WINTER 2020

We welcome all our new employees

CASIOOL

Castool – Canada

Duglas Mariyadas Equipment Technician

Tommy Stampolidis EDM Operator

> Alex Winter 5-Axis Mill Operator

Mike Wolbaum

Danny Canning Cleaner

Eve-Lynn Swan Accounts Payable Clerk

David Holder Die Cast Sales Indiana

Carlos Maciel Die Cast Technician Mexico



25 years of service

Prahb Braich Balraj Jhawar Jaspinder Singh Mickie Ramsawak

15 years of service Nala Mathan



HAPPY NEW YEAR

I wish you an awesome and cheerful year! May 2020 turn your dreams into reality and your efforts into great achievement. Paul Robbins

Congratulations to the Castool Tooling Systems Team for their expansion and continued growth.



Castool was founded in the 1984 and located in Markham and shortly thereafter moved to Scarborough.

Paul Robbins (General Manager) : When I joined Castool in 1986, Castool was a general machine shop with 11 employees servicing a variety of different customers in Ontario. Castool changed its name to Castool Precision Turning and Honing then to Castool Tooling Solutions around 1990. We fired our 2 largest customers FAG and SKF bearings to focus on tooling, and in 2005 changed our name again to Castool Tooling Systems. We moved from Scarborough to Uxbridge in 2006, the plant was 40,000 sq ft with 50 employees selling approximately \$28M annually in North America.

We increased the size of this plant in 2011, 2014 and again this year. The plant is now 90,000 sq ft with 140 employees and annual sales of approximately \$50M. We export 90% of what we produce to 55 countries around the world. We are well known today by most major die casters and extruders globally for our Tooling Systems. Our products are industry leading and greatly enhance the efficiencies of our customers.

YOUR MANAGEMENT TEAM



Paul Robbins The son of a leading Toronto die maker, Paul received his postgraduate degree from the Schulich School of Business in 1981.

He has worked in the light metal extrusion industry for more than 25 years and holds more than 20 international patents.

As General Manager of Castool Tooling Systems, Paul has played an important role in some of the most influential development work in the extrusion and die cast industries. Today, Castool Tooling Systems hosts complete tooling systems for extruding and die casting light metals.

Paul is well known for the articles that he has authored, and for the many technical papers he has presented. The most well known phrase he is known for is "Temperature, Temperature, Temperature" from his article published in 1997 in Light Metal Age Super extruders.

He is a committed advocate of the view that extrusion is a holistic process, and therefore components of the production systems should never be considered in isolation, but always as an interconnected part of the whole system. **Siri** started his professional studies In 1989, with Chartered Institute of management Accountants (CIMA) in the UK.

He immigrated to Canada in December 1993. Siri acquired his CGA designation with the Certified General Accountants in 2002, and received his Master of Business Administration (MBA) in 2006 from the Laurentian University, Canada.

Siri became a member of the Certified Professional Accountants (CPA) in 2014, working for an audit firm.



Siri Sugirthalingam Assistant General Manager

From 1994 to 2005, he worked as a controller at Fincore, a company coating automobile parts. Siri joined Castool in February 2005, and was promoted to AGM in 2016.



John joined Castool October 1986. He carries a license as a general machinist / tool and die maker, red seal in Canada. John started his career as a manual machinist and later moved in CNC machining / programming. John became shop foreman in 1989 , and was tasked to build and train the Castool production team to meet the requirements of a growing business. He was promoted to Production Manager and more recently to Operations Manager. He has just completed the building expansion in Canada, and is starting on our new facility in Morocco. His extensive knowledge in production and machinery, prepared John to manage Castool's facilities and quality globally.

John Cullum Operation Manager



Steve Boyce Production Manager



Paramjit (Lucky) Saimbhi Systems/I.T. Manager

Steve joined Castool in December 1989. He started as general machinist and worked in all areas of production up to his current position.

He was promoted to Production Manager at Castool in 2017.

Steve manages approximately 75 plant employees and 800 jobs per month. He is responsible for all manufacturing aspects and overseas Castool 180 production.

Lucky joined Castool in July 1996. He has an Electro-Mechanical Engineering diploma specializing in Automation and Robotics as wel as a Mechanical Engineering diploma specializing in Tool and Diemaking. Lucky started his Career with Castool as a Machinist, then moved to the CAM department programming various CNC machines.

Currently Lucky manages a team of programmers, electricans and technicians working on innovation, design, and development of Castool technology for the Extrusion and Die Cast industry. As IT Manager, he is involved in identifying and implementing best practices to help the system users at Castool.

YOUR MANAGAMENT TEAM



Danny Dunn has worked in the Light Metal industry for over 31 years. Dan's experience in Extrusion includes multiple positions within operations from extrusion press operation, die shop supervisor and production management.

He has been with Castool over 24 years. He started in inside sales, moved to outside sales, and was promoted to Sales Manager and more recently to Sales Director.

Dan is a seasoned presenter with the AEC and NADCA which are dedicated to education and continuous improvement of the Extrusion and Die Casting industry globally.



Krystean has been with Castool for 22 years.

He joined Castool in 1997 as a coop student while attending Centennial College studying marketing and mechanical design.

He worked in CAD for 8 years, inside sales for 4 years and outside sales for 10 years involved with both Die Cast and Extrusion products. Krystean also spent 2 years in Asia

Krystean was promoted to Sales Manager North America in 2019. He has extensive knowledge of Castool's products and markets Jean Dembowski is the Commercial Manager. Jean joined Castool 8 years ago working in inside sales. She was promoted to Commercial Manager in 2017. Jean is responsible for both Die Cast and Extrusion estimates, quotations and order entry for Canada and Thailand. She also manages the Process Planning department. Jean and her team prioritize and coordiante each quote and order. Jean also receives most customer complaints and initiates the solutions. She has a background in graphic design.





Gurmit Dhaliwal joined Castool 15 years ago in the shipping department. He was promoted to purchasing and more recently to Purchasing & Logistics Manager.

He looks after purchasing & logistics for Canada and Thailand. Gurmit and his team make sure that quality raw materials are delivered on time to both plants at a competitive price.

He has Bachelors in Mechanical Engineering and did his post graduation in Marine Engineering.



Prabh has a bachelor's degree in economics and a master's degree in political science. He started his career with Exco in 1984. In 1994, he was promoted to QC inspector and in 1995 received another promotion to QC supervisor. After accumulating 34 years of experience in the quality control department, Prabh was promoted to QC/QA Manager. On top of his regular duties, he is also responsible for implementing and maintaining ISO standards for the Castool group.

Raj Sagoo started working with Castool June 2006 as Horizontal CNC boring mill operator. Raj moved to Thailand to help setup Castoo180 plant in 2014.

He started at Castool 180 as the heavy milling/turning supervisor and was promoted to Production Manager and more recently to Process Manager.

Raj has a college diploma in accounting & business management. Prior to joining Castool, Raj managed a family owned custom manufacturing facility with 20 employees in Canada.

Watchirapan (Anu) has over 24 years in Industrial Engineering and Production Management. Anu has experience in Tool and Die Making, Injection and Stamping Tools, and quality systems for Automotive.

Anu joined Castool180 in 2013 as Production Supervisor and was promoted to Production Manager in 2018.



Raj Sagoo **Process Manger 180**



Watchirapan Rintawong Production Manger 180

UXBRIDGE EXPANSION 2019





Uxbridge, Canada

Castool moved to the present facility in Uxbridge in 2006. This is the 3rd and final expansion.

We added 23,000 sq ft inlcuding mezzanine and offices. The number of containers, shot sleeves and die ovens has continually increased to the point that we could not manage in the existing facilities.

One month after the expansion was ready to be occupied, the cutting, drilling and turning areas are fully functional. This was managed without disrupting manufacturing and sales.

A new horizontal boring mill, a vertical boring lathe and a vertical hone will be installed in the next month. This will increase our capacity for containers by 25%.







OCCUPATIONAL HEALTH AND SAFETY

CASTOOL SAFETY SIGN



The significance of the 3 circles on the plant health and safety sign are months 1, 2, and 3. These 3 months are equal to Castool's quarterly accident report of "medical" and "lost time" accidents.

During the completion of first month with no accidents, a green circle will be placed over the first red circle starting from the left. Month 2 and 3 will follow accordingly when no accidents have occurred. The green circles will be replaced to red if any accidents occur during any month. The goal is to have all circles green forever, meaning no medical or lost time injuries.

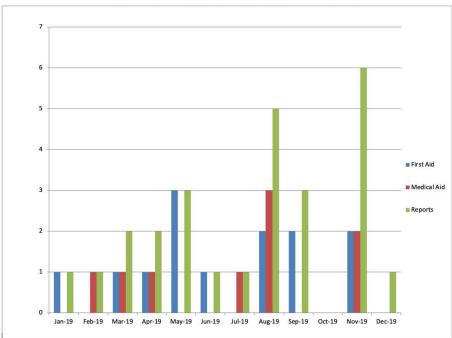


During the months of September and October, Castool had 0 medical or lost time accidents. This was another great accomplishment! We did however have 2 medical accidents late November. Both accidents resulted in hand injuries. During December we again had no medical or lost time accidents.

Our Joint Health and Safety committee have discussed all accidents and reported incidents to conclude that proper PPE to be worn at the correct times can reduce risks of worker injury. During November, 2 worker committee members completed part 1 of Health and Safety Certification. Also in the same month, 3 Castool Supervisors have completed Health and Safety training from Workplace Safety & Prevention Services (WSPS). This training was given to improve knowledge of roles and responsibilities including Supervisor due diligence. Our continued awareness, improvements and striving for results from a collective effort will make a safer workplace for all Castool employees.

> Jim Birnie Health and Safety Coordinator





Health and Safety Injuries per Month











Castool 180 celebrated 5 years

in business in Thai tradition. 9 monks were invited to Castool to bless the facility and employees.

The ceremony lasted 1 hour, inlcuding prayer and a meal. Castool's employees offered the monks lunch, which must be eaten before 11 am.

All Castool 180 employees met at a local hotel at 6 pm for a party and meal to celebrate.

Both New Year and Castool 180's anniversary were celebrated.



Castool 180 NEW YEAR Party 2020



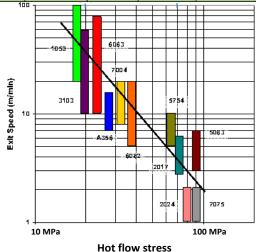
RESEARCH CORNER BY YAHYA

How does alloy effect extrusion and design of container?

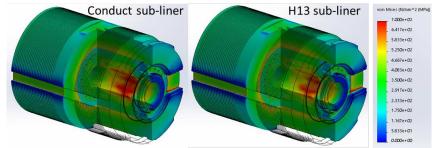
From metallurgical point of view, adding alloying elements decreases the melting point of aluminum drastically, but at the same time higher temperature is needed to bring the alloying elements back to solution which is important during the extrusion of heat-treatable alloys such as 6xxx and 7xxx. The temperature at which the melting starts is called "solidus" and the minimum temperature needed to bring alloying elements into solution is called "solvus". During the extrusion we need the exit temperature anything between the solvus and solidus to have both good surface quality and desired microstructure at the same time. Referring to following table, the solvus-solidus window can change from 170°F (95°C) for AA6063 down to 13°F (7°C) for AA6082. A narrow temperature control window makes is more difficult to control the exit temperature. Generally, harder alloys with more alloying elements have smaller temperature control window.

Alloy		Chemical Composition							Favora tempo (Solvus	Temperature control window		Exit speed	Cycle time [minutes] ER=50	Face	Heat generation in	Dissipation	
		Si	Mg	Mn	Cr	Cu	Zn	Zr	°C	۴F	°C	۴F	[ft/min]	40" long billet	[ksi]	container [kW]	required [kW]
Soft	1100			j.		0.1			< 643	< 1190			164-262	1-2	60	45	25
	3003			1.2		0.1			< 643	< 1190			98-230	1-2	70	53	27
	6063	0.4	0.7	1			11		520 - 615	970 - 1140	95	170	115-262	1-2	80	60	30
Medium	6005A	0.8	0.5	0.15	- 0.5				530 - 600	985 - 1110	70	125			90	23	15
	6061	0.6	1		0	0.3			560 - 582	1040 - 1080	22	40	16-82	3-10	90	23	15
	6082	1	1	0.6	0				570 - 577	1058 - 1071	7	13			90	23	15
	7003		0.7	ĵ.			6	0.8	540 - 600	1000 -1110	60	110	16-69	4-10	90	23	15
Hard	7075		2.5		0	1.6	5.6		465 - 480	870 - 895	15	25	3-7	25-55	100	3	3

Aluminum alloys are among the most extrudable metals due to minor flow stress at high temperature. By the way, the hot flow stress of Aluminum can be increased by a level of magnitude just by adding a few percent of alloying elements. Under the same temperature and deformation rate, AA7075 is 10 times stronger than commercially pure aluminum (AA1050). This huge difference in flow stress will translate into large range of extrudability where a soft aluminum alloy can be extruded about 2 level of magnitude (100 times) faster than a hard Al alloy. Slower ram speed during extrusion results in less heat generation from billet deformation inside the container. Such that during the extrusion of 7075 the cycle time is too long so that the rate of heat dissipation through the container is much more than the heat generation rate inside the container which is opposite the situation during the extrusion of soft alloys where the heat generation in container wins the heat dissipation of container and the container gets thermally saturated. The power of heat dissipation in container is a function of thermal conductivity, design and outside cooling method. Based on the aluminum alloy to be extruded, a proper combination of these parameters must be chosen to provide required heat dissipation power.



In addition to more temperature sensitivity, harder alloys need more extrusion load so that there is more load applied on the tooling including container and dummy block, so that using stronger material can be of benefit. The image below shows the stress distribution during the extrusion of a hard alloy with high pressure of 117 ksi (807 MPa) where the stress transferred to the sub-liner is close to yield stress of Conduct material. Under the same thermal conditions, the container with an H13 sub-liner exhibits better support on the liner so that the liner is under less deformation. At the same time the stress level on the sub-liner remains the same as conduct sub-liner. On the other hand due to less conductivity of H13 compared to Conduct material less heat is dissipated though the container that could be favourable in terms of low heat generation during the extrusion of hard alloys.



Stress distribution during the extrusion at peak face pressure of 117 ksi (807 MPa) in a 3 piece container with H13 liner and Conduct body and different sub-liner material.

WEBINAR AEC

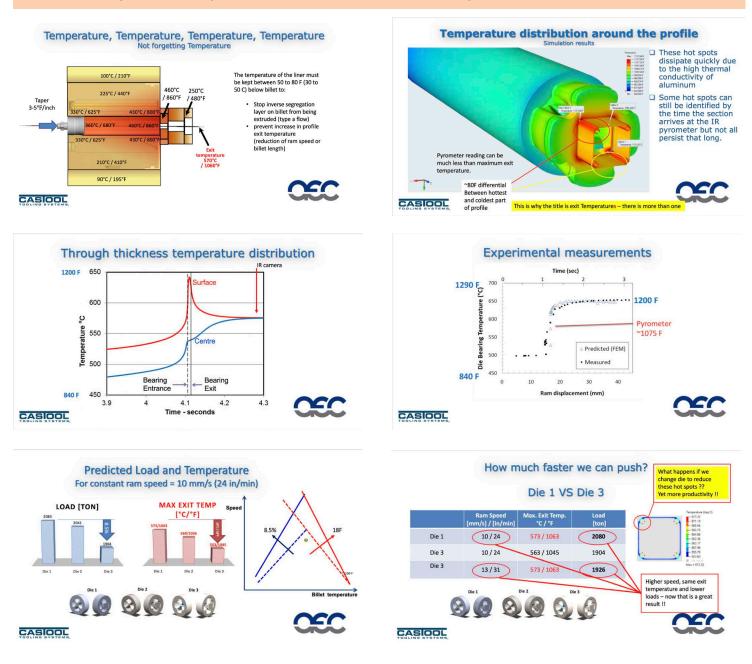
November 20, 2019 2:30-3:30 PM Eastern

Presenters: Richard Dickson of Hydro Metals, Yahya Mahmoodkhani and Paul Robbins of Castool Tooling Systems

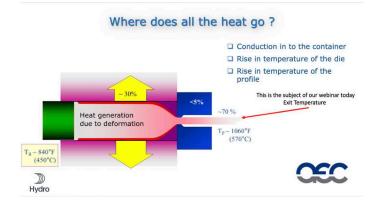
Temperature is the key factor that determines the surface quality of the extrusion, but does a pyrometer tell us enough about the exit temperature of the extrusion?

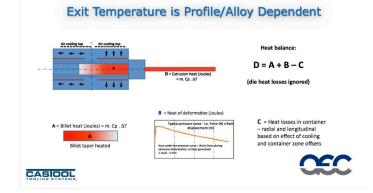
Here we are going to talk about tools available for estimating the actual surface temperature at die bearing and it's sensitivity to process and tooling parameters such as ram speed, container temperature, die design and conductivity.

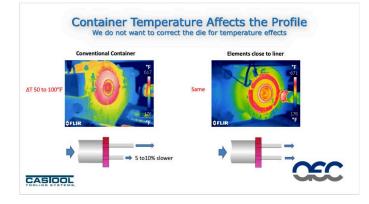
The art is to optimize these parameters so that the surface exit temperature is below the critical value while



WEBINAR AEC

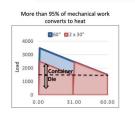






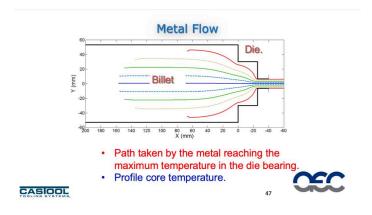
Heat generated by longer billets

Heat produced inside the container by 2 X 30" billets = 1/2 1 X 60" billet PLUS

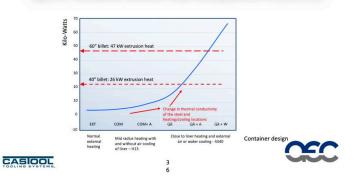




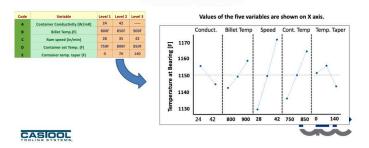
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Type of Container affects Heat Dissipation/Productivity



Showing sensitivity on the die bearing temperature to several variables



60 (mm) -60 80 60 X (mm) 160 140 120 100 40 20 180 -40 0 -20 CASIOOL 48

Point tracking

- INSIDER :WINTER 2020:PAGE 9



METALEX, participants from 50 countries including 9 nationalities



During 20-23 November 2019, METALEX 2019 attracted many customers and potential customers for having discussions together and making strategic planning for 2020.

There are some good feedback as mentioned;

 CCN casting is interested in 100mm sleeve (1 piece long sleeve)
Gold Star is ready to start trial the liquid Aluject by manual spray bottle Gold star is also considering the purhcase of a Pyrometer with scanning system

3. Kawasaki, one of our die cast customers who just placed the PO to CASTOOL for 120mm completes set with sleeve. After visit CASTOOL180 last week, they come to see us at the booth too.

4. BG F extrusion Thailand just placed the PO of a pyrometer full system to us . The pyrometer installation will be scheduled on Jan-2020 The PO will be sent us for the shear blade, dummy block and stem for 7" as well.

5. Daisin for the trial project in 2020 and we will provide the ABP-CD R 80mm sleeve and CLS200 for this trial

6. Safran (Zodiac) extruder is reviewing the new press 1100T from Mei Ruay, Taiwan. We asked them to order QR container as initiative and assembly with Mei Ruay press

7. Thai metal extrusion will send the container for re-surface at the sealing area

See you again with the impressive tooling and high level technology in METALEX 2020





Palm

UPCOMING EVENTS

EUROGUSS 2020

January 14-16,2020 Nuremberg, Germany Visit US @ Booth # 7A-412

MELZMETA

CASIOOL

FYCO



Castool will join Schmeltzmetall, InterGuss and Exco Engineering in Nuremberg for a die cast specific trade show. This show attracts die casters from all over the world. Dan, Merih, Palm, Andre and Yahya will be present.

SCHMELZMETALL







InterGuss

Gießereiprodukte GmbH

Technical Sessions **3 Abstracts** accepted for ET'2020

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20th INTERNATIONAL Aluminum Extrusion Technology Seminar & Exposition

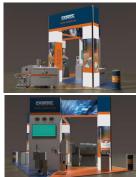
> Visit us @Castool Tooling Systems Booth# 509 Hyatt Regency Orland - Florida USA May 19-21, 2020





ET seminar and exposition happens every 4 years,

and is the seminal event for the extrusion industry. Castool will present 3 papers and will exhibit their latest extrusion technology. The focus of the booth will be the new container and die slide model which will have LED panels operated by a simulation program. The program will monitor and display temperatures and resulting productivity. Most of our extrusion team will be present.



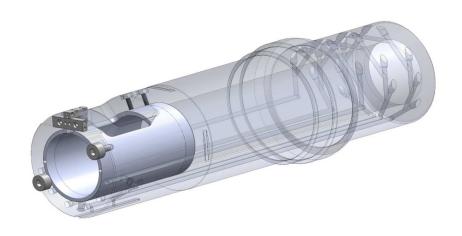
-INSIDER :WINTER 2020:PAGE 11

DIE CASTING UPDATES



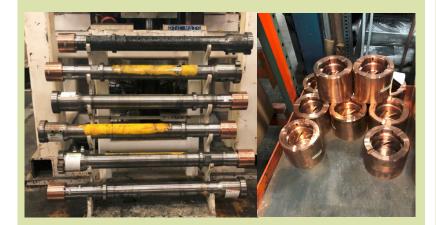
160 mm Dia One-Piece shot sleeve with insert replaces 2-Piece

in Mexico. Pour is 32 kg and using ALS-192 lube. Shot sleeve and insert life 130,000 + shots versus 30,000 to 60,000 with 2-piece design. AMP-R Con Duct face lasting 45,000 + shots and ring 25,000 + shots.



5.5" Dia ARP-A with non thermal sleeve

lasting 6,000 to 22,000 shots compared with cast plunger 2,000 to 2,500 shots. Plunger temperatures and cycle time also reduced. Castool is now being used on 18 - 5.5" & 3 - 6.1" LK 3000 ton machines and also 2 - 160 mm Italpress 3500 ton machines





5.5" Dia AMP-R and M-Loop one piece sleeve

now running in Southern USA. The tip lfe and sleeve life are both better than local competitor. They have extended Castool tooling to 5 more machines 4.5" to 5.5" dia.

DIE CASTING UPDATES

InterGuss chill vents mounted in a top moving core, incorporting a forced ejecton system in the gating area.

The installation has been sucessful and is still running 50,000 castings later. The chills will replace all mechanical vents and customer is expected to order 50 more chill vents for similar dies. It also opens up opportunities for new applications with other customers.









90 mm ARP-R replacing AMP-R.

The ARP reduced cycle time and increased ring and tip life. The tip is still in operation at 35,000 + shots and ring 11,000 shots + compared with 1,500 shots for AMP-R. The A-52 ARP is much better when water flow is restricted.



EXTRUSION UPDATES



Die Holders for Copper

Copper and Brass extruders use large amounts of tooling. Castool has capabilities and capacity for this type of tooling. Nice to see some new orders for copper extrusion die holders.

Alu-Ject Billet Spray System

Alu Ject billet spray systems are sucessfully being installed in more than 25 presses globally.





QR Conatiner with 4 Zone Cooling

New QR container with 4 zone cooling being installed on new 4500 Ton Presezzi 10" press in USA.

EXTRUSION UPDATES

TCXI 200 with Master Controller being installed in USA on new 4500 Ton Presezzi 10" press





QR Container being installed on older press in Egypt. It will be great to hear results after optimization.

STRONG/HARD H-13 MANTLES CRACK

Previous supplier made mantle from H-13 and refused to supply a drawing.

Castool is using it as a reference and designing the new QR with Con-Duct.





QR Container and Control Panel

beng installed on older press in Central America. It is advantageous to upgrade the panel whenever possible for best results.



2020



TRADE SHOWS



BOOTH # 7A-412

January 14-16, 2020 Nuremberg, Germany



BOOTH # 509 May 19-21, 2020 Hyatt Regency Orlando, Floria, USA



October 6-8, 2020 Messe, Dusseldorf Germany



Booth# 629

September 1-2, 2021 Kentucky International Convention Center Louisville KY, USA



October 20-22, 2020 Rapids, MI, USA



Japan Die Cast Congress & Exposition 2020 November 12-14, 2020 Pacifico Yokohama, Japan



BOOTH # BA-40, HALL 100

November 18-21, 2020 BITEC, Bangkok, Thailand





THE INTERNATIONA

Dan Dunn Krystean Rose

Glenn Titmuss Merih Marzari Keattikhun Chaichana Andre Iulianetti Iean Dembowski Tanmanun Tiantip Christine Kaschuba Sue Lotton Sue Su Keona Kirwan Phudis Phollawan **Ploy Robbins**

CANADA/USA

Ion Veenstra Sebastien Deroy **Ron Steininger** Sam Durbin Tom Bovd David Holder

LATIN AMERICA

Valentin Meneses Carlos Lima Osvaldo Lomas Alberto Forcato Carlos Maciel

EUROPE

Emmanuel Bach Olivier Druhen Bertrand Schnell Emmanuel Mandrelli Pascal Schorung Lars-Goran Nilsson Luciano Pedrini Jakub Jasiewicz Edgar Seufert Jurgen Barz

Sales Director Sales Manager North America

- Sales Coordinator APAC Sales Coordinator EMEA Product Specialist Asia Product Specialist North America **Commercial Manager** Commercial Supervisor Customer Service Customer Service **Customer Service** Customer Service **Customer Service** Marketing Director
- IW Industries LLC Sea Bass Outdoors **R-Bet Sales Inc R-Bet Sales Inc** Boyd Screenprinting Technologies, Inc DEH Consulting LLC

Kautec America KTC do Brasil Casmet Forcato Technologia Carlos Alberto Maciel Garciduenas

Comexale Comexale Comexale Comexale Comexale TEL Nordic APS

Techno Moulds KDO Komponenty Dla Odlewnictwa Schemlzmetall Schemlzmetall

UNITED ARAB EMIRATES

Emmannuel Mandrelli

ISRAEL

Tuvia Kornfield

TURKEY

Tuvia Kornfield

NTK Plant Management

Comexale

NTK Plant Management

SOUTH AFRICA

Olivier Druhen

Comexale

JAPAN

Shigeyoshi Takagi Tetsuya Ishida Yasunori Ito Nami Ito

KOREA

JH Song SW Song Tae Jean Hwang

TAIWAN

Jack Lee

CHINA

Daniel Cheng Long Shun Cheng Tony Chein

THAILAND

Manu Mekdhanasarn Patcharee Parkong

VIETNAM

Manu Mekdhanasarn Patcharee Parkong Tran Thi Thanh Thuy

INDONESIA

Yovinus Krisananto

MALAYSIA

Manu Mekdhanasarn Patcharee Parkong

SINGAPORE

Manu Mekdhanasarn Patcharee Parkong

Siam Anglo Alloy Co.Ltd Siam Anglo Alloy Co.Ltd

Siam Anglo Alloy Co.Ltd

Siam Anglo Alloy Co.Ltd

INDIA Sachin Kumar

AUSTRALIA/NEW ZELAND

Doug Loader Glenn Titmuss Extrusion Machine Co New Zeland GT Ex-Press Pty.Ltd

Techno Consul Benharks Tandem Technologies KBS Kubo Manufacturing Co KBS Kubo Manufacturing Co

ANK Ltd ANK Ltd GS Tech SOulutions

Shiny Lee

OEA Bridge Link OEA Bridge Link OEA Bridge Link

Siam Anglo Alloy Co.Ltd

Siam Anglo Alloy Co.Ltd

Siam Anglo Alloy Co.Ltd Siam Anglo Alloy Co.Ltd Thang Long Mechanics Equipment Co

PT Willisindomas Indahmakmur