



**IBC ADVANCED ALLOYS CORP.**

**MANAGEMENT'S DISCUSSION AND ANALYSIS**

**THREE MONTHS ENDED SEPTEMBER 30, 2017**

401 ARVIN ROAD  
FRANKLIN, IN 46131

TELEPHONE: 317-738-2558  
EMAIL: [INFO@IBCADVANCEDALLOYS.COM](mailto:INFO@IBCADVANCEDALLOYS.COM)

## Table of Contents

Our Business.....	1
Corporate Developments.....	2
Manufacturing Operations .....	2
Copper Alloys .....	2
Engineered Materials .....	3
Business Risks .....	5
Operating Performance and Outlook.....	8
Research Initiatives .....	9
Financial.....	10
Selected Quarterly Information .....	10
Results Of Operations – First Quarter 2018 .....	11
Liquidity and Capital Resources.....	13
Commitments.....	14
Related Party Transactions.....	14
Financial Instruments and Other Instruments.....	14
Environmental and Occupational Safety Issues.....	15
Shareholders' Equity .....	16
Potential Share Issuance .....	16
Private Placement.....	16
Outstanding Share Data .....	17

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

*The following is management's discussion and analysis ("MD&A") of IBC Advanced Alloys Corp., and its subsidiaries, prepared as of November 17, 2017. This MD&A should be read together with the unaudited interim condensed consolidated financial statements for the three months ended September 30, 2017 and the audited consolidated financial statements and related notes for the year ended June 30, 2017. Financial amounts, other than amounts per share or per pound, are presented in thousands of United States dollars ("\$\$") unless indicated otherwise. Canadian dollar amounts are denoted by "C\$".*

*The terms "IBC", "we", "us" and "our" refer to IBC Advanced Alloys Corp. and its subsidiaries, unless the context otherwise requires.*

*Certain information included in this MD&A may constitute forward-looking statements. Statements in this report that are not historical facts are forward-looking statements involving known and unknown risks and uncertainties, which could cause actual results to vary considerably from these statements. Readers are cautioned not to put undue reliance on forward-looking statements.*

*The Company's unaudited interim consolidated financial statements for the period ended September 30, 2017 have been prepared in accordance IAS 34 – Interim Financial Reporting using accounting policies consistent with International Financial Reporting Standards ("IFRS"), as issued by the International Accounting Standards Board and interpretations of the International Financial Reporting Interpretations Committee.*

*Additional information relating to us is available for view on SEDAR at [www.sedar.com](http://www.sedar.com).*

## **Our Business**

We are primarily engaged in developing and manufacturing advanced alloys, in particular beryllium-aluminum alloys and specialty copper alloys. Our head office is located in Franklin, Indiana. We operate four plants in the United States ("US") that manufacture, heat-treat, machine, or market copper-beryllium, beryllium-aluminum, copper-based master alloys, and similar specialty alloy products including beryllium-aluminum castings. Our manufacturing operations currently employ 74 people and comprise two divisions: Copper Alloys and Engineered Materials.

- Copper Alloys manufactures and distributes a wide variety of copper alloys as castings and forgings: beryllium copper, chrome copper, oxygen-free high conductivity copper and aluminum bronze as plate, block, bar, rings, and specialty copper alloy forgings for the industrial welding, oil and gas, plastic mold, metal melting, marine defense, electronic, and industrial equipment markets.
- Engineered Materials manufactures and supplies high-performance beryllium-aluminum components to the aerospace and high-tech manufacturing sectors.

At present, we are engaged in research and development of scandium-containing alloys, and we are monitoring developments related to the potential use of beryllium oxide ("BeO") in enhanced nuclear fuels, which has been the subject of previous research by the Company.

We were formed by an amalgamation under the laws of British Columbia on November 23, 2007 and our common shares are listed on the TSX Venture Exchange (the "TSX-V") under the symbol "IB" and on the OTCQB market under "IAALF".

## Corporate Developments

- In September 2017, an Award was issued in favor of Claimant Gerald Hoolahan against the Company, which the Company is currently contesting. See *Legal Matters* below.
- In July 2017, we completed a non-brokered private placement issuing 3,828,525 units at an issue price of C\$.375 per unit for gross proceeds for C\$1,435. Certain directors and senior officers of the Company subscribed for an aggregate of 263,333 units in the Private Placement for gross proceeds of C\$99. The planned use of proceeds is for general working capital purposes, to support a current production ramp-up and to serve as a bridge financing until the Company has sustained cash-flow positive operations.

Each unit consisted of one common share (“Common Share”) of IBC and a one-half of one transferable share purchase warrant (“Warrant”). Each full Warrant entitles the holder to acquire an additional Common Share of IBC at a price of C\$0.45 until July 12, 2019. The Warrants have an acceleration provision, under which, in the event that IBC’s common shares trade C\$.90 or higher for 21 consecutive days, a Warrant holder must either exercise the Warrants or have them expire within 60 days following that period. The acceleration clause comes into effect on July 12, 2018. The securities issued in the offering and all securities issued upon exercise of those securities, are subject to a hold period that expired on November 12, 2017. In connection with the private placement, we paid finders’ fees and issued finders’ warrants. See *Shareholders’ Equity – Private Placement* below.

## Manufacturing Operations

We currently have four manufacturing operations in the United States that employ a total of 74 people.

Location	Building Area		Leased/Owned	Employs
	m <sup>2</sup>	sq ft		
Copper Alloys				
Franklin, IN	4,500	48,800	Owned	39
Royersford, PA	1,500	16,000	Leased	6
New Madrid, MO	2,500	26,500	Owned	4
				<u>49</u>
Engineered Materials				
Wilmington, MA	5,800	63,000	Leased	25
				<u>74</u>

Most of the Company’s management and administration are based at the Franklin, IN facility.

### *COPPER ALLOYS*

We manufacture and distribute a wide variety of copper alloys as castings and forgings, including beryllium copper, chrome copper, oxygen-free high conductivity copper, and aluminum bronze as plate, block, bar, rings and specialty copper alloy forgings for various markets and applications. We sell directly to end users and serve some markets through a network of

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

established dealers and distributors. Our Copper Alloys operations are based in Franklin, IN, where we maintain a forging (hammer, press and ring rolling), heat-treating and machining operation. We cast billets at plants in Royersford, Pennsylvania and New Madrid, Missouri. Our Franklin plant sits on 4.8 hectares (12.0 acres) of land that has considerable room for expansion should economic conditions and business plans call for such expansion.

We source copper alloys as cast billet, slab or ingot from mills in North America, Europe and Asia and convert these into usable industrial products serving the industrial welding, oil and gas, plastic mold, metal melting, marine defense, electronic and industrial equipment markets. We also provide tooling components for the North American automotive industry, the European and North American consumer plastic tooling producers, the global oil and gas service industry, the prime North American submarine and aircraft carrier producers and repair facilities including the US Navy, electronics industries and general equipment manufacturers. We produce material at two IBC-owned foundries and buy other billet from independent third-party foundries and mills.

We have expertise in melting and casting beryllium copper and other beryllium-containing alloys. Our casting operations are a primary producer-supplier of beryllium copper casting and master alloy ingot products in North America and markets around the world. Our Copper Alloys operations also manufacture beryllium-nickel and low-beryllium-content beryllium-aluminum alloys. We offer our customers a full range of manufacturing and support services including casting and master alloy products, cast and forged billet products, semi-continuous cast input billets and wrought products. We manufacture our beryllium alloys utilizing either pure metallic beryllium or certified beryllium copper master alloy.

Our Royersford, PA facility has three furnaces that have been adapted to meet the specialized requirements of beryllium alloy manufacturing. We have strong technical and manufacturing engineering resources in the highly specialized beryllium and beryllium containing alloy industry. This gives us the capability to manufacture large 21-inch diameter beryllium copper input billets weighing up to two tons. These large-scale as-cast billets exhibit consistently fine-grained, uniform micro-structures coupled with high purity, low carbide chemical compositions.

Our New Madrid, MO plant is located on a 2.4-hectare (6.0 acres) site 265 kilometers (165 miles) south of St. Louis, Missouri. It has two furnaces and is capable of producing billets in a range of sizes and compositions. This facility is underutilized and, as a result, there is room for significant expansion of plant operations at this location should economic conditions and business plans call for such expansion.

*ENGINEERED MATERIALS*

The Engineered Materials division supplies high-performance beryllium-aluminum components to the aerospace and high-tech manufacturing sectors. We currently manufacture the Beralcast<sup>®</sup> and ABX<sup>™</sup> families of metal matrices that are used in commercial and military applications requiring complex, lightweight and/or high-stiffness parts. We have additional, higher-performance products in development. Using our proprietary manufacturing techniques, our objective is to make beryllium-aluminum components more accessible and cost-effective for a wide range of industries and applications.

In general, Beralcast<sup>®</sup> and ABX<sup>™</sup> alloys serve as a higher-performance or lower-cost replacement materials for cast aluminum, magnesium, titanium, metal matrix composites, non-metallic composites, and pure beryllium or powder metallurgy beryllium-aluminum. Some of their varied applications include automotive braking and structural components and aerospace and satellite system components.

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

The principal Beralcast<sup>®</sup> metal matrix is more than three times stiffer than aluminum with 22% less weight and it can be precision cast to simple and complex configurations. This material is very lightweight with a high modulus of elasticity and can be precision cast for three-dimensional stability. Beralcast<sup>®</sup> is ideally suited for certain demanding semiconductor manufacturing equipment, computer components and other commercial and aerospace applications, and it allows for a near-net shape to be cast for maximum manufacturing and cost efficiencies.

Binary beryllium-aluminum composites were developed by a US corporation, which was originally a metallurgical laboratory affiliated with the Massachusetts Institute of Technology (MIT), in cooperation with Lockheed Martin. We own the intellectual property relating to the more advanced development of this technology, which is a proprietary castable metal matrix composite beryllium-aluminum alloy now manufactured as Beralcast<sup>®</sup>. We believe that a competitor has sought to develop an alternative cast beryllium-aluminum product, which, if commercially viable, would be a direct competitor to Beralcast<sup>®</sup> and ABX<sup>™</sup>.

We have trade name rights to Beralcast<sup>®</sup> and ABX<sup>™</sup>; proprietary know-how; manufacturing equipment; marketing and supply agreements; and US beryllium stockpile bidding requirements and bona fides. Since the manufacturing process for our beryllium-aluminum products is different from that employed for Copper Alloys products, we operate a separate manufacturing facility optimized for Beralcast<sup>®</sup> and ABX<sup>™</sup> alloys in Wilmington, MA.

We are developing Engineered Materials' business by undertaking product-focused development initiatives with a heavy emphasis on defense applications. Generally, the process for developing and ramping up to production on a new product is as follows:

1. **Memorandum of understanding** – The first step is to assess the feasibility of using Beralcast<sup>®</sup> in the customer's application.
2. **Non-recurring engineering** – At various stages between the initial feasibility assessment and production, we and our customer engage in engineering work to tailor the part design to the material and assess its performance.
3. **Hard tooling** – Once production is likely, the customer asks us to design, manufacture and implement hard tooling to be included as part of the final qualification process. Although not a guarantee that a production order will follow, a hard tooling contract is a very strong indication that the customer expects to enter volume production of the component.
4. **Low-Rate Initial Production ("LRIP")** – New programs typically work through a start-up phase to optimize various processes before production reaches long-term levels. As part of the first production run, we work with our customer on various quality assurance steps culminating in the first article inspection.
5. **Volume production.**

We are currently working on various product development and sales initiatives with a range of existing and potential new customers at stages from memorandum of understanding to volume production.

*Recent Business Initiatives*

In September 2014, Lockheed Martin Missiles and Fire Control selected Engineered Materials to provide critical cast components for the Electro-Optical Targeting System ("EOTS") on the F-35 Lightning II. EOTS is multi-function system that provides precision air-to-air and air-to-surface targeting capability. The first component covered by this contract is an EOTS azimuth gimbal housing being manufactured using Beralcast<sup>®</sup>, Engineered Material's proprietary beryllium-aluminum casting alloy.

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

Lockheed Martin has awarded us three contracts for production azimuth gimbal housings for OEM aircraft and spares. These contracts are for the ramp-up production period, or LRIP. The first contract, awarded in September 2014, was for LRIP lots 7 and 8, and the second contract awarded in August 2015 was for LRIP lots 9 and 10. We have completed production for LRIP lots 7 and 8. We have also completed LRIP lots 9 and 10 and have begun making deliveries on the third contract, LRIP 11.

The value of the initial contract in 2014 was just over \$2.0 million, including machining, non-recurring engineering and hard tooling deliverables. The value of the second contract in 2015, which is for castings only, was for a similar amount. The third contract, which is for a single LRIP, has been awarded and is valued at approximately \$2.6 million. See *Business Risks* below. These contracts, with subsequent LRIP contract awards, have the potential to increase significantly over the life of the F-35 program. The EOTS system is being produced by Lockheed Martin for all the F-35 variants. Although our production contracts are typically about one year, planned F-35 production is expected to run through 2035 with completion of over 3,000 aircraft.

In addition to our publicly announced contracts with Lockheed Martin and Raytheon, we are currently pursuing other sales opportunities with several defense companies, including BAE Systems and other major aerospace companies.

Installation and commissioning of a new vacuum induction melting (VIM) furnace in our Wilmington, MA production facility was completed in May 2017. We have ramped up our production capacity at this facility in order to fill existing Beralcast® orders as well as a significant acceleration of component part orders from existing and new customers. Advanced automation and real-time process monitoring have been integrated into this VIM furnace, thereby enabling a significant step-change in capability. With improved cycle time, the daily melt capacity has increased 25% in the Engineered Materials division. Combined with additional shifts, reduced maintenance down-time, and expected yield improvements, this capital improvement has positioned the Engineered Materials division to significantly increase output to meet increased customer demand.

In May 2017, we successfully completed the installation and commissioning of a new Solution Annealing Furnace and Quench Tank at our Copper Alloys division's Franklin, Indiana facility. The unit's operational start marked the completion of the major component of the Copper Alloys division's capital improvement program. This furnace features enhanced temperature uniformity throughout the furnace and an attached quench tank. The automated controls provide consistency throughout the heat treat and quenching cycles. These controls allow us to certify our processes as conforming to AMS 2750 Rev E, (SAE International, <http://standards.sae.org/ams2750/>), as required by many customers in the aerospace, defense, and oil and gas sectors.

*BUSINESS RISKS*

Some of the risks that our business faces, which are specific to our operations, include the following:

*Dependence on Ulba Metallurgical Plant and sole-source suppliers*

Our proprietary Beralcast® and ABX™ castings and many of our copper alloys use beryllium which is a specialty metal that is not readily sourced. We are dependent on Ulba Metallurgical Plant ("Ulba") for our supply of vacuum-cast beryllium and beryllium copper master alloy. Ulba operates a beryllium processing and manufacturing facility and is owned by Kazatomprom, the national atomic company of Kazakhstan. As we have done in the past, we may also be able to source beryllium from the US National Defense Stockpile and a third-party business from time to

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

time. We have entered into long-term beryllium and beryllium copper master alloy supply agreements with Ulba lasting through 2021. Ulba's ability to honor its supply obligations will depend on its ability to source raw materials. We are unable to obtain reliable information as to the extent and availability of Ulba's raw material supply, although we understand that production uses long-term stockpiles. Any disruptions in Ulba's ability to manufacture beryllium or CTMA to our specifications would have a materially adverse effect on our business.

We are dependent upon several suppliers of our base materials and alloying agents as sole-source suppliers. Approximately 80% of our materials purchased, including Ulba Metallurgical Plant as described above, are primarily from these sole-source suppliers. Any disruptions in these suppliers' ability to manufacture our base materials and alloying agents could have a materially adverse effect on our short-term revenue, while we seek to engage alternative sources.

*Disruptions of our Manufacturing Operations*

From time to time, our operations are adversely affected by disruptions caused by such things as water line failures, power outages, labor turnover, equipment failures, and adverse weather. These issues normally only cause short-term interruptions but can affect our ability to meet our quarterly revenue and profitability objectives.

*Need to Meet Product Specifications*

Most of the products we manufacture are required to conform to a specification. Some of these specifications are very exacting. Small variations in process can cause our products to fall short of the required standard. In addition, customers' requirements can change from time to time. If we are unable to address these specification issues in a timely manner, we are at risk of losing short-term revenue and even long-term production contracts.

*Legal Matters*

In the normal course of business operations, the Company and its subsidiaries are parties, from time to time, to various civil and administrative proceedings. These may include product liability claims, health and safety claims, environmental claims and employee-related matters.

On August 7, 2012, we received a demand from Gerald Hoolahan alleging damages related to a Stock Purchase Agreement in connection with the Company's acquisition of Beralcast Corp., now IBC Engineered Materials Corp. On September 8, 2017, an Award was issued in favor of Claimant Gerald Hoolahan against IBC Advanced Alloys Corp. The Award, in the amount of \$1,240 plus attorney's fees, costs, and expenses in the amount of \$155, was granted by the American Arbitration Association's International Centre for Dispute Resolution. The Award is premised on the Arbitrator's general finding of IBC's certain breaches of contract related to the Stock Purchase Agreement previously mentioned. Gerald Hoolahan was a Vendor in that transaction and received shares of the Company as partial consideration for the transaction. These shares were subject to trading restrictions. The Arbitrator's Award is fashioned based upon a calculation of prospective sales of Gerald Hoolahan's shares before the restrictions were removed. The Arbitrator determined the restrictions to be improper. The Company vigorously disputes the allegations and is appealing the Arbitrator's Award.

On January 21, 2014, a subsidiary in the Copper Alloys division, Nonferrous Products, Inc. ("Nonferrous Products") received a "Special Notice Letter of Potential Liability" from the United States Environmental Protection Agency ("EPA"). The letter references the EPA's determination that a release of hazardous materials had occurred at the Chemetco Superfund Site located in Hartford, Illinois. Chemetco, Inc. operated a secondary smelting operation for recycling and after-market processing of copper-bearing scrap and manufacturing by-products. The EPA has

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

identified Nonferrous Products as a potentially response party ("PRP") under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"). Nonferrous Products was identified as a PRP due to the EPA's review of Chemetco's records indicating that Nonferrous Products shipped more than 150,000 pounds of material to the Superfund Site. Nonferrous Products has joined a defense group of other PRPs. The presumed amount of shipped material from Nonferrous Products classifies it as a Tier 3 Group member of four tiers, with Tier 1 consisting of PRP's that shipped the highest volume of material to Chemetco. By joining the PRP Group, Nonferrous Products entered into an Amended Cost Sharing Agreement which requires certain assessments based on an interim allocation according to Tier Group. To date, Nonferrous Products has paid immaterial amounts related to these assessments and member fees. These assessments will be used to fund further site investigation to determine the amount of materials sent to Chemetco by each party and the best clean-up method. The matter is in its early stages. It is premature to speculate on any potential liability to the Company. Nonferrous Products demanded defense and indemnity under various insurance policies, to which several insurers agreed to defend Nonferrous Products under a reservation of rights.

On April 7, 2015, a subsidiary in the Copper Alloys division, Freedom Alloys, Inc. ("Freedom Alloys") was named as a defendant in a suit filed in the Superior Court of the State of California, Los Angeles County entitled *Godoy et al. v The Argen Corporation et al.* BC578085. This Complaint for Survival and Wrongful Death from Toxic Injuries alleges Freedom Alloys, along with five other defendants, supplied beryllium-containing materials causing fatal chronic beryllium disease to plaintiffs' deceased father. The complaint alleges the decedent was exposed to beryllium alloys through his employment as a foundry worker at H. Kramer & Co. and also as a dental lab technician at various dental labs in the Los Angeles area. The claim was dismissed in September 2015, but was reinstated on the plaintiffs' appeal in June 2016. A trial date has been set for April 2019. While the outcome of any legal proceeding is difficult to predict, the Company believes that it has adequate defenses to prevail in this matter.

On March 7, 2016, Maxum Indemnity Company filed a Complaint for Declaratory Judgment against Freedom Alloys in the United States District Court for the Eastern District of Pennsylvania, seeking a judgment that it owes Freedom Alloys no duty to defend or indemnify Freedom Alloys for the underlying *Godoy et al. v The Argen Corporation et al.* lawsuit described above. The matter is pending as *Maxum Indemnity Company v Freedom Alloys Inc.*, case number 2:16-CV-01077-AB. The matter was stayed by agreement based on the status of *Godoy et al. v The Argen Corporation et al.* However, because *Godoy et al. v The Argen Corporation et al.* has resumed proceedings in the trial court in California, Maxum's counsel has threatened to lift the Stay of Proceedings if Freedom Alloys does not commit to giving up its claim for indemnity if it does not prevail in its defense of the matter.

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

*OPERATING PERFORMANCE AND OUTLOOK*

*Copper Alloys*

The Copper Alloys division completed the major components of its capital improvement program in the fiscal 4<sup>th</sup> quarter of 2017, and we stated at the time that we expected this to improve both our sales revenue and margins. In the 1<sup>st</sup> quarter of 2018, all as compared to the year-ago period:

- Sales revenue increased 7% to \$2,849 from \$2,665;
- Gross profit swung to a positive \$221 from a loss of \$61;
- Cost of sales declined 3.6% to \$2,628 from \$2,726;
- Operating losses were cut 46% to a loss of \$269 from a loss of \$498;
- Order bookings increased 15% to \$3,108 from \$2,698;
- Order backlog decreased 20% to \$2,852 from \$3,552; and
- Gross margin for the division swung to a positive 8% from a negative 2%.

In addition, we received bid proposals and orders in the quarter from both existing customers and new customers as a result of installing the Solution Annealing Furnace and Quench Tank at our Franklin, Indiana facility.

While performance improved in the division on a year-on-year basis, sales in the quarter fell 8% to \$2,849 from \$3,105 in the quarter ended June 30, 2017. This was due to significant equipment downtime and labor turnover in our Franklin forging facility in the first two months of the 1<sup>st</sup> quarter. In addition, on a sequential quarterly basis, gross profit declined \$168, due to decreased sales volume, and operating income declined \$320 from income of \$51 to a loss of \$269 due to decreased gross profit and impaired receivables expense. Management believes that customers delayed orders during this time, and order bookings are expected to improve as equipment downtime and labor turnover are reduced. Looking forward, we expect sales revenue to increase further as we begin shipping all awarded forged and machined copper alloy products to a Fortune 100 electronics manufacturer. We have been shipping to this customer two qualified parts and have produced samples of the remaining four parts that have been ordered, which are currently undergoing First Article Inspection. While we expect acceptance of these samples, we cannot be certain that we will meet the production specification. Expected revenues of up to \$2 million for production of sales of these six parts are based on customer forecasts and historical ordering patterns, although the customer may change these targets at its discretion.

We also expect sales revenue to improve as we resolve a disruption in our supply chain for products to be shipped to a multinational manufacturing customer in Asia.

Copper Alloys sales also are affected by changes in the underlying price of commodities, primarily copper. Indicative copper prices per pound are:

	<b>2017</b>	<b>2016</b>
June 30	\$2.72	\$2.20
September 30	\$2.95	\$2.21

We aim to pass the cost of copper through to our customers and we do not hold large inventories of copper. Accordingly, our profitability should not be affected by the price of copper in the long term except to the extent that high copper prices discourage consumption or that competitors lower their margins to obtain business. In the short term, price fluctuations can have a bearing on our profitability as we realize gains or losses on our inventories. Since copper is a

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

significant component of products we sell, the price of copper does materially affect our revenues.

*Engineered Materials*

In the quarter, and as compared to the year-ago period, the Engineered Materials division saw:

- Sales revenue increased by 142%, to \$1,449 from \$598;
- Gross profit swing to a positive \$175 from a loss of \$418;
- Operating losses were cut by 90% to a loss of \$68 from a loss of \$659; and
- Gross margin shift to a positive 12% from a negative 70%.

As compared to the quarter ended June 30, 2017:

- Sales revenue increased 34% to \$1,449 from \$1,081;
- Gross profit improved \$319 to \$175 from a loss of \$144;
- Operating losses decreased 84% to \$68 from \$430; and
- Gross margin improved to a positive 12% from a negative 13%.

Operationally in the quarter, the division continued to fulfill orders related to our ongoing Lockheed Martin business as well as orders for additional customers.

For Lockheed Martin, we have completed LRIP lots 9 and 10 and have begun making deliveries on the third contract, LRIP 11. LRIP 11 represents a 16% increase in volume compared to LRIP lots 9 and 10. Sales of commercial products within the semiconductor manufacturing sector have experienced strong growth compared to the prior year. Our order intake rate is continuing to follow this growth trend.

**Research Initiatives**

From time to time, we sponsor and assist in research and development (“R&D”) initiatives to create new market opportunities. Our current R&D focus is on developing scandium-containing aluminum alloys. We have significant in-house expertise in the development of these ultra high-performance alloys, and the head of our Engineered Materials division is a named co-inventor of two pending patents regarding scandium-bearing aluminum alloys. This work was conducted while he was with The Boeing Company, which has actively explored the potential integration of scandium-containing aluminum alloys in commercial aircraft.

In previous years, we actively engaged in R&D regarding the potential use of beryllium oxide in enhanced nuclear fuels. Since 2008, we have sponsored collaborative research agreements with Purdue University and Texas A&M to develop a new type of BeO nuclear fuel. Work to date has confirmed that UO<sub>2</sub> – BeO fuel is longer lasting and more efficient and provides a larger safety margin than current nuclear fuels. Under the terms of the collaborative research agreements, IBC has an option to enter into an exclusive royalty-bearing license for commercial application to the intellectual property relating to the development of an advanced BeO nuclear fuel with both Purdue and Texas A&M. Purdue has filed provisional patents covering the IBC-funded nuclear fuel research. The next step in this research initiative will be to have an industrial assembly of the BeO-enhanced fuel approved for irradiation in a test reactor. We have not allocated funds to this initiative but are seeking a partner to jointly fund the next development step.

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

**Financial**

Except as noted, all financial amounts are determined in accordance with IFRS and expressed in thousands of US dollars, except per-share amount.

*SELECTED QUARTERLY INFORMATION*

During our most recent eight quarters, we have not incurred any loss from discontinued operations.

Quarter Ended	Revenue	Loss for the period	Basic and diluted loss per share <sup>1</sup>
	\$000	\$000	\$
December 31, 2015	3,324	(1,774)	(0.19)
March 31, 2016	4,741	(296)	(0.03)
June 30, 2016	4,077	(1,139)	(0.06)
September 30, 2016	3,263	(1,607)	(0.05)
December 31, 2016	3,571	(838)	(0.03)
March 31, 2017	4,695	(707)	(0.02)
June 30, 2017	4,186	(2,168)	(0.07)
September 30, 2017	4,298	(602)	(0.02)

The sum of quarterly loss per share may not add to year-to-date totals due to rounding

General trends and factors affecting revenue and losses include:

- Average quarterly copper Comex values have fluctuated from a low of \$2.14 per pound for the quarter ended March 31, 2016 to a high of \$2.95 per pound for the quarter ended September 30, 2017, but generally trended upward since March 31, 2016.
- Some demand for our products are seasonal in nature, particularly sales of commercial castings in our Engineered Materials division. Demand is typically weaker during our second fiscal quarter.
- Significant excess capacity exists in our Royersford, PA and New Madrid, MO casting facilities. This results in significantly higher costs per unit than if the facilities were fully utilized.
- Engineered Materials has experienced higher than expected rejection rates due to continuing problems with the old furnace. The furnace structural upgrades and sub-systems were completed in May 2017. Rejection rates are normalizing as the upgrades achieve peak efficiency.
- Order bookings in the Copper Alloys division have trended upward for three of the last four quarters, while sales order backlog has also increased in three of the last four quarters. These increases reflect a trend in quotes and bids, which have generally trended upward as well.
- During the quarter ended June 30, 2017, we incurred \$1,395 in expenses related to the Arbitration Award discussed in *Legal Matters* above.

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

*RESULTS OF OPERATIONS – FIRST QUARTER 2018*

We incurred a loss of \$602 for the three months ended September 30, 2017 compared to a loss of \$1,607 in the comparative 2016 period. A summary of our results of operations to loss before other items (“operating income (loss)”) follows:

	Three Months Ended September 30, 2017				Three Months Ended September 30, 2016			
	Copper Alloys \$	Eng. Mat. \$	Corp. \$	Consol- idated \$	Copper Alloys \$	Eng. Mat. \$	Corp. \$	Consol- idated \$
Sales	2,849	1,449	-	4,298	2,665	598	-	3,263
Cost of sales								
Materials	1,362	261	-	1,623	1,512	210	-	1,722
Labor	543	301	-	844	649	258	-	907
Subcontract	43	39	-	82	-	-	-	-
Overhead	588	388	-	976	471	358	-	829
Depreciation	85	100	-	185	146	83	-	229
Change in finished goods	7	185	-	192	(52)	107	-	55
	2,628	1,274	-	3,902	2,726	1,016	-	3,742
Gross profit (loss)	221	175	-	396	(61)	(418)	-	(479)
SG&A expenses	490	243	198	931	437	241	440	1,118
Operating income (loss)	(269)	(68)	(198)	(535)	(498)	(659)	(440)	(1,597)
Gross margin	8%	12%	-	9%	(2%)	(70%)	-	(15%)

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

*Segment Analysis*

A discussion about the significant components of the segment operating loss and net loss follows.

*Copper Alloys*

- Sales increased \$184 compared to the quarter ended September 30, 2016 from \$2,665 to \$2,849, a 7% increase. Average copper Comex values for the quarter increased by 34% from \$2.20 to \$2.95 per pound. Average selling prices increased 10%, partially offsetting a decline in overall sales volume. Sales to metal service center customers decreased slightly, while most other market sectors improved, particularly original equipment manufacturers. Our Franklin, Indiana plant experienced significant equipment downtime and labor turnover. This was offset by increased sales through our Royersford, PA foundry, particularly to customers supplying the material. Gross profit improved \$282, due to sales growth and reduced labor costs. Operating losses decreased \$229 from a loss of \$498 to a loss of \$269, primarily due to improved gross profit.
- Sales decreased \$256 compared to the quarter ended June 30, 2017, from \$3,105 to \$2,849, an 8% decrease. Average copper Comex values increased 13% from \$2.62 to \$2.95 per pound. Sales volumes declined \$378, which was offset by a favorable product mix and increased Comex copper values of \$122. Our Franklin, Indiana plant experienced significant disruptions to production due to equipment downtime and labor availability. Sales to metal service center customers declined, as did sales to mill customers. Sales to original equipment manufacturers improved. Sales to a multinational manufacturing customer in Asia declined as we experienced a temporary disruption in our supply chain for these products. Gross profit declined \$168, due to decreased sales volume. Operating income declined \$320 from income of \$51 to a loss of \$269 due to decreased gross profit and impaired receivables expense.
- We try to pass price changes, both favorable and unfavorable, through to our customers, but sharp declines in price may adversely affect our profitability due to holding losses on inventory.

*Engineered Materials*

- Sales increased \$851 compared to the quarter ended September 30, 2016 from \$598 to \$1,449, a 142% increase. Sales volumes of both commercial castings and aerospace and defense castings increased significantly. Gross profit increased \$593 from a loss of \$418 to a profit of \$175 due to the volume increases. Operating losses decreased \$591 from a loss of \$498 to a loss of \$68, due to improved gross profit.
- Sales increased \$368 compared to the quarter ended June 30, 2017 from \$1,081 to \$1,449, a 34% increase. We completed the furnace structural upgrades and sub-systems installation in May 2017. We temporarily halted production while the existing furnace components were removed and the new components installed. While production was halted, we continued to ship commercial castings from stock. Sales volumes of commercial castings increased slightly, while sales volumes of aerospace and defense castings increased 267%. Gross profit improved \$319 as production resumed. Operating losses decreased \$362 from a loss of \$430 to a loss of \$68.

*Corporate*

- Corporate expenses decreased \$242 from \$440 to \$198 compared to the quarter ended September 30, 2016, as we closed the Vancouver office in fiscal 2017. Corporate

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

expenses increased \$241 compared to the quarter ended June 30, 2017 from (\$43) to \$198 as we recovered professional fees expense at year-end.

*LIQUIDITY AND CAPITAL RESOURCES*

At September 30, 2017, we had working capital deficiency of \$867 including cash of \$463, as compared to working capital deficiency of \$1,505 at June 30, 2017. Factors affecting our liquidity include:

- We have not yet achieved sustained profitable operations.
- In July 2017, we completed a non-brokered private placement issuing 3,828,525 units at an issue price of C\$.375 per unit for gross proceeds for C\$1,435. The planned use of proceeds is for general working capital purposes, to support a current production ramp-up and to serve as a bridge financing until the Company has sustained cash-flow positive operations.
- Current liabilities include an accrual of \$1,395 related to the Arbitration Award discussed in *Legal Matters* above. We are appealing the award.
- We have raised \$375, of which \$75 has been repaid, through the issuance of promissory notes which are due in the third quarter of fiscal 2018.
- Our banks have imposed restrictions that currently prevent us from transferring funds from Copper Alloys to our other segments. During the year ended June 30, 2017, the Company breached certain covenants associated with the line of credit and term loan, which were not resolved at the date of this MD&A. As a result, the Company's line of credit facility and term loan are due on demand. No call has been made.
- Effective July 1, 2016, non-executive directors have agreed to receive the majority of their compensation in common shares until the Company's financial position improves.
- Resource prices, particularly for copper, have a bearing on our manufacturing costs and selling prices, as copper is a large component of most of our products.
- We may be obliged to incur material expenditures on purchases of and repairs to property, plant and equipment to maintain our productive capacity or service customers.
- The Company manages liquidity risk associated with trade receivables by trading with recognized creditworthy third parties and insuring trade receivables. All sales are conducted in United States dollar. In addition, receivable balances are monitored on an on-going basis with the result that the Company's exposure to impaired receivables is not significant.
- The Company also manages its liquidity risk by investing its cash only in obligations of Canada or the United States or their respective agencies, obligations of enterprises sponsored by any of the above governments; bankers' acceptances purchased in the secondary market and having received the highest credit rating from a recognized rating agency in Canada or the United States, with a term of less than 180 days; and bank term deposits and bearer deposit notes, with a term of less than 180 days.
- The Company is contractually committed to purchase, at September 30, 2017 prices, an aggregate of \$1,061 in raw materials prior to June 30, 2018.
- The Company has entered into commercial property leases. These leases have an average remaining life of 2.9 years, with no renewal options. The future minimum rental

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

payments under non-cancellable operating leases are \$404 for fiscal 2018 and \$1,305 for subsequent fiscal years.

We expect that we will need to raise additional funds in the short-term to finance working capital and growth initiatives. We may be able to generate additional cash through short-term debt or by issuing shares, but there can be no assurance that we will be successful in obtaining such funds.

*COMMITMENTS*

At June 30, 2017, we had commitments to lease premises over the next four years with an aggregate payment obligation of \$1,709. We are also committed to raw materials purchases over the next year aggregating \$1,061.

*RELATED PARTY TRANSACTIONS*

Except as described below, we do not have any contractual relationships with directors or officers other than employment contracts in the ordinary course of business. The employment contracts are not financially material to our business except that our CEO is eligible to receive payment of up to \$200 in the event of a change of control of IBC, if certain conditions are met.

Our non-executive directors were paid \$36 per year, but in October 2012, agreed to temporarily reduce annual director compensation to \$18 as part of a broader initiative to reduce overhead expenses. In fiscal 2017, the non-executive directors' compensation was returned to \$36 per year but the directors agreed to receive the bulk of this amount in common shares. In December 2016, we issued 52,927 common shares to our directors as partial payment for services rendered for the quarter ended September 30, 2016. The issue date value of these shares was \$23. Mark A. Smith and Geoff Hampson each received 17,259 common shares and Mike Jarvis received 18,409 common shares. In February 2017, we issued 48,457 common shares to our directors as partial payment for services rendered for the period from October 1, 2016 to January 18, 2017. The issue date value of these shares was \$21. Mark A. Smith and Geoff Hampson each received 17,728 common shares and Mike Jarvis received 13,001 common shares. The balance of their director fees was paid in cash.

In the quarter ended March 31, 2016, we borrowed \$225 from our CEO under two promissory notes. We have repaid \$75. The loans are secured by the accounts receivable and inventory of our Engineered Materials division and bear interest at an annual rate of 10%. We borrowed a further \$150 from individuals related to our CEO. The loans are secured by the accounts receivable and inventory of our Engineered Materials division and bear interest at an annual rate of 12%.

*FINANCIAL INSTRUMENTS AND OTHER INSTRUMENTS*

Our activities expose us to a variety of financial risks, including foreign exchange risk, interest rate risk, commodity price risk and credit risk. We do not have a practice of trading derivatives. We attempt to employ a natural hedge for foreign currency by holding funds in the currency in which we expect to spend the monies.

*Foreign Exchange Risk*

While the majority of our administrative and manufacturing activities occur in the United States, we incur some corporate administration costs in Canada and raise equity proceeds in Canadian dollars. We manage exchange risk on equity capital by converting expected United States expenditures to United States dollars at the time the money is raised.

### *Interest Rate Risk*

Our interest rate risk mainly arises from interest expense on the BMO Harris Bank line of credit. Our term loan has a fixed interest rate and is not exposed to short-term interest rate risk.

### *Commodity Price Risk*

Our profitability and long-term viability depend, in some measure, on the market prices of copper, aluminum and beryllium. The market prices for metals can be volatile and are affected by factors beyond our control, including the following: global or regional consumption patterns; the supply of, and demand for, these metals; speculative activities; the availability and costs of metal substitutes; expectations for inflation; and political and economic conditions, including interest rates and currency values. We cannot predict the effect of these factors on metal prices. We do not engage in hedging but, where possible, structure selling arrangements in a way that passes commodity price risk through to the customer.

### *Credit Risk*

We manage credit risk by trading with recognized creditworthy third parties and by insuring international trade receivables. In addition, we monitor receivable balances with the result that the Company's exposure to impaired receivables is generally not significant.

## **Environmental and Occupational Safety Issues**

We melt and machine materials that have the potential, if not controlled and handled appropriately, to have a negative effect on an individual's health and the environment. In addition, our operations use materials such as cutting and hydraulic fluids, which have the capacity to cause environmental contamination if left uncontained.

To mitigate these potential risks, we:

- employ a full-time health and safety manager to administer and monitor our safety programs;
- employ manufacturing practices to minimize and eliminate dispersal of fumes and dust;
- use trap basins and fluid reservoirs to capture and retrieve possible overages;
- use active exhaust vents/hoods located in equipment areas to capture and filter air;
- regularly schedule assessments and maintenance of in-house ventilation systems;
- require our employees to use appropriate personal protective equipment (such as respirators, outer garments, gloves, etc.) selected to limit and protect them from any potential exposures;
- conduct beryllium lymphocyte proliferation tests (BeLPT) to determine employees' potential for sensitivity to beryllium prior to possible exposure;
- undertake ongoing air quality monitoring and perform periodic employee health exams as per occupational health guidelines; and
- limit access to areas that may have a potential exposure to beryllium dust particles.

Despite these procedures, we remain subject to risk in this regard.

As with all industry, we are subject to periodic inspection by state and local safety, health and environmental authorities. If during an inspection a failing was noted in our system, the potential for the temporary or permanent closure of the facilities could exist. If during the periodic employee health screening, an employee displays elevated exposure to metals, it could require

us to place the employee on sick leave, which would have the potential to impact both our direct and indirect costs and cause a disruption of production. There is also the potential that an inherent safety or environmental exposure, if uncontrolled, could initialize legal action by employees, neighbors or those who visit our facilities.

To minimize the risks arising from pre-acquisition activities, we commissioned phase one environmental reviews prior to acquiring our copper alloys businesses. It may be possible that environmental problems remain at our facilities that these phase-one assessments did not uncover.

## **Shareholders' Equity**

### *POTENTIAL SHARE ISSUANCE*

Our board and the TSX-V have approved the issuance of 3,333 shares to settle a contingent liability of \$30 with a supplier but we have not yet issued the shares.

### *PRIVATE PLACEMENT*

In July 2017, we completed a non-brokered private placement issuing 3,828,525 units at an issue price of C\$0.375 per unit for gross proceeds of C\$1,435.

Each Unit consists of one common share ("Common Share") of IBC and a one-half of one transferable share purchase warrant ("Warrant"). Each full Warrant entitles the holder to acquire an additional Common Share of IBC at a price of C\$0.45 until July 12, 2019. The Warrants have an acceleration provision, to which, the Warrant holders will either need to exercise the Warrants or have them expire within 60 days if IBC's common shares trade at C\$0.90 or greater for 21 consecutive trading days. The acceleration clause will come into effect after the one-year anniversary of the Warrant issuance. The securities issued and all securities issued upon exercise of those securities, are subject to a hold period expiring on November 12, 2017.

Certain directors and senior officers of the Company subscribed for an aggregate of 263,333 Units in the Private Placement for gross proceeds of \$99. Each of these subscriptions constitutes a "related party transaction" within the meaning of TSX Venture Exchange Policy 5.9 - Protection of Minority Security Holders in Special Transactions and Multilateral Instrument 61-101 - Protection of Minority Security Holders in Special Transactions. The Company conducted the private placement in reliance upon certain prospectus and registration exemptions.

Funds raised under the Private Placement are being used to provide general working capital, to support current production ramp-up and to serve as a bridge financing until IBC has achieved sustained cash-flow-positive operations. We paid finders' fees on the Private Placement in the aggregate amount of C\$25 in cash and issued 66,656 non-transferable common share purchase warrants ("Finder's Warrant"). Each Finder's Warrant is exercisable with the same terms as those Warrants issued to subscribers in the Private Placement.

**IBC Advanced Alloys Corp.**  
**Management's Discussion and Analysis**  
Three Months Ended September 30, 2017

---

*OUTSTANDING SHARE DATA*

As at the date of this MD&A, we have issued:

- A total of 34,175,115 common shares. In addition, we plan to issue 3,333 common shares to settle a contingent liability to a supplier.
- Warrants to purchase 21,033,670 common shares.
- Share options to purchase 2,071,750 common shares.

The maximum number of shares potentially issuable is therefore 57,283,868.