



*The reference point
for the global metal
casting industry*

WFO WORLD FOUNDRY SUMMIT 2018

CEO's Reshaping the Foundry Industry

Rome, Italy

November 8th and 9th



Post Event Report

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*The World Foundry
Organization*

With over 30 member countries from all regions of the world, the World Foundry Organization (WFO) has access to a network of vital foundry knowledge that is gathered and shared to enhance the worldwide foundry industry.

The World Foundry Organization is comprised of national foundry organisations or associations representing foundries, suppliers and academia from around the world, creating a representative global network.

One of the main functions of the WFO is to unite the industry and disseminate appropriate information in a standardised and systemised manner at annual events.

This documentation has been drafted through the works developed by the WFO in the **2018 World Foundry Summit** and the contents there shared.



WFO World Foundry Summit 2018 CEO's Reshaping the Foundry Industry

Rome, Italy - November 8th to 9th

World Foundry Organization - November 2018

The World Foundry Organization (WFO) has successfully held the first edition of the World Foundry Summit, on November 8th and 9th in Rome, Italy, which was attended by 106 delegates from 17 countries.

This exclusive event - only accessible under the invitation of the WFO - has gathered Managing Directors and Foundry owners from groups and companies all around the world, as well as senior executives from supplier companies. The Member Associations of the WFO, a key connection of this organization with the global casting sector, have boosted the participation of their own industries at this meeting. The countries with the largest presence at the event have been Germany, USA, UK and Turkey.

Along 11 high level presentations by renowned international experts, the managers attending had access to exclusive content oriented towards strategies and policies in relevant areas for the development of the casting business, such as energy, management or economics. It was also a unique opportunity to expand networking between casting groups and companies in a reference space.

The event emerges as an outcome of the new 2018-2020 Strategic Plan of the WFO, shaping some of the challenges posed by the WFO Member Associations for the global foundry industries



More than 100 international delegates attended the World Foundry Summit, accessing high level strategic contents and maintaining an intense networking agenda

The event was introduced by **Mark Fenyés**, President of the **WFO** and CEO of **OMEGA SINTO FOUNDRY MACHINERY LTD.**, and by **Eur Ing Andrew Turner**, General secretary of the **WFO**. Both welcomed the attendees and introduced them to the objectives of this international event.

The keynote program of the World Foundry Summit 2018 was then opened by **Dr. Heinz-Jürgen Büchner**, managing Director of Industrials and Automotive of **IKB DEUTSCHE INDUSTRIEBANK AG**, who shared a very interesting presentation called *"Foundry Industry 2025: New Challenges due to changing Market Conditions"*.

The macroeconomic environment was initially presented to contextualize the discussion, after which the trends in major customer markets were also broadly detailed.

The expert addressed next the keys in E-mobility as a potential risk factor for the foundry industry. Through data obtained by the International Energy Agency (IEA), a basic scenario was raised, in which the registration of electric vehicles would maintain a strong rise, going from about 13 million

units in 2020 to about 130 million in 2030. This tremendous increase would be based mostly on commercial passenger vehicles. In a more optimistic scenario, these figures should be increased by 100 million. In addition, battery prices are also supposed to fall.

The hybrid vehicle, which will be still including an engine block, will be one of the most interesting spotlights for Foundry in the near future

As the speaker commented, the possible consequences of these scenarios for the casting production will be profound, with a huge reduction in the needs of cast iron in those cases where the

engine blocks disappear, for example. These and other specific consequences were exposed by Dr. Büchner through this part of his presentation



Dr. Heinz-Jürgen Büchner made a complete presentation on the global situation of the metalcasting sector

Finally, and backed up with numerous data and graphs, the presentation detailed the expected production trends in main worldwide producers and for the different casting types, showing also to the attendees the future supplying and post-processing keys expected from the OEMs, as well as the strategic challenges for foundries in the global market.



The following lecture was made by **Ms. Jean Bye**, President and CEO of **DOTSON IRON CASTINGS**. She made a motivating exposition entitled *“Disaster Recovery: Building Strength from Ruins”*, based on their experience with a fire taking place in one of their foundry plants on September 22nd, 2017, which affected almost all its molding lines. The speaker detailed the whole recovery process, from the initial response and training tips for a plant to be prepared to be agile in this situation, to the final reconstruction.



Jean Bye's speech was really inspiring, just as the attendants themselves valued it after the event

For an effective initial response, the manager explained how they raised an intense disaster recovery planning process, which began immediately after the happening. In her opinion, next are the keys in this phase: launching cross functional working groups, a clear division of duties, anticipation and proper management of the media.

One of the most relevant points highlighted was the work made by Dotson Iron casting with its customers after this disaster. Under the philosophy of "being faster by providing solutions to the customers than they looking for alternatives", it was explained how they gained the confidence of most of them, with a continuous and transparent communication plan (the company even organized customer visits to the affected area, where they were also detailed the recovery plans), showing so that the company had more capacity to manage the crisis than the customers themselves to look for alternatives. Building and taking advantage of a network formed by 8 foundries near the plant, to which they shipped the cores to keep on pouring, they were able to maintain the production while recovering the plant. The key, to be able to own the customer solution, as well as the produced results.

The strong involvement of its employees, supported by a previous culture of cooperation, was a clear key in the recovery

Some of the final conclusions and recommendations of this inspiring experience were to be agile, to maintain a strong leadership that overcomes the written plan, to be clear in the new responsibilities, to maintain a sense of humour, to pose aggressive goals, integrity and transparency.

Next turn then for a presentation by **Mr. Chris Cordery**, Executive and Business Coach from **AURORA TDS**. Under the title *"The Value of Coaching for Senior Executives"*, Mr. Cordery analyzed some of the keys from the use of this tool also within the casting industry.

The presentation began with some general thoughts on the coaching processes and the most common motivations for their start-up, as well as the initial definition of some key concepts.

The Aurora TDS responsible remarked that a coaching process is not about telling people how to do their job, but that is a discussion between the Manager and his Coach in which both are contributors to the final outcome. In this conversation, the Manager is typically trying to solve one of the following questions: How can I become a more effective leader? How do I solve this specific business problem? To be able to find specific answers to these questions, the process is not designed as a cozy talking space, but as a structured development process and conversation that is oriented to generate results.



Chris Cordery (Aurora TDS) focused on the connections between most commonly posed questions from Senior Management and the possibilities of Coaching

As the lecturer pointed out, these issues are also present as a workaday matter for casting managers, who seek to devote more time to the strategy, to improve the performance of their company or to increase customer satisfaction, among other aspects. Coaching can be so a tool with which approaching to possible solutions.

Coaching can be also a useful tool so that Foundry Managers can successfully obtain results in very relevant issues

In these processes with Executives, the usual commitment is one hour per month for at least 6 months, before evaluating its effectiveness. These sessions can be face to face or via Skype or phone.

To sum up, the lecturer noted that a coaching process, when conducted professionally and with a clear commitment from the Coachee, drives results,

increases the leadership capacities, enables change, creativity and innovation, and promotes a highly efficient teamworking.



The following presentation offered to the Summit attendees was made by **Mr. Timothy J. DiDonato**, from **TRIUMPH GROUP** Aerostructures Division. With the title *"Aerospace Supply Chain - A Total Landed Cost Model"* and based in his 30-year experience devoted to business development, strategic sourcing and operations in the sector, the speaker shared the market opportunities for Metalcasting in this relevant industry.

His presentation began with a contextualization of the Aerospace market, highlighting the estimated demand of 41,000 new aircrafts for the 2017-2037 period, being 72% of these new deliveries formed by single-aisle aircrafts. Europe would concentrate 19% of this demand, while a 29% would be located be in Asia.

Then, Mr. DiDonato linked the estimation for new industrial orders with the evolution produced in materials. Thus, he pointed out that the purchase of aluminum is still the largest single category (43%), while titanium and composites comprise 50% of raw material spend. Historical and future needs of these materials was broken down in the different manufactured aircraft model groups, seeing there how these last two commented materials will continue to grow.

Additive manufacturing technologies will be one of the keys for the supply to the future demand in Aeronautics

Finally, the lecturer introduced the emerging and most competitive technologies that are nowadays the supplying keys for the sector, such as 5-axis machining centers, composites and thermoplastics, as well as additive manufacturing and 3D Printing. He also developed here for the attendees a wide explanation on the strategic sourcing priorities for aerospace supply chain, and on those areas where cost reduction is key within the industry.

The presentation allowed an interesting dialogue, where it was shared the view that the Aerospace companies have about Metalcasting as a strategic supplier, as well as the ways for collaboration that this market offers.



The presentation by Tim DiDonato led the discussion towards the opportunities in the aerospace sector as a Foundry client

The programme advanced with a presentation by the General Secretary of the **World Foundry Organization (WFO)**, **Eur Ing Andrew Turner**, who under the title "**WFO Global Foundry Report 2018**", presented a global view of the situation of the industry to the meeting attendees.

The representative of the WFO started his explanation showcasing the new opportunities for the foundry industry that have emerged in the new organizational context of this international body. From a new 2018-2020 strategic planning, new products and services have emerged, and other proposals have been strengthened, being all of them focused in the metalcasting sector. The clearest example, as highlighted by the speaker, is the celebration of this World Foundry Summit, a working line that answers directly to some of the new strategic challenges posed to the WFO by its member countries. In addition, the annual Global Foundry Report, the new initiatives around various International Working Groups and the increase of networking among the Member Associations, are new and reinforced action lines.



Andrew Turner, General Secretary of the WFO, explained how the production trend in 2018 marks a small and sustained global growth

The main content of Mr. Turner's presentation addressed the global situation in the sector. Starting

We still don't master all the metallurgical, chemical... aspects of the casting process, which sets space for innovative opportunities

from an overview of casting production around the world, where China's growth continues to mark the context, data and trends from the main customer industries for the Foundry supply chain were reviewed. The speaker then shared some statistics focusing directly on the situation of the largest producers in the foundry industry, analyzing for all of them the trends in production, customer sectors, macroeconomic situation and

competitiveness factors, among others.

Finally, there was an interesting reflection on the common need to attract new professionals to our industry, showing numerous tools and international examples of how in different countries this task is being successfully addressed. By way of conclusion, and regarding the possible threat of E-mobility, it was pointed out that from a global perspective of the casting industry, the foreseeable increase in the production of vehicles will positively lead to a greater need for casted parts and components, especially in aluminum.

The last keynote of the working morning was titled *"The Future of Energy and How to Survive It and Thrive"*. Developed by **Mike Hogg**, former senior manager of **SHELL UK**, it was focused on the strategies and future implications of global energy policy, as a major impact aspect on casting industry.

The presentation began by revising the global energy context, in which three certainties frame the situation: the overall increase in prosperity and population has changed the pace of energy consumption; energy supplies through traditional sources are outstripped; environmental stresses are produced by CO₂ and resources such as land, water... The so-called "Energy Tri-lemma" was visualized, conformed by factors such as environmental impact, availability and affordability.



With a 25% average impact of energy consumption on the gross margin, the projections shown by Mike Hogg advance a complex situation for the industry

The former manager of Shell showed some projections of global warming, where it was possible to see the direct influence of man-made factors on it, as well as the land areas that will presumably be affected first by the rise of the sea level.

In this context, the speaker detailed some information on the present and future demand for energy. In a forecast up to 2040, it was seen that the demand in industry, transportation or construction will continue to grow in a stable upward curve, being the industrial sector the largest consumer. In response to the demand according to fuel type and region, the forecasts for consumption in China and India show a big growth from 2040 on, above the ones in Europe or the USA. The increase in consumption of renewables in India or China would also double the one in Europe at that time.

"Industrial companies do not usually manage energy at the executive level, with a specific strategic manager"

With regard to supply, renewable energies will be the key, as the speaker pointed out. It was also here addressed the continuous evolution towards the electrification of vehicles, and how the efficiency savings and the reduction in the energy intensity will remain as the main challenges.

After a networking lunch in which the executives attending the Summit were able to converse and interact with their international counterparts, the first evening presentation was driven by **Mr. Jim Jarrell**, President and CEO of **LINAMAR CORPORATION**. With the title "*Light Metal Casting – A Global Perspective*", the expert highlighted a set of new opportunities that arise in this area within the Automotive industry.



Jim Jarrell made a very interesting and complete presentation on the new opportunities for lightweighting in Automotive

Jim Jarrell started his interesting presentation by referring to some of the historical keys that have marked the development of his company. In particular, the entrepreneurial and visionary character of its executives has been shaping a path in which they have become "experts in launch": they are able to be close to clients through a continuous and focused commitment to innovation. The major part of its operations is concentrated in the transportation (74%) and industrial markets (26%). He also explained the adoption of the strategy *One Stop Shop* in the company, for customers to optimize costs, quality and technology.

New markets are being opened, and we need to develop the proper knowledge in them to be able to adapt us to new scenarios

As for lightweighting in vehicles, the forecasts announce a clear shift towards greater use of lighter materials (some studies were presented, anticipating up to a possible 28% mass reduction in passenger vehicles in the close future).

The next block within the presentation addressed specific strategies for the future: in a context in which the expectations about the producers are growing, but not so the budgets, what can we do? Regarding the propulsion systems, the manager

commented the opportunities for our sector in internal combustion engines (ICE), hybrid vehicles (HEV) and electric vehicles.

The speaker finally shared diverse practical examples of innovative developments, both in process and in product, as well as digitalization and additive manufacturing solutions.

The 2018 World Foundry Summit programme continued with a keynote entitled "*Development of the electric vehicles market by 2030 in Germany, Europe, US and China*", which was presented by Dr Carsten Kuhlitz, CEO of HÜTTENES-ALBERTUS.

How the electric vehicle market will be evolving over the next few decades and which will be the impact of this development in actual suppliers are two main questions present in the reflections of those responsible for the foundry business around the world. Through this presentation, the speaker showcased some of the possible answers, extracted from the analysis of a comprehensive study carried out in Germany by the IVG and the Center of Automotive Management.

Based on an initial analysis of the current situation, in terms of sales and production, the manager gave numerous production data from the different types of vehicles involved, divided also by region. Taking into account these current sales and trends in production, Mr. Kuhlitz presented different scenarios, forecasting future trends: a positive scenario for EV, a moderate one and a more pessimistic development. To understand the building of these models, it was explained the analysis of key factors such as the development of battery costs, the range of electric vehicles, the charging infrastructure (including the number of quick-charging points, as well as charging times) and, finally, the Government regulations, where the aim of reducing CO₂ emissions is of great importance (a key, how vehicle portfolios help to achieve CO₂ targets).

The impact of E-Mobility in Foundry is one of the most shared concerns at a global level by the companies in this industry



Carsten Kuhlitz (HA), carrying out his presentation on the development of the EV market, a subject of high interest to the Foundry executives directivos

Looking in detail at the results of the study and the scenarios raised, it was verified that the general picture of the more moderate scenario shows that the market of the EV would develop in a similar way in Europe, US and China. In Germany, the shift would start on 2020. By 2030, 30% of the new registrations would be in EV. Through these and many more data and conclusions, the speaker contextualized to the attendees the different possible frameworks where the necessary adaptive strategies must be adopted. He highlighted, in any case, the future need for a greater production in Automotive castings and pointed out the hybrid car as a key element that in the coming years will continue to play a special role as the destination of this production.

Next turn for **Professor Paul Theron**, PhD, head of the Cyber Resilience unit at the **University of CRANFIELD**, with the presentation "*Cybersecurity in the e-connected industrial world of foundries*". The speaker began his dissertation explaining the need to unite the concepts of cyber defense and Industry 4.0, as it is in this new paradigm where the greatest opportunities to receive an attack of these characteristics are happening. To this end, he initially contextualized certain aspects of this industrial revolution and linked them with their implications for the metalcasting industry.



Prof. Paul Theron, sharing direct tips with the managers to improve their cybersecurity policies in foundry plants

The speaker also highlighted certain technological actions that can be identified as 4.0 in an industrial environment, but that are not really such, like some automations or the monitoring of certain production parameters.

To be able to identify those areas susceptible to be attacked within a real 4.0 environment, the speaker deployed the characteristics of a Foundry 4.0 model, connecting software developments, hardware, intelligent machinery, sensors... with all the agents (internal and external) that can interact with those elements. Through this model, participants were shown a specific example of

possible cyber-attacks to a casting process, with different scenarios and possible problems generated in production and in the appearance of defects in parts.

In general, foundries are not working on cybersecurity, but they are as susceptible to attacks as other industries

Finally, Professor Theron shared with attendees a series of recommendations for plant and casting processes managers to be able to work in the addressed security challenges. In terms of

short-term priorities, he pointed out some relatively simple actions with very direct objectives, both in the field of people and technology. All these transmitted ideas can help the plant managers to improve very quickly certain basic protections. On the other hand, and regarding longer-term priorities, more complex projects and systems were identified, aimed at ensuring intelligent management of potential threats.

The penultimate presentation of the event for CEOs was developed by **Mr. David Weiss**, Vice President of Engineering and R&D at **ECK INDUSTRIES, INC.**, who shared contents with the attendees under the title "*Extending the Capabilities of Aluminum Castings*".

After an initial contextualization of the most relevant development areas of his company in the objectives of weight reduction, performance at high temperatures and efficiency, Mr. Weiss began classifying aluminum alloys in terms of strength and stiffness regarding to other metal alloys. Through the comparison of certain properties of both ductile iron and Al alloys, specific opportunities were displayed for weight reductions of up to 50% in the substitution of some of them.

He also showed some uses of certain aluminum alloys in highly-demanding industries such as the military one, detailing the improvements in mechanical properties that support this election.



David Weiss (Eck Industries, Inc.), in a presentation of advanced developments in aluminum castings

The speaker emphasized the need not to confuse castability with cost: for example, casting 200 series alloys is straightforward given certain constraints, like lower yield in order to establish a thermal gradient, enhance mold temperature control required in permanent mold or tighter chemistry control than Al-Si alloys.

David Weiss then detailed the paths to strengthening at high temperatures, such as the use of metal matrix composites, improved age-hardenable alloys or exotic alloying elements.

Finally, the expert put stress on how significant aluminum alloy research is occurring, particularly in the development of high-temperature aluminum alloys. In this direction, and as a result of some of these investigations, there are production-ready materials that are not yet being used that offer significant improvements over 356-type alloys. Thus, aluminum alloys that can operate in the range of 250-350° C are nearing production readiness.

Aluminum metal matrix composites are under-utilized to reduce weight or improve thermal performance

The program of the World Foundry Summit 2018 was closed with an interesting presentation by **Mr. Serhan Yener**, Strategic commodity Manager of **AGCO CORPORATION**, entitled *"Where are we going with the Foundry industry and how fast"*.

This was initially focused on a market outlook and how this has evolved and defied our industry over time, in terms of capacity and cost management, reduced access to markets and design adaptations. Different regions from around the world were analyzed, along with the key market-driving aspects and how the customer's expectations are changing in the new global situation.

Then, a thorough tour was made around the casting major components that the company consumes throughout all its international plants, as well as the material types required for the different applications. An interesting portfolio of client needs for the managers attending the meeting, which was complemented with the requirements nowadays demanded to companies to be suppliers of the referred industry.

A global vision of the economy, markets, growing regions and how they are shaping the industry, key to understand our clients

Relying on these needs and AGCO's sourcing strategy, Mr. Yener exposed the company's preference for a supply model in which casting and its all subsequent post-processing are joined in a single TIER1, so lowering total cost of ownership, optimizing production times and efficiency.

Regarding the challenges faced by the Foundry sector, there were mentioned and discussed aspects such as the reduction of foundries in China, the existence of new tariffs or the OSHA silica dust regulations, apart from others focused on issues going from design to manufacturing of ferrous and non-ferrous.



Serhan Yener made an interesting keynote on specific opportunities for Foundry industry from the agricultural machinery sector

By way of conclusion, the speaker stressed the need to maintain a global vision of the industry, managing its total capacities and focusing in the proper use of its resources to meet the needs of all customers, understanding them first, and aligning them later with the design, optimization and manufacture of the different products.

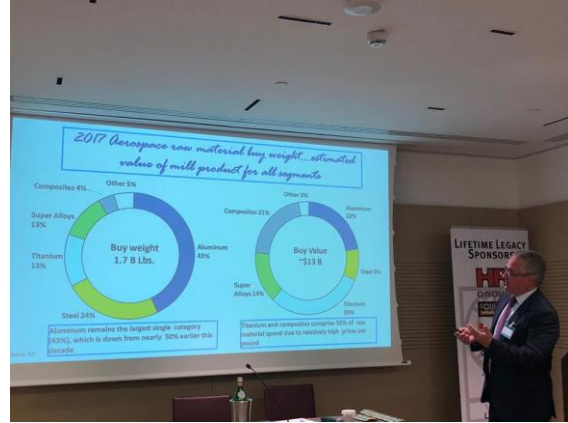
In addition to the contents shared in the event's programme, the World Foundry Summit 2018 allowed nearly one hundred professionals and senior executives in the foundry industry maintaining a very valuable networking agenda. The opportunity to strengthen ties and business with counterparts from around the world is another of the key values proposed by this WFO space.

Every attendee received an electronic device as part of the documentation, allowing them both accessing all the contents of the meeting and interacting with all the professionals attending the event, which facilitated really dynamic and effective networking spaces.

A brief video highlighting the event can be seen through next link: <https://bit.ly/2BWlvdX>



The keynote program of the World Foundry Summit was complemented with networking spaces. In addition, the electronic platform that was delivered to each assistant facilitated the interaction and contact between all managers attending



Professionals from world reference companies in the metalcasting industry took part in the keynote program, generating a rewarding discussing environment around the strategic issues shared during the event



Delegates from 17 countries, representing recognized business groups and foundry companies, were able to expand their contacts and to discuss the strategic aspects shared by the speakers throughout the working programme



In short, this edition of the World Foundry Summit has been the reference point for casting business strategy in 2018, posing an excellent opportunity to gain access to strategic knowledge and high-level networking with industry executives from all over the world. The WFO is already working on the next edition of this event.



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Announcement of next WFO global events:

WFO Technical Forum and 59th IFC (Slovenia)

“Castings as complex components”

September 18th - 20th, 2019 – Portoroz, Slovenia



WFO World Foundry Summit 2020

Dates and venue to be announced soon

74th WFO World Foundry Congress ***“Cast the future”***

October 18th - 22nd, 2020 – Bexco, Busan, Korea



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*WFO World Foundry
Summit*

The World Foundry Summit is an exclusive invitation only event, that periodically brings together owners and CEO's of foundry business from all around the world, to meet and discuss the future of the industry and the current trends that affect it.

Its programme allows listening to world renowned and high-level speakers sharing contents around key topics like worldwide situation of the sector, global industrial energy policy, materials and parts lightweighting, impact of the electric car in the industry, supplying opportunities in sectors such as Aeronautics, Agriculture, Automotive..., among others.



WFO WORLD FOUNDRY SUMMIT 2018

The World Foundry Organization



General Secretary: Eur Ing Andrew Turner
Offices: Winton House, Lyonshall, Kington HR5 3JP UK
Telephone: + 44 1544 340332
Email: andrew@thewfo.com



www.thewfo.com

CONTACT AND
ADDITIONAL
INFORMATION

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new7ducks: cover, back cover

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