in applying accounting policies and key sources of estimation uncertainty:**

Critical judgments in applying accounting policies:

Critical judgments that management has made in the process of applying the Corporation's accounting policies and that have the most significant effect on the amounts recognized in the consolidated financial statements are limited to management's assessment of the Corporation's ability to continue as a going concern (note 2(e)).

Key sources of estimation uncertainty:

The following are key assumptions concerning the future and other key sources of estimation uncertainty that have significant risk of resulting in a material adjustment to the reported amount of assets, liabilities, income and expenses within the next fiscal year.

**(a) Revenue recognition:**

On long-term fixed price contracts, revenues are recorded over time using costs incurred to date relative to total estimated costs at completion to measure progress towards satisfying performance obligations. Revenue is recognized by multiplying the expected consideration by the ratio of cumulative costs incurred to date to the sum of incurred and estimated costs for completing the performance obligation. The cumulative effect of changes to expected revenues and expected costs for completing a contract are recognized in the period in which the revisions are identified. If the expected costs exceed the expected revenues on a contract, such loss is recognized in its entirety in the period it becomes known.

- (i) The determination of expected costs for completing a contract is based on estimates that can be affected by a variety of factors such as variances in the timeline to completion, the cost of materials, the availability and cost of labour, as well as productivity.
- (ii) The determination of potential revenues includes the contractually agreed amount and may be adjusted based on the estimate of the Corporation's attainment on achieving certain defined contractual milestones. Management's estimation is required in determining the amount of consideration to which the Corporation expects to be entitled and in determining when a performance obligation has been met.

Estimates used to determine revenues and costs of long-term fixed price contracts involve uncertainties that ultimately depend on the outcome of future events and are periodically revised as projects progress. There is a risk that a customer may ultimately disagree with management's assessment of the progress achieved against milestones, or that the Corporation's estimates of the work required to complete a contract may change.

**(b) Asset impairment:**

The recoverable amount of an asset or cash-generating unit is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In assessing fair value less costs to sell, the price that would be received on the sale of an asset in an orderly transaction between market participants at the measurement date is estimated. For the purposes of impairment testing, assets that cannot be tested individually are grouped together into the smallest group of assets that generates cash inflows from continuing use that are largely independent of the cash inflows of other groups of assets. The allocation of goodwill to cash-generating units reflects the lowest level at which goodwill is monitored for internal reporting purposes. Many of the factors used in assessing fair value are outside the control of management and it is reasonably likely that assumptions and estimates will change from period to period.

These changes may result in future impairments. For example, the revenue growth rate could be lower than projected due to economic, industry or competitive factors, or the discount rate used in the value in use model could increase due to a change in market interest rates. In addition, future goodwill impairment charges may be necessary if the market capitalization decreased due to a decline in the trading price of the Corporation's common stock, which could negatively impact the fair value of the Corporation's operating segments.

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**5. Critical judgments in applying accounting policies and key sources of estimation uncertainty (cont'd):**

## (c) Warranty provision:

A provision for warranty costs is recorded on product sales at the time of shipment. In establishing the warranty provision, management estimates the likelihood that products sold will experience warranty claims and the cost to resolve claims received. In making such determinations, the Corporation uses estimates based on the nature of the contract and past and projected experience with the products. Should these estimates prove to be incorrect, the Corporation may incur costs different from those provided for in the warranty provision. Management reviews warranty assumptions and makes adjustments to the provision at each reporting date based on the latest information available, including the expiry of contractual obligations. Adjustments to the warranty provision are recorded in cost of product and service revenues.

## (d) Inventory provision:

In determining the lower of cost and net realizable value of inventory and in establishing the appropriate provision for inventory obsolescence, management estimates the likelihood that inventory carrying values will be affected by changes in market pricing or demand for the products and by changes in technology or design which could make inventory on hand obsolete or recoverable at less than the recorded value. Management performs regular reviews to assess the impact of changes in technology and design, sales trends and other changes on the carrying value of inventory. Where it is determined that such changes have occurred and will have a negative impact on the value of inventory on hand, appropriate provision are made.

If there is a subsequent increase in the value of inventory on hand, reversals of previous write-downs to net realizable value are made. Unforeseen changes in these factors could result in additional inventory provisions, or reversals of previous provisions, being required.

## (e) Financial assets including impairment of trade receivables:

An ECL model applies to financial assets measured at amortized cost, contract assets and debt investments at FVOCI, but not to investments in equity instruments. The Corporation's financial assets that are measured at amortized cost and subject to the ECL model consist primarily of trade receivables and contract assets.

In applying the ECL model, loss allowances are measured on either of the following bases:

- 12-month ECLs: these are ECLs that result from possible default events within the 12 months after the reporting date; and
- lifetime ECLs: these are ECLs that result from all possible default events over the expected life of a financial instrument.

The Corporation has elected to measure loss allowances for trade receivables and contract assets at an amount equal to lifetime ECLs.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition and when estimating ECLs, the Corporation considers reasonable and supportable information that is relevant and available without undue cost or effort. This includes both quantitative and qualitative information and analysis, based on the Corporation's historical experience and informed credit assessment and including forward-looking information.

ECLs are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all cash shortfalls (i.e. the difference between the cash flows due to the entity in accordance with the contract and the cash flows that the Corporation expects to receive). ECLs are discounted at the effective interest rate of the financial asset. At each reporting date, the Corporation assesses whether financial assets carried at amortized cost are credit-impaired. A financial asset is 'credit-impaired' when one or more events that have a detrimental impact on the estimated future cash flows of the financial asset have occurred. Loss allowances for financial assets measured at amortized cost are deducted from the gross carrying amount of the assets. Impairment (losses) recoveries related to trade receivables and contract assets are presented separately in the statement of profit or loss.

**5. Critical judgments in applying accounting policies and key sources of estimation uncertainty (cont'd):**

## (f) Employee future benefits:

The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of high-quality corporate bonds that have terms to maturity approximating the terms of the related pension liability. Determination of benefit expense requires assumptions such as the discount rate to measure obligations, expected plan investment performance, expected healthcare cost trend rate, and retirement ages of employees. Actual results will differ from the recorded amounts based on these estimates and assumptions.

## (g) Income taxes:

Deferred tax assets and liabilities are measured using enacted, or substantively enacted, tax rates expected to apply to taxable income in the years in which temporary differences are expected to be recovered or settled. The effect on deferred income tax assets and liabilities of a change in tax rates is included in income in the period that includes the substantive enactment date. Management reviews the deferred income tax assets at each reporting period and records adjustments to the extent that it is no longer probable that the related tax benefit will be realized.

**6. Recent accounting pronouncements and future accounting policy changes:**

The following is an overview of accounting standard changes that the Corporation will be required to adopt in future years. The Corporation expects to adopt these standards as at their effective dates and will continue to evaluate the impact of these standards on the consolidated financial statements.

## (a) Amendments to References to the Conceptual Framework in IFRS Standards

On March 29, 2018 the IASB issued a revised version of its *Conceptual Framework for Financial Reporting* (“the Framework”) that underpins IFRS Standards. The IASB also issued *Amendments to References to the Conceptual Framework in IFRS Standards* (“the Amendments”) to update references in IFRS Standards to previous versions of the Conceptual Framework.

Some Standards include references to the 1989 and 2010 versions of the Framework. The IASB has published a separate document which contains consequential amendments to affected Standards so that they refer to the new Framework, with the exception of *IFRS 3 Business Combinations* which continues to refer to both the 1989 and 2010 Frameworks.

Both documents are effective from January 1, 2020 with earlier application permitted. The Corporation intends to adopt the Amendments in its financial statements for the annual period beginning on January 1, 2020. The adoption of the Amendments is not expected to have a material impact on the Corporation's financial statements.

(b) Definition of a Business (Amendments to *IFRS 3 Business Combinations*)

On October 22, 2018 the IASB issued amendments to *IFRS 3 Business Combinations*, that seek to clarify whether a transaction results in an asset or a business combination.

The amendments include an election to use a concentration test. This is a simplified assessment that results in an asset acquisition if substantially all of the fair value of the gross assets is concentrated in a single identifiable asset or a group of similar identifiable assets. If a preparer chooses not to apply the concentration test, or the test is failed, then the assessment focuses on the existence of a substantive process.

The amendments apply to businesses acquired in annual reporting periods beginning on or after January 1, 2020 with earlier adoption permitted. The Corporation intends to adopt the amendments in its financial statements for the annual reporting period beginning on January 1, 2020. The adoption of the Amendments is not expected to have a material impact on the Corporation's financial statements.

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**6. Recent accounting pronouncements and future accounting policy changes (cont'd):**(c) Definition of Material (Amendments to *IAS 1* and *IAS 8*)

On October 31, 2018 the IASB refined its definition of material and removed the definition of material omissions or misstatements from *IAS 8*.

The definition of material has been aligned across *IFRS Standards and the Conceptual Framework for Financial Reporting*. The amendments provide a definition and explanatory paragraphs in one place. Pursuant to the amendments, information is material if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of general purpose financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity.

The amendments are effective for annual periods beginning on or after January 1, 2020 with earlier adoption permitted. The Corporation intends to adopt the amendments in its financial statements for the annual reporting period beginning on January 1, 2020. The adoption of the Amendments is not expected to have a material impact on the Corporation's financial statements.

**7. Trade and other receivables:**

	December 31, 2019	December 31, 2018
Trade accounts receivable	\$ 27,009	\$ 21,724
Other receivables	3,345	7,706
Contract assets	18,962	9,094
	<b>\$ 49,316</b>	<b>\$ 38,524</b>

Contract assets primarily relate to the Corporation's rights to consideration for work completed but not billed as at December 31, 2019 for engineering services and technology transfer services.

	December 31, 2019
Contract assets	
At January 1, 2019	\$ 9,094
Additions to contract assets	32,137
Invoiced during the year	(22,269)
At December 31, 2019	<b>\$ 18,962</b>

Information about the Corporation's exposure to credit and market risks, and impairment losses for trade receivables and contract assets is included in note 30.

**8. Inventories:**

	December 31, 2019	December 31, 2018
Raw materials and consumables	\$ 12,848	\$ 15,547
Work-in-progress	9,848	10,034
Finished goods	3,222	1,460
Service inventory	4,180	2,270
	<b>\$ 30,098</b>	<b>\$ 29,311</b>

In 2019, the amount of raw materials and consumables, finished goods and work-in-progress recognized as cost of product and service revenues amounted to \$47,559,000 (2018 - \$39,647,000).

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**8. Inventories (cont'd):**

In 2019, the write-down of inventories to net realizable value amounted to \$2,985,000 (2018 - \$1,300,000) and the reversal of previously recorded write-downs amounted to \$609,000 (2018 - \$409,000), resulting in a net write-down of \$2,376,000 (2018 - \$891,000). In addition, \$143,000 of inventory write down was charged to program expense (2018 – \$nil). Write-downs and reversals are included in either cost of product and service revenues, or research and product development expense, depending on the nature of inventory.

**9. Property, plant and equipment:**

	December 31, 2019	December 31, 2018
Property, plant and equipment owned	\$ 27,746	\$ 21,620
Right-of-use assets	15,090	—
	<b>\$ 42,836</b>	<b>\$ 21,620</b>

*Property, plant and equipment owned:*

	December 31, 2019	December 31, 2018
Net carrying amounts		
Building	\$ —	\$ 5,007
Computer equipment	1,427	1,639
Furniture and fixtures	51	67
Leasehold improvements	1,260	1,019
Production and test equipment	25,008	13,888
	<b>\$ 27,746</b>	<b>\$ 21,620</b>

Cost	December 31, 2018	Additions	Disposals	Reclass to Right- of-use assets	Effect of movements in exchange rates	December 31, 2019
Building under finance lease	\$ 12,180	\$ —	\$ —	\$ (12,180)	\$ —	\$ —
Computer equipment	5,584	214	(63)	4	(6)	5,733
Furniture and fixtures	1,103	1	—	(4)	(2)	1,098
Leasehold improvements	7,936	630	—	—	(7)	8,559
Production and test equipment	43,310	13,089	(716)	—	(2)	55,681
	<b>\$ 70,113</b>	<b>\$ 13,934</b>	<b>\$ (779)</b>	<b>\$ (12,180)</b>	<b>\$ (17)</b>	<b>\$ 71,071</b>

Accumulated depreciation	December 31, 2018	Depreciation	Disposals	Reclass to Right- of-use	Effect of movements in exchange	December 31, 2019
Building under finance lease	\$ 7,173	\$ —	\$ —	\$ (7,173)	\$ —	\$ —
Computer equipment	3,945	422	(63)	4	(2)	4,306
Furniture and fixtures	1,036	16	—	(4)	(1)	1,047
Leasehold improvements	6,917	389	—	—	(7)	7,299
Production and test equipment	29,422	1,969	(716)	—	(2)	30,673
	<b>\$ 48,493</b>	<b>\$ 2,796</b>	<b>\$ (779)</b>	<b>\$ (7,173)</b>	<b>\$ (12)</b>	<b>\$ 43,325</b>

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**9. Property, plant and equipment (cont'd):**

Cost	December 31, 2017	Additions	Disposals	Effect of movements in exchange rates	December 31, 2018
Building under finance lease	\$ 12,180	\$ —	\$ —	\$ —	\$ 12,180
Computer equipment	4,787	1,016	(215)	(4)	5,584
Furniture and fixtures	1,190	6	(87)	(6)	1,103
Leasehold improvements	8,246	71	(363)	(18)	7,936
Production and test equipment	36,431	8,932	(2,047)	(6)	43,310
	\$ 62,834	\$ 10,025	\$ (2,712)	\$ (34)	\$ 70,113

Accumulated depreciation	December 31, 2017	Depreciation	Disposals	Effect of movements in exchange rates	December 31, 2018
Building under finance lease	\$ 6,361	\$ 812	\$ —	\$ —	\$ 7,173
Computer equipment	3,767	383	(200)	(5)	3,945
Furniture and fixtures	1,035	60	(54)	(5)	1,036
Leasehold improvements	6,622	524	(211)	(18)	6,917
Production and test equipment	29,735	1,299	(1,607)	(5)	29,422
	\$ 47,520	\$ 3,078	\$ (2,072)	\$ (33)	\$ 48,493

During the year ended December 31, 2018, the Corporation had cash additions of \$9,854,000 and non-cash additions of \$171,000 related to an adjustment for asset retirement obligations. The Corporation also disposed of certain property, plant and equipment totaling \$495,000 primarily related to Ballard Unmanned Systems' Power Manager business (note 25).

*Right-of-use assets*

The Corporation leases certain assets under lease agreements, comprising primarily of leases of land and buildings, office equipment and vehicles (note 17).

Right-of-use assets	December 31, 2019	December 31, 2018
Net carrying amounts		
Property	\$ 14,921	\$ —
Equipment	67	—
Vehicle	102	—
	\$ 15,090	\$ —

Cost	January 1, 2019	Additions	Effect of movements in exchange rates	December 31, 2019
Property	\$ 23,427	\$ 1,147	\$ (6)	\$ 24,568
Equipment	76	13	(5)	84
Vehicle	111	31	—	142
	\$ 23,614	\$ 1,191	\$ (11)	\$ 24,794



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**9. Property, plant and equipment (cont'd):**

	January 1, 2019	Depreciation	Effect of movements in exchange	December 31, 2019
Accumulated depreciation				
Property	\$ 7,173	\$ 2,474	\$ —	\$ 9,647
Equipment	—	22	(5)	17
Vehicle	—	40	—	40
	\$ 7,173	\$ 2,536	\$ (5)	\$ 9,704

**10. Intangible assets:**

	December 31, 2019	December 31, 2018
Intellectual property acquired from UTC	\$ 970	\$ 1,417
Intellectual property acquired from H2 Logic A/S	—	43
Intellectual property acquired from Ballard Unmanned Systems (formerly Protonex)	630	787
Internally generated fuel cell intangible assets	168	1,199
ERP management reporting software system	3,912	4,825
Intellectual property acquired by Ballard Power Systems Europe	7	14
	\$ 5,687	\$ 8,285

Intangible assets	Cost	Accumulated amortization	Net carrying amount
Balance			
At January 1, 2018	\$ 69,547	\$ 51,597	\$ 17,950
Amortization expense	—	2,354	(2,354)
Disposals	(9,138)	(1,827)	(7,311)
At December 31, 2018	60,409	52,124	8,285
Amortization expense	—	2,598	(2,598)
At December 31, 2019	\$ 60,409	\$ 54,722	\$ 5,687

Amortization expense on intangible assets is allocated to research and product development expense or general and administration expense depending upon the nature of the underlying assets. In 2019, amortization of \$2,598,000 (2018 - \$2,354,000) was recorded.

During the year ended December 31, 2018, the Corporation disposed of intangible assets of \$7,311,000 related to Ballard Unmanned Systems' (formerly Protonex) Power Manager business (note 25).

**11. Goodwill:**

For the purpose of impairment testing, goodwill is allocated to the Corporation's cash-generating units which represent the lowest level within the Corporation at which the goodwill is monitored for internal management purposes, which is not higher than the Corporation's operating segments (note 29).

*Fuel Cell Products and Services*

As of December 31, 2019, the aggregate carrying amount of the Corporation's goodwill is \$40,287,000 (2018 - \$40,287,000).

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**11. Goodwill (cont'd):**

The impairment testing requires a comparison of the carrying value of the asset to the higher of (i) value in use; and (ii) fair value less costs to sell. Value in use is defined as the present value of future cash flows expected to be derived from the asset in its current state.

The Corporation's fair value test is a modified market capitalization assessment, whereby the fair value of the Fuel Cell Products and Services segment is determined by first calculating the value of the Corporation at December 31, 2019 based on the average closing share price in the month of December, adding a reasonable estimated control premium to determine the Corporation's enterprise value on a controlling basis after adjusting for excess cash balances, and deducting the estimated costs to sell to arrive at the fair value of the Fuel Cell Products and Services segment. Based on the fair value test, the Corporation has determined that the fair value of the Fuel Cell Products and Services segment exceeds its carrying value as of December 31, 2019.

In addition to the fair value test, the Corporation also performed a value in use test on the Fuel Cell Products and Services segment, comparing the carrying value of the segment to the present value of future cash flows expected to be derived from the segment. The principal factors used in the discounted cash flow analysis requiring significant estimation are the projected results of operations, the discount rate based on the weighted average cost of capital and terminal value assumptions. The value in use assessment resulted in an estimated fair value for the Fuel Cell Products and Services segment that is consistent with the conclusion determined under the fair value, less costs to sell, assessment.

As the recoverable amount of the Fuel Cell Products and Services segment was determined to be greater than its carrying amount, no impairment loss was recorded in 2019 or 2018.

**12. Investments:**

	December 31, 2019	December 31, 2018
Investment in Synergy Ballard JVCo (note 4)	\$ —	\$ —
Investment in Weichai Ballard JV (note 4)	21,642	13,989
Other	5	5
	<b>\$ 21,647</b>	<b>\$ 13,994</b>

For the year ended December 31, 2019, the Corporation recorded \$11,059,000 (2018 - \$1,154,000) in equity loss of investment in JV and associates, comprising of equity loss in Weichai Ballard JV of \$10,580,000 (2018 - \$617,000) and equity loss in Synergy Ballard JVCo of \$479,000 (2018 - \$537,000).

*Investment in Weichai Ballard JV*

	December 31, 2019	December 31, 2018
Investment in Weichai Ballard JV		
Beginning balance	\$ 13,989	\$ —
Capital contribution to JV	20,944	14,286
Incorporation costs	4	320
Recognition (deferral) of 49% profit on inventory sold (not yet sold) to third party, net	(2,715)	—
Equity in loss	(10,580)	(617)
Ending balance	<b>\$ 21,642</b>	<b>\$ 13,989</b>

Weichai Ballard JV is an associate in which the Corporation has significant influence and a 49% ownership interest. During the year ended December 31, 2019, the Corporation made committed capital contributions of \$20,944,000 (RMB 143,325,000 equivalent) (2018 - \$14,286,000 (RMB 98,000,000 equivalent)) to Weichai Ballard JV.

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**12. Investments (cont'd):**

The following tables summarize the financial information of Weichai Ballard JV as included in its own financial statements as of December 31, 2019, adjusted for foreign exchange differences, the application of the Corporation's accounting policies, and the Corporation's incorporation costs.

	December 31, 2019	December 31, 2018
Percentage ownership interest (49%)		
Current assets	\$ 48,836	\$ 28,963
Non-current assets	15	—
Current liabilities	(553)	(1,123)
Non-current liabilities	(534)	—
Net assets (100%)	47,764	27,840
Corporation's share of net assets (49%)	23,404	13,642
Incorporation costs	324	320
Effects of movements in exchange rates	(2,086)	27
Carrying amount of investment in Weichai Ballard JV	\$ 21,642	\$ 13,989

	December 31, 2019	December 31, 2018
Revenue (100%)	\$ 6,950	\$ —
Net loss (100%)	\$ 21,591	\$ 1,259
Corporation's share of net loss (49%)	\$ 10,580	\$ 617

At December 31, 2019, as specified in the Equity Joint Venture Agreement, the Corporation is committed to capital contributions to Weichai Ballard JV as follows:

Less than one year (RMB 135,975,000)	\$ 19,526
One to three years (RMB 161,700,000)	23,220
Total capital contributions	\$ 42,746

*Investment in Synergy Ballard JVCo*

	December 31, 2019	December 31, 2018
Investment in Synergy Ballard JVCo		
Beginning balance	\$ —	\$ 676
Recognition (deferral) of 10% profit on inventory sold (not yet sold) to third party, net	479	(139)
Equity in loss	(479)	(537)
Ending balance	\$ —	\$ —

Synergy Ballard JVCo is an associate in which the Corporation has significant influence and a 10% ownership interest. During the year ended December 31, 2019, the Corporation made committed capital contributions of \$nil (2018 - \$nil) to Synergy Ballard JVCo.

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**13. Bank facilities:**

The Corporation has certain bank facilities available to it, which are secured by a hypothecation of the Corporation's cash and cash equivalents.

*Operating Facility*

The Corporation has a demand revolving facility ("Operating Facility") in which an operating line of credit of up to CDN \$7,000,000 is made available to be drawn upon by the Corporation. The Operating Facility can be utilized to finance the short-term working capital requirements of the business. Outstanding amounts are charged interest at the bank's prime rate minus 0.50% per annum and are repayable on demand by the bank.

At December 31, 2019, \$nil (2018 - \$nil) was outstanding on the Operating Facility.

*Leasing Facility*

The Corporation also has a CDN \$1,830,770 capital leasing facility ("Leasing Facility") which can be utilized to finance the acquisition and lease of operating equipment. Interest is charged on outstanding amounts at the bank's prime rate per annum and is repayable on demand by the bank in the event of certain conditions.

At December 31, 2019, \$nil (2018 - \$nil) was outstanding on the Leasing Facility which is included in lease liability (note 17).

*Forward Contract Facility*

The Corporation also has a Canadian dollar credit facility ("EncoreFX Facility") that allows the Corporation to purchase forward foreign exchange contracts of up to \$30,000,000 with an aggregate out-the-money mark-to-market limit of \$1,500,000.

Periodically, the Corporation uses forward foreign exchange contracts to manage exposure to currency rate fluctuations. These contracts are recorded at their fair value as either assets or liabilities on the balance sheet. Any changes in fair value are either (i) recorded in the statement of comprehensive income if formally designated and qualified under hedge accounting criteria; or (ii) recorded in the statement of operations if either not designated, or not qualified, under hedge accounting criteria.

At December 31, 2019, the Corporation had outstanding foreign exchange currency contracts to purchase a total of CDN \$16,800,000 (2018 – CDN \$17,400,000) at an average rate of 1.32 CDN per U.S. dollar, resulting in an unrealized gain of CDN \$306,000 at December 31, 2019 (2018 – unrealized loss of CDN \$777,000). The unrealized gain on forward foreign exchange contracts is presented in prepaid expenses and other current assets on the balance sheet.

The outstanding foreign exchange currency contracts are not qualified under hedge accounting.

**14. Trade and other payables:**

	December 31, 2019	December 31, 2018
Trade accounts payable	\$ 14,884	\$ 6,924
Compensation payable	12,596	8,505
Other liabilities	3,559	5,327
Taxes payable	388	398
	<b>\$ 31,427</b>	<b>\$ 21,154</b>

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**15. Deferred revenue:**

Deferred revenue (i.e. contract liabilities) represents cash received from customers in excess of revenue recognized on uncompleted contracts.

	December 31, 2019	December 31, 2018
Deferred revenue		
Beginning Balance	\$ 16,681	\$ 8,082
Additions to deferred revenue	41,197	19,353
Revenue recognized during the year	(37,722)	(10,754)
Ending Balance	\$ 20,156	\$ 16,681

**16. Provisions and other liabilities:**

Balance	Restructuring provision	Warranty provision	Other liabilities	Total
At January 1, 2018	\$ 248	\$ 5,199	\$ 4,253	\$ 9,700
Provisions made during the year	509	5,474	(63)	5,920
Provisions used/paid during the year	(560)	(1,409)	—	(1,969)
Provisions reversed/expired during the year	(2)	(208)	—	(210)
Effect of movements in exchange rates	(4)	(4)	(328)	(336)
At December 31, 2018	191	9,052	3,862	13,105
Provisions made during the year	104	3,855	40	3,999
Provisions used/paid during the year	(289)	(1,458)	—	(1,747)
Provisions reversed/expired during the year	(2)	(967)	(2,292)	(3,261)
Effect of movements in exchange rates	4	(2)	78	80
At December 31, 2019	\$ 8	\$ 10,480	\$ 1,688	\$ 12,176

At December 31, 2018				
	\$	\$	\$	\$
Current	191	9,052	—	9,243
Non-current	—	—	3,862	3,862
	\$ 191	\$ 9,052	\$ 3,862	\$ 13,105

At December 31, 2019				
	\$	\$	\$	\$
Current	8	10,480	—	10,488
Non-current	—	—	1,688	1,688
	\$ 8	\$ 10,480	\$ 1,688	\$ 12,176

*Restructuring provision*

During 2018, restructuring charges relate primarily to a change in operations leadership combined with severance obligations paid to departed employees at Ballard Unmanned Systems as a result of the disposition of the Power Manager assets and associated personnel (note 25).

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**16. Provisions and other liabilities (cont'd):***Warranty provision*

The Corporation recorded \$3,855,000 (2018 - \$4,414,000) of warranty provisions related to new product sales. This was offset by warranty expenditures of \$1,458,000 (2018 - \$1,409,000) and downward warranty adjustments of \$967,000 (2018 - \$852,000 upward warranty adjustments), due primarily to contractual expirations and changes in estimated and actual costs to repair. The remaining \$2,000 (2018 - \$4,000) decrease to the warranty provision related to the effect of movements in exchange rates.

*Other liabilities: Decommissioning liabilities*

A provision for decommissioning liabilities has been recorded for the Corporation's head office building in Burnaby, British Columbia and is related to estimated site restoration obligations at the end of the lease term. The Corporation has made certain modifications to the leased building to facilitate the manufacturing and testing of its fuel cell products. Consequently, the site restoration obligations relate primarily to dismantling and removing various manufacturing and test equipment and restoring the infrastructure of the leased building to its original state of when the lease was entered into.

Due to the long-term nature of the liability, the most significant uncertainty in estimating the provision is the costs that will be incurred. The Corporation has determined a range of reasonably possible outcomes of the total costs for the head office building. In determining the fair value of the decommissioning liabilities, the estimated future cash flows have been discounted at 1.68% per annum (2018 - 2.18%).

The Corporation performed an assessment of the estimated cash flows required to settle the obligations for the building as of December 31, 2019. Based on the assessment, no increase in the provision (2018 - \$171,000) was recorded against decommissioning liabilities, in addition to accretion costs of \$40,000 (2018 - \$36,000).

The total undiscounted amount of the estimated cash flows required to settle the obligation for the building is \$1,914,000 (2018 - \$1,825,000) which is expected to be settled at the end of the lease term in 2025.

*Other liabilities: Deferred lease inducement*

A lease extension and modification agreement was signed in December 2017 for the second building that eliminated the decommissioning liability at the end of the new 10 year lease term. The contractual elimination of the decommissioning liability of \$2,292,000 for the second building was being treated as a lease inducement and was originally deferred and amortized on a straight-line basis over the amended 10 year lease term, commencing January 2018.

At January 1, 2019, this deferred lease inducement was reclassified to right-of-use assets as per *IFRS 16 Leases* (notes 3, 4, and 9).

**17. Lease liability:**

The Corporation leases certain assets under lease agreements. The lease liability consists primarily of leases of land and buildings, office equipment and vehicles. The leases have interest rates ranging from 3.90% to 9.45% per annum and expire between May 2020 and December 2027.

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**17. Lease liability (cont'd):**

	December 31, 2019	December 31, 2018
Property	\$ 2,382	\$ 631
Equipment	24	—
Vehicle	39	—
<b>Lease Liability, Current</b>	<b>\$ 2,445</b>	<b>\$ 631</b>
Property	\$ 17,200	\$ 5,064
Equipment	45	—
Vehicle	61	—
<b>Lease Liability, Non-current</b>	<b>\$ 17,306</b>	<b>\$ 5,064</b>
<b>Lease Liability</b>	<b>\$ 19,751</b>	<b>\$ 5,695</b>

The Corporation is committed to minimum lease payments as follows:

<b>Maturity Analysis</b>	December 31, 2019
Less than one year	\$ 3,723
Between one and five years	14,803
More than five years	6,321
<b>Total undiscounted lease liabilities</b>	<b>\$ 24,847</b>

The adoption of *IFRS 16 Leases* had the following impact for the year ended December 31, 2019.

<b>Amounts recognized in profit or loss</b>	December 31, 2019
Interest on lease liabilities	\$ 1,383
Income from sub-leasing right-of-use assets	\$ 1,556
Expenses relating to short-term leases	\$ 179
<b>Amounts recognized in the statement of cash flows</b>	
Interest paid	\$ 1,383
Principal payments of lease liabilities	\$ 2,053
Expenses relating to short-term leases	\$ 179
<b>Total cash outflow for leases</b>	<b>\$ 3,615</b>

Deferred gains were also recorded on closing of the finance lease agreement and are amortized over the lease term. At December 31, 2019, the outstanding deferred gain was \$2,150,000 (2018 – \$2,566,000).

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**18. Employee future benefits:**

	December 31, 2019	December 31, 2018
Net defined benefit pension plan liability	\$ 4,308	\$ 4,215
Net other post-retirement benefit plan liability	88	84
<b>Employee future benefits</b>	<b>\$ 4,396</b>	<b>\$ 4,299</b>

The Corporation maintains a defined benefit pension plan covering existing and former employees in the United States. The benefits under the pension plan are based on years of service and salary levels accrued as of December 31, 2009. In 2009, amendments were made to the defined benefit pension plan to freeze benefits accruing to employees at their respective years of service and salary levels obtained as of December 31, 2009. Certain employees in the United States are also eligible for post-retirement healthcare, life insurance, and other benefits.

The Corporation accrues the present value of its obligations under employee future benefit plans and related costs, net of the present value of plan assets.

The measurement date used to determine pension and other post-retirement benefit obligations and expense is December 31 of each year. The most recent actuarial valuation of the employee future benefit plans for funding purposes was as of January 1, 2019. The next actuarial valuation of the employee future benefit plans for funding purposes is expected to be performed as of January 1, 2020.

The Corporation expects contributions of approximately \$600,000 to be paid to its defined benefit plans in 2020.

The following tables reconcile the opening balances to the closing balances for the net defined benefit liability and its components for the two plans. The expense recognized in profit or loss is recorded in finance income (loss) and other.

	Defined benefit obligation		Fair value of plan assets		Net defined benefit liability	
	2019	2018	2019	2018	2019	2018
<b>Defined benefit pension plan</b>						
Balance at January 1	\$ 16,255	\$ 17,603	\$ (12,040)	\$ (12,809)	\$ 4,215	\$ 4,794
<b>Included in profit or loss</b>						
Current service cost	37	57	—	—	37	57
Interest cost (income)	661	621	(493)	(455)	168	166
Benefits payable	—	—	—	—	—	—
	<b>698</b>	<b>678</b>	<b>(493)</b>	<b>(455)</b>	<b>205</b>	<b>223</b>
<b>Included in other comprehensive income</b>						
Remeasurements loss (gain):						
Actuarial loss (gain) arising from:						
Demographic assumptions	(236)	(49)	—	—	(236)	(49)
Financial assumptions	2,343	(1,331)	—	—	2,343	(1,331)
Experience adjustment	(131)	(2)	—	—	(131)	(2)
Return on plan assets excluding interest income	—	—	(1,593)	1,075	(1,593)	1,075
Plan expenses	(35)	(35)	35	35	—	—
	<b>1,941</b>	<b>(1,417)</b>	<b>(1,558)</b>	<b>1,110</b>	<b>383</b>	<b>(307)</b>
<b>Other</b>						
Contributions paid by the employer	—	—	(495)	(495)	(495)	(495)
Benefits paid	(622)	(609)	622	609	—	—
	<b>(622)</b>	<b>(609)</b>	<b>127</b>	<b>114</b>	<b>(495)</b>	<b>(495)</b>
<b>Balance at December 31</b>	<b>\$ 18,272</b>	<b>\$ 16,255</b>	<b>\$ (13,964)</b>	<b>\$ (12,040)</b>	<b>\$ 4,308</b>	<b>\$ 4,215</b>



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**18. Employee future benefits (cont'd):**

Other post-retirement benefit plan	Defined benefit obligation		Fair value of plan assets		Net defined benefit liability	
	2019	2018	2019	2018	2019	2018
Balance at January 1	\$ 84	\$ 120	\$ —	\$ —	\$ 84	\$ 120
<b>Included in profit or loss</b>						
Interest cost (income)	3	3	—	—	3	3
	3	3	—	—	3	3
<b>Included in other comprehensive income</b>						
Remeasurements loss (gain):						
Actuarial loss (gain) arising from:						
Demographic assumptions	—	—	—	—	—	—
Financial assumptions	7	(5)	—	—	7	(5)
Experience adjustment	10	7	—	—	10	7
	17	2	—	—	17	2
<b>Other</b>						
Contributions paid by the employer	—	—	(16)	(41)	(16)	(41)
Benefits paid	(16)	(41)	16	41	—	—
	(16)	(41)	—	—	(16)	(41)
Balance at December 31	\$ 88	\$ 84	\$ —	\$ —	\$ 88	\$ 84

Included in other comprehensive income (loss)	December 31, 2019	December 31, 2018
Defined benefit pension plan actuarial gain (loss)	\$ (383)	\$ 307
Other post-retirement benefit plan actuarial gain (loss)	(17)	(2)
	\$ (400)	\$ 305

Pension plan assets comprise:

	2019	2018
Cash and cash equivalents	2 %	3 %
Equity securities	61 %	59 %
Debt securities	37 %	38 %
Total	100 %	100 %

The significant actuarial assumptions adopted in measuring the fair value of benefit obligations at December 31 were as follows:

	2019		2018	
	Pension plan	Other benefit plan	Pension plan	Other benefit plan
Discount rate	3.16 %	2.84 %	4.16 %	3.96 %
Rate of compensation increase	n/a	n/a	n/a	n/a

The significant actuarial assumptions adopted in determining net expense for the years ended December 31 were as follows:

	2019		2018	
	Pension plan	Other benefit plan	Pension plan	Other benefit plan
Discount rate	4.16 %	2.84 %	3.60 %	3.96 %
Rate of compensation increase	n/a	n/a	n/a	n/a

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**18. Employee future benefits (cont'd):**

The assumed health care cost trend rates applicable to the other post-retirement benefit plan at December 31 were as follows:

	2019	2018
Initial medical/dental health care cost trend rate	n/a	n/a
Cost trend rate declines to medical and dental	n/a	n/a
Year that the medical rate reaches the rate it is assumed to remain at	2024	2023
Year that the dental rate reaches the rate it is assumed to remain at	2019	2018

A one-percentage-point change in assumed health care cost trend rates would not have a material impact on the Corporation's financial statements.

**19. Equity:**

	December 31, 2019	December 31, 2018
Share-based Compensation		
Option Expense	\$ 1,926	\$ 1,676
DSU Expense	281	307
DSU Expense Adjustment	—	(45)
RSU Expense	1,354	964
Total Share-based Compensation (included in net loss)	\$ 3,561	\$ 2,902
2018 DSU Expense (issued in 2019) (note 20 (e))	—	380
Total Share-based Compensation (per statement of equity)	\$ 3,561	\$ 3,282

**(a) Share capital:***Authorized and issued:*

Unlimited number of common shares, voting, without par value.

Unlimited number of preferred shares, issuable in series.

*Private placement:*

On November 13, 2018, the Corporation closed a private placement strategic equity investment with Weichai Power of 46,131,712 common shares and with Broad-Ocean Motor Co., Ltd. of a further 5,699,947 common shares issued from treasury at \$3.5464 per share for gross proceeds of \$163,602,000 and \$20,214,000, respectively.

Gross Offering proceeds (51,831,659 shares at \$3.5464 per share)	\$ 183,816
Less: Share issuance costs	(144)
Net Offering proceeds	\$ 183,672

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**19. Equity (cont'd):**

## (b) Share Purchase Warrants:

Warrants Outstanding	Exercise price of \$1.50	Exercise price of \$2.00	Total Warrants
At January 1, 2018	122,563	662,500	785,063
Warrants exercised in 2018	(122,563)	(625,000)	(747,563)
Warrants expired in 2018	—	(37,500)	(37,500)
At December 31, 2018	—	—	—

During 2019, nil (2018 - 747,563) warrants were exercised for an equal amount of common shares for net proceeds of \$nil (2018 - \$1,434,000).

At December 31, 2019 and 2018, nil share purchase warrants were issued and outstanding.

## (c) Share options:

The Corporation has options outstanding under a consolidated share option plan. All directors, officers and employees of the Corporation, and its subsidiaries, are eligible to participate in the share option plans although as a matter of policy, options are currently not issued to directors. Option exercise prices are denominated in either Canadian or U.S. dollars, depending on the residency of the recipient. Canadian dollar denominated options have been converted to U.S. dollars using the year-end exchange rate for presentation purposes.

All options have a term of seven years from the date of grant unless otherwise determined by the board of directors. One-third of the options vest and may be exercised, at the beginning of each of the second, third, and fourth years after granting.

As at December 31, options outstanding from the consolidated share option plan were as follows:

Balance	Options for common shares	Weighted average exercise price
At January 1, 2018	4,828,173	\$ 2.01
Options granted	1,675,640	3.27
Options exercised	(945,022)	1.66
Options forfeited	(400,663)	2.22
Options expired	(24,667)	1.35
At December 31, 2018	5,133,461	2.45
Options granted	1,317,521	3.19
Options exercised	(2,234,997)	2.12
Options forfeited	(94,336)	2.46
Options expired	(5,500)	1.26
At December 31, 2019	4,116,149	\$ 2.87

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**19. Equity (cont'd):**

## (c) Share options (cont'd):

The following table summarizes information about the Corporation's share options outstanding as at December 31, 2019:

Range of exercise price	Options outstanding			Options exercisable	
	Number outstanding	Weighted average remaining contractual life (years)	Weighted average exercise price	Number exercisable	Weighted average exercise price
\$0.83 - \$1.46	303,096	3.1	\$ 1.36	303,096	\$ 1.36
\$1.68 - \$2.36	969,041	3.3	2.16	624,061	2.22
\$2.79 - \$3.09	820,692	4.6	2.89	299,322	2.87
\$3.14 - \$4.61	2,023,320	5.7	3.43	188,991	3.70
	4,116,149	4.7	\$ 2.87	1,415,470	\$ 2.37

During 2019, 2,234,997 options were exercised for an equal amount of common shares for proceeds of \$4,624,000. During 2018, 945,022 options were exercised for an equal amount of common shares for proceeds of \$1,628,000.

During 2019, options to purchase 1,317,521 common shares were granted with a weighted average fair value of \$1.40 (2018 – 1,675,640 options and \$1.70 fair value). The granted options vest annually over three years.

The fair values of the options granted were determined using the Black-Scholes valuation model under the following weighted average assumptions:

	2019	2018
Expected life	4 years	4 years
Expected dividends	Nil	Nil
Expected volatility	57 %	64 %
Risk-free interest rate	2 %	2 %

As at December 31, 2019, options to purchase 4,116,149 common shares were outstanding (2018 – 5,133,461). During 2019, compensation expense of \$1,926,000 (2018 – \$1,676,000) was recorded in net loss based on the grant date fair value of the awards recognized over the vesting period.

## (d) Share distribution plan:

The Corporation has a consolidated share distribution plan that permits the issuance of common shares for no cash consideration to employees of the Corporation to recognize their past contribution and to encourage future contribution to the Corporation. At December 31, 2019, there were 13,700,924 (2018 – 12,051,923) shares available to be issued under this plan.

During 2018 and 2019, no shares were issued under this plan and therefore no compensation expense was recorded against income.

## (e) Deferred share units:

Deferred share units ("DSUs") are granted to the board of directors and executives. Eligible directors must elect to receive at least half of their annual retainers and executives may elect to receive all or part of their annual bonuses in DSUs. Each DSU is redeemable for one common share in the capital of the Corporation after the director or executive ceases to provide services to the Corporation. Shares will be issued from the Corporation's share distribution plan.

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**19. Equity (cont'd):**

## (e) Deferred share units (cont'd):

Balance	DSUs for common shares
At January 1, 2018	865,344
DSUs granted	179,469
DSUs exercised	(297,600)
At December 31, 2018	747,213
DSUs granted	64,165
DSUs exercised	—
At December 31, 2019	811,378

During 2019, \$281,000 of compensation expense was recorded in net loss relating to 64,165 DSUs granted during the year.

During 2018, \$307,000 of compensation expense was recorded in net loss relating to 91,361 DSUs granted during the year. For the remaining 88,108 DSUs granted during the year, estimated compensation expense of \$380,000 was recorded in net income in 2017. Upon the issuance of the DSUs in 2018, a \$45,000 adjustment increasing net income was recorded.

During 2019, nil DSUs (2018 – 297,600) were exercised, net of applicable taxes, which resulted in the issuance of nil common shares (2018 – 154,752), resulting in an impact on equity of \$nil (2018 - \$436,000).

As at December 31, 2019, 811,378 deferred share units were outstanding (2018 – 747,213).

## (f) Restricted share units:

Restricted share units (“RSUs”) are granted to employees and executives. Each RSU is convertible into one common share. The RSUs vest after a specified number of years from the date of issuance, and under certain circumstances, are contingent on achieving specified performance criteria. A performance factor adjustment is made if there is an over-achievement (or under-achievement) of specified performance criteria, resulting in additional (or fewer) RSUs being converted.

The Corporation has two plans under which RSUs may be granted, the consolidated share distribution plan and the market purchase RSU plan. Awards under the consolidated share distribution plan (note 19(d)) are satisfied by the issuance of treasury shares on maturity. Awards granted under the market purchase RSU Plan are satisfied by shares purchased on the open market by a trust established for that purpose. No common shares were repurchased in 2019 and 2018.

Balance	RSUs for common shares
At January 1, 2018	1,674,637
RSUs granted	379,257
RSU performance factor adjustment	218,213
RSUs exercised	(290,820)
RSUs forfeited	(203,095)
At December 31, 2018	1,778,192
RSUs granted	449,625
RSU performance factor adjustment	(192,016)
RSUs exercised	(730,536)
RSUs forfeited	—
At December 31, 2019	1,305,265

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**19. Equity (cont'd):**

## (f) Restricted share units (cont'd):

During 2019, 449,625 RSUs were issued (2018 – 379,257). The fair value of RSU grants is measured based on the stock price of the shares underlying the RSU on the date of grant. During 2019, compensation expense of \$1,354,000 (2018 - \$964,000) was recorded in net loss.

During 2019, 730,536 RSUs (2018 – 290,820) were exercised, net of applicable taxes, which resulted in the issuance of 387,686 common shares (2018 – 149,980), resulting in an impact on equity of \$1,034,000 (2018 - \$464,000).

As at December 31, 2019, 1,305,265 RSUs were outstanding (2018 – 1,778,192).

**20. Commitments and contingencies:**

In connection with the acquisition of intellectual property from UTC in April 2014, the Corporation retains a royalty obligation in certain circumstances to pay UTC a portion of any future intellectual property sale and licensing income generated from certain of the Corporation's intellectual property portfolio for a period of 15 years expiring in April 2029. No royalties were paid to UTC in the years ended December 31, 2019 and December 31, 2018.

The Corporation retains a previous funding obligation to pay royalties of 2% of revenues, to a maximum of \$4,613,000 (CDN \$5,351,000), on sales of certain fuel cell products for commercial distributed utility applications. As of December 31, 2019, no royalties have been incurred to date for this agreement.

The Corporation also retains a previous funding obligation to pay royalties of 2% of revenues, to a maximum of \$1,896,000 (CDN \$2,200,000), on sales of certain fuel cell products for commercial transit applications. As of December 31, 2019, no royalties have been incurred to date for this agreement.

At December 31, 2019, the Corporation has outstanding commitments aggregating up to a maximum of \$7,790,000 relating primarily to purchases of property, plant and equipment.

The Corporation is committed to capital contributions to Weichai Ballard JV over a three year period (note 12). The Corporation is also committed to minimum lease payments (note 17).

**21. Disaggregation of revenue:**

The Corporation's operations and main revenue streams are the same as those described in note 4. The Corporation's revenue is derived from contracts with customers.

In the following table, revenue is disaggregated by geographical market, by market application, and by timing of revenue recognition.

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**21. Disaggregation of revenue (cont'd):**

	December 31, 2019	December 31, 2018
<b>Geographical markets</b>		
China	\$ 47,132	\$ 30,791
Europe	41,856	37,590
North America	14,266	23,871
Other	3,073	4,334
	\$ 106,327	\$ 96,586
<b>Market application</b>		
Heavy Duty Motive	35,363	39,464
Portable Power	604	7,109
Material Handling	10,758	8,010
Back Up Power	2,982	2,426
Technology Solutions	56,620	39,577
	\$ 106,327	\$ 96,586
<b>Timing of revenue recognition</b>		
Products transferred at a point in time	47,250	53,729
Products and services transferred over time	59,077	42,857
	\$ 106,327	\$ 96,586

**22. Personnel expenses:**

Personnel expenses are included in cost of product and service revenues, research and product development expense, general and administrative expense, sales and marketing expense, and other expense.

	December 31, 2019	December 31, 2018
Salaries and employee benefits	\$ 54,794	\$ 46,381
Share-based compensation (note 19)	3,561	2,902
	\$ 58,355	\$ 49,283

**23. Other operating expense:**

	December 31, 2019	December 31, 2018
Net impairment loss on trade receivables	\$ 1,537	\$ 98
Impairment loss allowance	250	—
Total impairment loss on trade receivables	1,787	98
Restructuring costs	146	507
	\$ 1,933	\$ 605

Net impairment loss on trade receivables of \$1,537,000 for the year ended December 31, 2019 (2018 - \$98,000) relates primarily to amounts owed to the Corporation for product sales in previous periods no longer expected to be collected as a customer in Europe has entered into administration under U.K. insolvency laws due to an inability to pay its debts. In the event that the Corporation recovers any amounts previously recorded as impairment losses, the recovered amount will be recognized as a reversal of the impairment loss in the period of recovery.

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**23. Other operating expense (cont'd):**

For the year ended December 31, 2019, the Corporation recorded an impairment loss allowance of \$250,000 (2018 - \$nil). Information about the Corporation's exposure to credit and market risks, and impairment losses for trade receivables and contract assets is included in note 30.

During 2019, restructuring charges of \$146,000 relate primarily to cost reduction initiatives. During 2018, restructuring charges of \$507,000 related primarily to a change in operations leadership combined with severance obligations paid to departed employees at Ballard Unmanned Systems as a result of the disposition of the Power Manager assets and associated personnel (note 25).

**24. Finance income and expense:**

	2019	2018
Employee future benefit plan expense (note 18)	\$ (208)	\$ (226)
Pension administration expense	(120)	(117)
Investment and other income	3,710	1,034
Other income (loss)	(111)	(62)
Foreign exchange gain (loss)	(420)	(1,078)
Finance income (loss) and other	\$ 2,851	\$ (449)
Finance expense	\$ (1,434)	\$ (503)

**25. Loss on sale of assets:**

	2019	2018
Loss on sale of Power Manager assets	\$ (2,000)	\$ (3,957)
Loss on sale of SOFC assets	—	(94)
Gain on miscellaneous disposals	5	2
	\$ (1,995)	\$ (4,049)

	2019	2018
Cash proceeds received on sale of Power Manager assets	\$ 2,132	\$ 2,000
Less: Disposition costs	—	(707)
Net cash proceeds received on sale of Power Manager assets	\$ 2,132	\$ 1,293
Cash proceeds received on sale of SOFC assets	—	50
Cash proceeds from miscellaneous disposals	5	2
Net cash proceeds received on sale of assets	\$ 2,137	\$ 1,345

*Loss on sale of Power Manager assets*

During the year ended December 31, 2018, the Corporation divested certain assets of its subsidiary, Ballard Unmanned Systems Inc. related to the Power Manager business to Revision Military Ltd. ("Revision"), a private U.S. based company. At closing, the Corporation received initial consideration of approximately \$4,132,000, paid in \$2,000,000 cash and a \$2,132,000 note receivable (collected in full in September 2019), and could have received up to a further \$11,250,000, based on achievement of specific sales objectives during a 12-month earn-out period. The Corporation retained certain assets related to fuel cell propulsion systems for unmanned vehicles under the Ballard brand and divested its Power Manager assets as they were considered to be no longer aligned with the Corporation's strategic fuel cell focus.



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**25. Loss on sale of assets (cont'd):**

During the year ended December 31, 2018, the Corporation recorded a loss on sale of assets of \$3,957,000 on the divestiture of the Power Manager assets after estimating the amount of variable consideration included in the transaction price that is constrained to be \$2,000,000, as opposed to the above noted maximum possible earn-out amount of \$11,250,000. During the three months ended March 31, 2019, the Corporation recorded an additional loss on sale of assets of \$2,000,000 after adjusting the estimated amount of variable consideration from \$2,000,000 to \$nil. During October 2019, the estimated amount of variable consideration was confirmed as \$nil as Revision failed to meet the minimum specific sales objectives in the 12-month earn-out period to trigger any additional proceeds payable to the Corporation.

Various miscellaneous disposals also occurred during the year ended December 31, 2019, resulting in a net gain on sale of property, plant and equipment of \$5,000 partially offsetting the loss on sale of assets above, resulting in a net loss on sale of assets of \$1,995,000. The proceeds on disposal of these miscellaneous items of \$5,000 and the repayment of \$2,132,000 on the above note receivable result in net proceeds on sale of property, plant, and equipment of \$2,137,000.

**26. Income taxes:**

## (a) Current tax expense:

The components of income tax benefit (expense) included in the determination of the profit (loss) from continuing operations comprise of:

	2019	2018
<b>Current tax expense</b>		
Current period income tax	\$ 9	\$ 51
Withholding tax	11	319
<b>Total current tax expense</b>	<b>\$ 20</b>	<b>\$ 370</b>
<b>Deferred tax expense</b>		
Origination and reversal of temporary differences	\$ (16,287)	\$ 1,834
Adjustments for prior periods	2,715	(1,138)
Change in unrecognized deductible temporary differences	13,572	(696)
<b>Total deferred tax expense</b>	<b>\$ —</b>	<b>\$ —</b>
<b>Total income tax expense</b>	<b>\$ 20</b>	<b>\$ 370</b>

The Corporation's effective income tax rate differs from the combined Canadian federal and provincial statutory income tax rate for companies. The principal factors causing the difference are as follows:

	2019	2018
Net loss before income taxes	\$ (39,030)	\$ (26,953)
Expected tax recovery at 27.00% (2018 – 27.00%)	\$ (10,538)	\$ (7,277)
Increase (reduction) in income taxes resulting from:		
Non-deductible expenses (non-taxable income)	(73)	1,009
Investment tax credits earned	(3,126)	(2,439)
Foreign tax rate differences	1,304	227
Change in unrecognized deductible temporary differences	12,442	8,531
Other	11	319
<b>Income taxes</b>	<b>\$ 20</b>	<b>\$ 370</b>

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**26. Income taxes (cont'd):**

## (b) Unrecognized deferred tax liabilities:

At December 31, 2019, the Corporation did not have any deferred tax liabilities resulting from taxable temporary differences related to unremitted earnings of controlled subsidiaries.

## (c) Unrecognized deferred tax asset:

At December 31, 2019, the Corporation did not recognize any deferred tax assets resulting from the following deductible temporary differences for financial statement and income tax purposes.

	2019	2018
Scientific research expenditures	\$ 97,340	\$ 83,661
Accrued warranty provision	6,600	10,197
Share issuance costs	238	668
Losses from operations carried forward	115,977	107,339
Investment tax credits	34,341	30,231
Property, plant and equipment and intangible assets	193,336	174,006
	\$ 447,832	\$ 406,102

Deferred tax assets have not been recognized in respect of these deductible temporary differences because it is not currently probable that future taxable profit will be available against which the Corporation can utilize the benefits.

The Corporation has available to carry forward the following as at December 31:

	2019	2018
Canadian scientific research expenditures	\$ 97,340	\$ 83,661
Canadian losses from operations	34,847	33,801
Canadian investment tax credits	34,341	30,231
German losses from operations for corporate tax purposes	525	553
U.S. federal losses from operations	51,696	45,140
Denmark losses from operations	26,405	25,757
Hong Kong losses from operations	33	24

The Canadian scientific research expenditures may be carried forward indefinitely. The Canadian losses from operations may be used to offset future Canadian taxable income and expire over the period from 2031 to 2039.

The German, Hong Kong and Denmark losses from operations may be used to offset future taxable income in Germany, Hong Kong and Denmark for corporate tax and trade tax purposes and may be carried forward indefinitely.

The U.S. federal losses from operations incurred prior to January 1, 2018 may be used to offset future U.S. taxable income and expire over the period from 2021 to 2037 and may be carried forward indefinitely for losses incurred after January 1, 2018.

The Canadian investment tax credits may be used to offset future Canadian income taxes otherwise payable and expire over the period from 2020 to 2039.

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**27. Related party transactions:**

Related parties include shareholders with a significant ownership interest in the Corporation, including its subsidiaries and affiliates, and the Corporation's equity accounted investees: Weichai Ballard JV and Synergy Ballard JVCo (note 12).

For the year ended December 31, 2019 and 2018, related party transactions and balances with the Corporation's 49% owned equity accounted investee, Weichai Ballard JV, were as follows:

Balances with related party - Weichai Ballard JV		2019	2018
Trade and other receivables	\$	10,057	\$ 1,123
Investments		21,642	13,989
Deferred revenue		11,857	8,875
Transactions during the year with related party - Weichai Ballard JV		2019	2018
Revenues	\$	37,197	\$ 1,248

For the year ended December 31, 2019 and 2018, related party transactions and balances with the Corporation's 10% owned equity accounted investee, Synergy Ballard JVCo, were as follows:

Balances with related party - Synergy Ballard JVCo		2019	2018
Trade and other receivables	\$	65	\$ 481
Investments		—	—
Deferred revenue		46	2,021
Transactions during the year with related party - Synergy Ballard JVCo		2019	2018
Revenues	\$	8,666	\$ 17,547

The Corporation provides key management personnel, being board directors and executive officers, certain benefits, in addition to their salaries. Key management personnel also participate in the Corporation's share-based compensation plans (note 19).

In addition to cash and equity compensation, the Corporation provides the executive officers with certain personal benefits, including car allowance, medical benefit program, long and short-term disability coverage, life insurance and an annual medical, financial planning allowance and relocation allowances and services as necessary.

The employment agreements for the executive officers are substantially the same with slight variations by individual. The maximum obligation that is required to be provided in the event of termination is notice of 12 months plus one month for every year of employment completed with the Corporation, or payment in lieu of such notice, consisting of the salary, bonus and other benefits that would have been earned during such notice period. If there is a change of control, and if the executive officer's employment is terminated, including a constructive dismissal, within 2 years following the date of a change of control, the executive officer is entitled to a payment equivalent to payment in lieu of a 24 month notice period. The minimum obligation that is required is limited to that required by employment standards legislation plus one day for every full month of employment since hire date, with no distinction made for a change of control situation.

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**27. Related party transactions (cont'd):**

Key management personnel compensation is comprised of:

	2019	2018
Salaries and employee benefits	\$ 3,098	\$ 2,869
Post-employment retirement benefits	56	49
Termination benefits	—	12
Share-based compensation (note 19)	1,651	1,353
	<b>\$ 4,805</b>	<b>\$ 4,283</b>

**28. Supplemental disclosure of cash flow information:**

	2019	2018
Non-cash financing and investing activities:		
Compensatory shares	\$ 548	\$ 693
Recognition (write-down) of constrained earn-out receivable on sale of assets (note 25)	(2,000)	2,000
Recognition of right-of-use assets (note 4)	11,434	—
Recognition of additional lease liabilities (note 4)	(13,988)	—

**29. Operating segments:**

The Corporation operates in a single segment, Fuel Cell Products and Services, which consists of the design, development, manufacture, sale and service of PEM fuel cell products for a variety of applications, focusing on the power product markets of Heavy-Duty Motive (consisting of bus, truck, rail and marine applications), Portable Power / UAV, Material Handling and Backup Power, as well as the delivery of Technology Solutions, including engineering services, technology transfer and the licensing and sale of the Corporation's extensive intellectual property portfolio and fundamental knowledge for a variety of PEM fuel cell applications.

As a result of the sale of the Power Manager assets (note 25) in 2018, the Corporation has renamed the former Portable Power market as the Portable Power / UAV market. As the sale of the Power Manager assets is not presented as a discontinued operation, the Portable Power / UAV market includes revenues associated with the Power Manager business prior to its sale, and product and service revenues generated from the retained Ballard Unmanned Systems assets related primarily to fuel cell propulsion systems for unmanned systems.

In 2019, revenues included sales to two individual customers of \$37,932,000 and \$26,164,000, respectively, which each exceeded 10% of total revenue. In 2018, revenues included sales to two individual customers of \$26,587,000, and \$17,547,000, respectively, which each exceeded 10% of total revenue.

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**29. Operating segments (cont'd):**

Revenues from continuing operations by geographic area, which are attributed to countries based on customer location for the years ended December 31, are as follows:

Revenues	2019	2018
China	\$ 47,132	\$ 30,791
Germany	30,604	28,685
U.S.	13,500	23,505
Belgium	5,408	3,531
UK	2,794	1,431
Japan	2,743	3,901
Denmark	1,701	1,889
Canada	766	366
Norway	478	187
Switzerland	359	—
France	287	276
Taiwan	216	287
Netherlands	115	892
Finland	65	198
Spain	20	168
Other countries	139	479
	\$ 106,327	\$ 96,586

Non-current assets by geographic area are as follows:

Non-current assets	December 31, 2019	December 31, 2018
Canada	\$ 82,665	\$ 65,346
U.S.	4,836	4,880
China	21,663	14,012
Denmark	1,629	269
	\$ 110,793	\$ 84,507

**30. Financial instruments:**

## (a) Fair value:

The Corporation's financial instruments consist of cash and cash equivalents, trade and other receivables, investments, and trade and other payables. The fair values of cash and cash equivalents, trade and other receivables, and trade and other payables approximate their carrying values because of the short-term nature of these instruments.

Fair value measurements recognized in the statement of financial position must be categorized in accordance with the following levels:

- (i) Level 1: Quoted prices (unadjusted) in active markets for identical assets or liabilities;
- (ii) Level 2: Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices);
- (iii) Level 3: Inputs for the asset or liability that are not based on observable market data (unobservable inputs).

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**30. Financial instruments (cont'd):**

## (b) Financial risk management:

The Corporation primarily has exposure to foreign currency exchange rate risk, commodity risk, interest rate risk, and credit risk.

*Foreign currency exchange rate risk*

Foreign currency exchange rate risk is the risk that the fair value of deferred cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Corporation is exposed to currency risks primarily due to its holdings of Canadian dollar denominated cash equivalents and its Canadian dollar denominated purchases and accounts payable. Substantially all receivables are denominated in U.S. dollars.

The Corporation limits its exposure to foreign currency risk by holding Canadian denominated cash and cash equivalents in amounts up to 100% of forecasted twelve month Canadian dollar net expenditures and up to 50% of the following twelve months of forecasted Canadian dollar net expenditures, thereby creating an economic hedge. Periodically, the Corporation also enters into forward foreign exchange contracts to further limit its exposure. At December 31, 2019, the Corporation held Canadian dollar denominated cash and cash equivalents of CDN \$15,916,000 and outstanding forward foreign exchange contracts to sell a total of CDN \$16,800,000 in 2020 at an average rate of CDN \$1.32 to US \$1.00.

The following exchange rates applied during the year ended December 31, 2019:

	\$U.S. to \$1.00 CDN	\$CDN to \$1.00 U.S.
January 1, 2019 Opening rate	\$0.734	\$1.363
December 31, 2019 Closing rate	\$0.770	\$1.299
Fiscal 2019 Average rate	\$0.754	\$1.327

Based on cash and cash equivalents and forward foreign exchange contracts held at December 31, 2019, a 10% increase in the Canadian dollar against the U.S. dollar, with all other variables held constant, would result in an increase in foreign exchange gains of approximately \$2,518,000 recorded against net income.

If the Canadian dollar weakened 10% against the U.S. dollar, there would be an equal, and opposite impact, on net income. This sensitivity analysis includes foreign currency denominated monetary items, and adjusts their translation at year-end, for a 10% change in foreign currency rates.

*Commodity risk*

Commodity risk is the risk of financial loss due to fluctuations in commodity prices, in particular, for the price of platinum and palladium, which are key components of the Corporation's fuel cell products. Platinum and palladium are scarce natural resources and therefore the Corporation is dependent upon a sufficient supply of these commodities. To manage its exposure to commodity price fluctuations, the Corporation may include platinum and or palladium pricing adjustments directly into certain significant customer contracts, and may also periodically enter into platinum and or palladium forward contracts. At December 31, 2019, there were no outstanding forward platinum contracts under the Forward Contract Facility.

*Interest rate risk*

Interest rate risk is the risk that the fair value of deferred cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Corporation is exposed to interest rate risk arising primarily from fluctuations in interest rates on its cash and cash equivalents. The Corporation limits its exposure to interest rate risk by continually monitoring and adjusting portfolio duration to align to forecasted cash requirements and anticipated changes in interest rates.

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**30. Financial instruments (cont'd):**

## (b) Financial risk management (cont'd)

*Interest rate risk (cont'd)*

Based on cash and cash equivalents at December 31, 2019, a 0.25% decline in interest rates, with all other variables held constant, would result in a decrease in investment income of \$369,000. If interest rates had been 0.25% higher, there would be an equal and opposite impact on net income.

*Credit risk*

Credit risk is the risk of financial loss to the Corporation if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises principally from the Corporation's receivables from customers.

The carrying amounts of financial assets and contract assets represent the maximum credit exposure.

Impairment loss on financial assets and contract assets recognized in profit and loss of \$1,787,000 (2018 - \$98,000) were comprised of realized impairment loss recognized during the year of \$1,537,000 (2018 - \$98,000) and an impairment loss allowance of \$250,000 (2018 - \$nil).

The Corporation's exposure to credit risk is influenced mainly by the individual characteristics of each customer. However, management also considers the factors that may influence the credit risk of its customer base, including the default risk associated with the industry and country in which customers operate. Details of concentration of revenue are included in note 21.

The Corporation limits its exposure to credit risk from trade receivables and contract assets by contracting prepayments (from 50% to 100%) from certain customers.

The Corporation determines probability of default based on the following common credit risk characteristics: geographic region, age of customer relationship, and duration of remaining contract. The Corporation calculates probability of default using a forecasted default rate over the next twelve months for the automotive and manufacturing industries, ranging from 0.8% to 1.2%, depending on the individual assessment by customer. The loss given default is assumed to be 100% due to the Corporation's position as an unsecured creditor.

The movement in the allowance for impairment in respect of trade receivables and contract assets during the year was as follows.

	December 31, 2019	December 31, 2018
Impairment loss allowance		
Beginning Balance	\$ —	\$ —
Net measurement of loss allowance	250	—
Ending Balance	\$ 250	\$ —