



THE GLOBAL CASTINGS INDUSTRY

AFI Queensland Conference 2018

Mark Fenyes C.Eng FICME
President– The WFO

TO BE ADDRESSED IN PRESENTATION:

- ▶ Overview of the World Foundry Organization
- ▶ General Thoughts on the Global castings Industry
- ▶ Specific Statistics on the leading nations
- ▶ Thoughts for the future



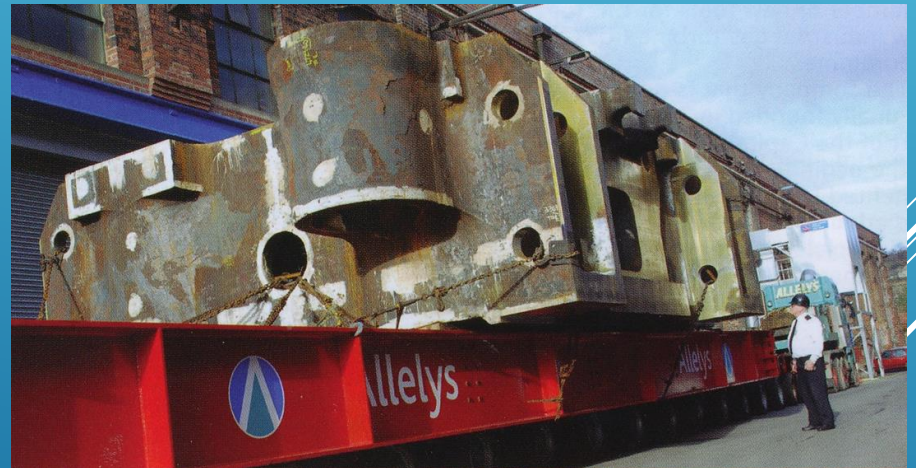
- ▶ A little background about myself
- ▶ I grew up in the north of England in a city called Sheffield
- ▶ Left school at 16 in 1980
- ▶ Major recession in the UK at the time
- ▶ Managed to get a job as a trainee metallurgical technician



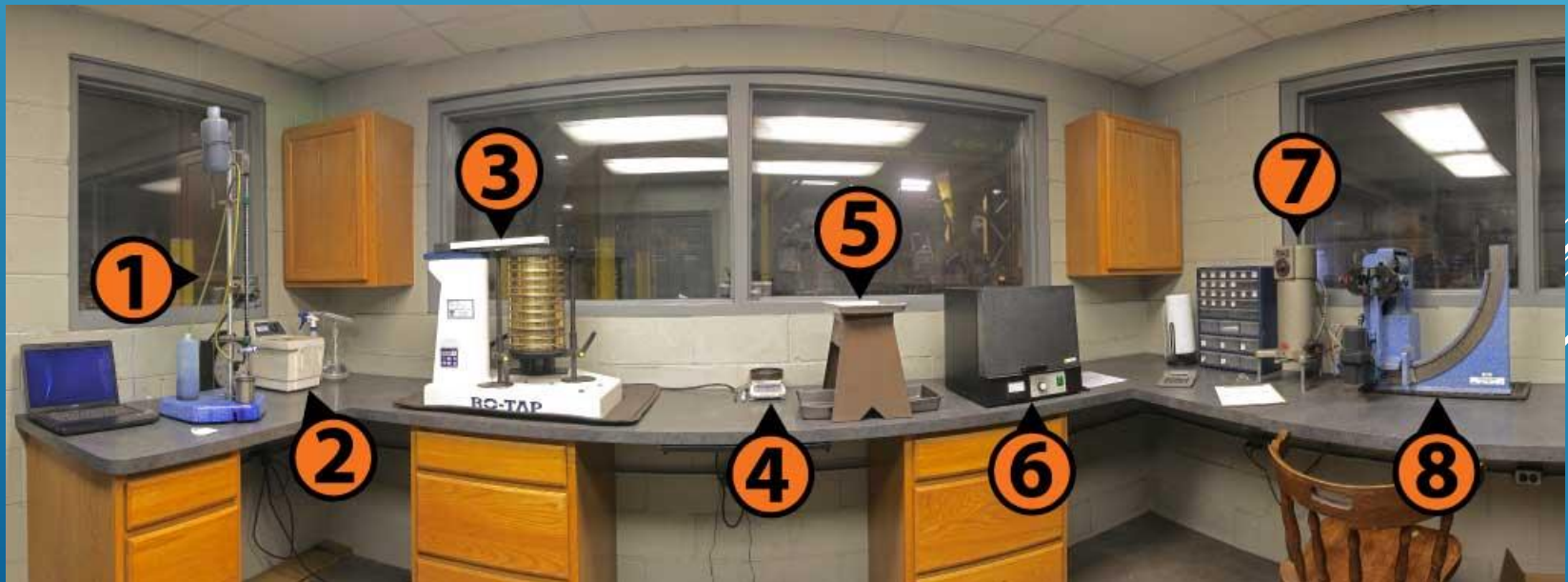
- ▶ Sheffield Forgemasters (Formerly BSC River Don Works)
- ▶ 10,000T press with a 300T manipulator



- ▶ There was also a foundry there
- ▶ Largest casting to date was over 600T liquid metal with nett casting weight of 380T



- ▶ Part of the group was an iron foundry primarily making ingot moulds and base plates
- ▶ BSC Renishaw
- ▶ I became the sand technician there
- ▶ I realised then that all the castings defects were down to the metal, the sand was never the problem!



- ▶ I spent a total of 6 years in the foundry and attended day release and night school during this time studying metallurgy
- ▶ In 1986 I joined Hepworth PLC as a Tech representative
- ▶ In 1990 I emigrated to the USA to start a non ferrous division for Hepworth
- ▶ In 1996 I came back to the UK and bought Omega Foundry Machinery
- ▶ In 2010 I became part of the WFO executive committee

WHAT IS THE WORLD FOUNDRY ORGANISATION ?

- ▶ The WFO was formed over 90- years ago, the first meeting was held in Paris in 1926
- ▶ The aim was to unite and represent the member associations of the foundry industry
- ▶ 8 out of 10 of the founding member countries are still involved with the WFO
- ▶ The WFO represents 31 countries and accounts for over 90% of the total tonnage cast in our industry.
- ▶ A congress is held every two years along with a technical forum
- ▶ A number of working groups are sponsored and supervised by the WFO
- ▶ The nations report is published on an annual basis

WFO Background and History

Presence and cooperation of Australia in the WFO:

- Joined in 1975
- Hosted the congress in Melbourne in 1985



WFO on the move (September 2016)

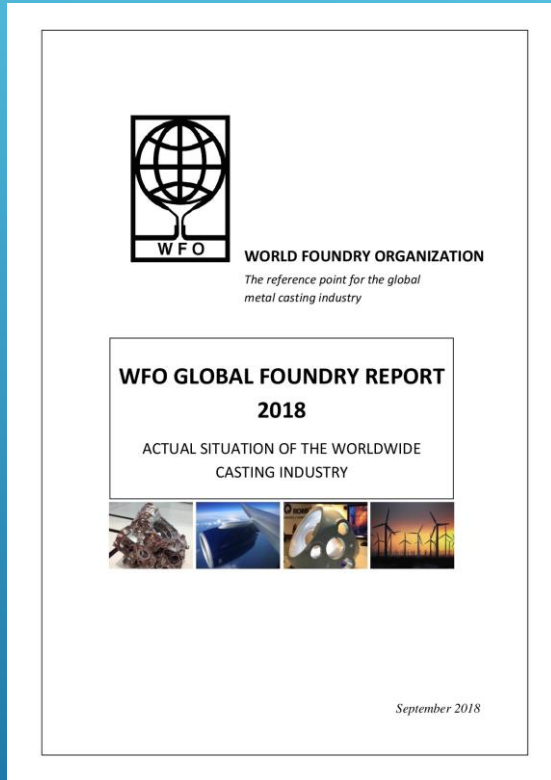
Executive committee
consisting of International
Industrialists and
academics



WFO on the move (September 2016)



WFO GLOBAL FOUNDRY REPORT 2018



26 countries providing information for 2018 Report:

AUSTRIA, BELARUS, CHINA, CZECH REPUBLIC, EGYPT, FINLAND, FRANCE, GERMANY, HUNGARY, INDIA, ITALY, JAPAN, KOREA, MEXICO, NORWAY, POLAND, ROMANIA, SERBIA, SLOVENIA, SOUTH AFRICA, SPAIN, SWEDEN, SWITZERLAND, TURKEY, UNITED KINGDOM, USA

(Top world producers providing qualitative and quantitative information for this compilation, which is becoming increasingly a more comprehensive and standardized report)



Provide Valuable Global Metalcasting Data



WORLD FOUNDRY ORGANIZATION

2.8. INDUSTRY REPORT FROM FRANCE

ASSOCIATION TECHNIQUE DE FONDERIE (ATF)

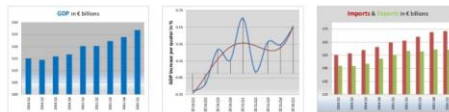
Review of French Foundry for 2015 and tendency for first half of 2016

In 2015, France maintained his position as a major foundry country in Europe with the third position behind Germany and Italy but Turkey became and becomes a strong competitor to "catch" the podium.

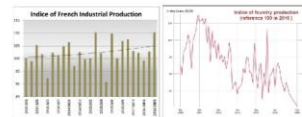
The official statistics are not yet published for 2015 by the official foundry organisations but some information is available on French government websites like Insee (official French agency for statistics). This paper will take many of these data as references.

First of all: general economic information

GDP in France continues his slow growing but similar to the Europe's average with positive tendency during the last three quarters. However the Imports grow quicker than the Export; that affects indirectly the foundry activity: the French foundries have good export activities, but the competition is strong with "low cost" countries which have a certain presence and some arguments to supply castings.



If the index of Industrial Production (all industries) continues its slow but significant increase in France, at the opposite, the foundry production presents a "certain" slowdown!



World Foundry Organization Industry Report 2016

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WORLD FOUNDRY ORGANIZATION

2.9. INDUSTRY REPORT FROM GERMANY

GERMAN FOUNDRY ASSOCIATION (BDG)

German Foundry Industry Current Status and Perspectives

Key Figures - German Foundry Industry 2015

Production:

- 5,263 m t
- Fe: 4,048 m t
- Non-ferrous: 1,215 m t

Turnover:

- approx. 12,758 bn € *
- Fe: 7,015 bn €
- Non-ferrous: 5,743 bn €

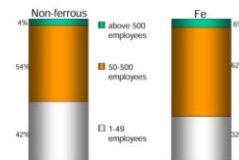
Export quota 33%

Employment:

- 600 foundries
- 78,900 employees *
- Fe: 44,000
- Non-ferrous: 34,900

Source: Stat BA, BDG, Data 2015

Company Structure in % - German Foundry Industry



World Foundry Organization Industry Report 2016

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WFO on the move (September 2016)

WFO CONGRESS



Papers Presented

Over 200
Technical Papers



WFO on the move (September 2016)

73rd WFO Congress in Krakow, Poland 930 Delegates from 43 Countries



GENERAL ASSEMBLY OF MEMBER NATIONS

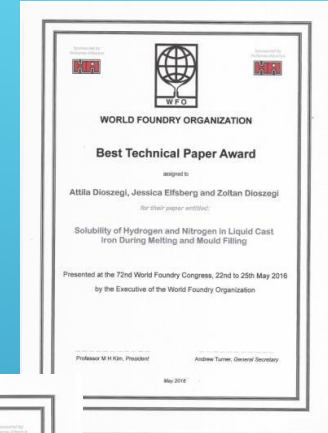


EXHIBITION RUNNING ALONG SIDE THE CONGRESS



WFO on the move (September 2016)

Best Paper Awards



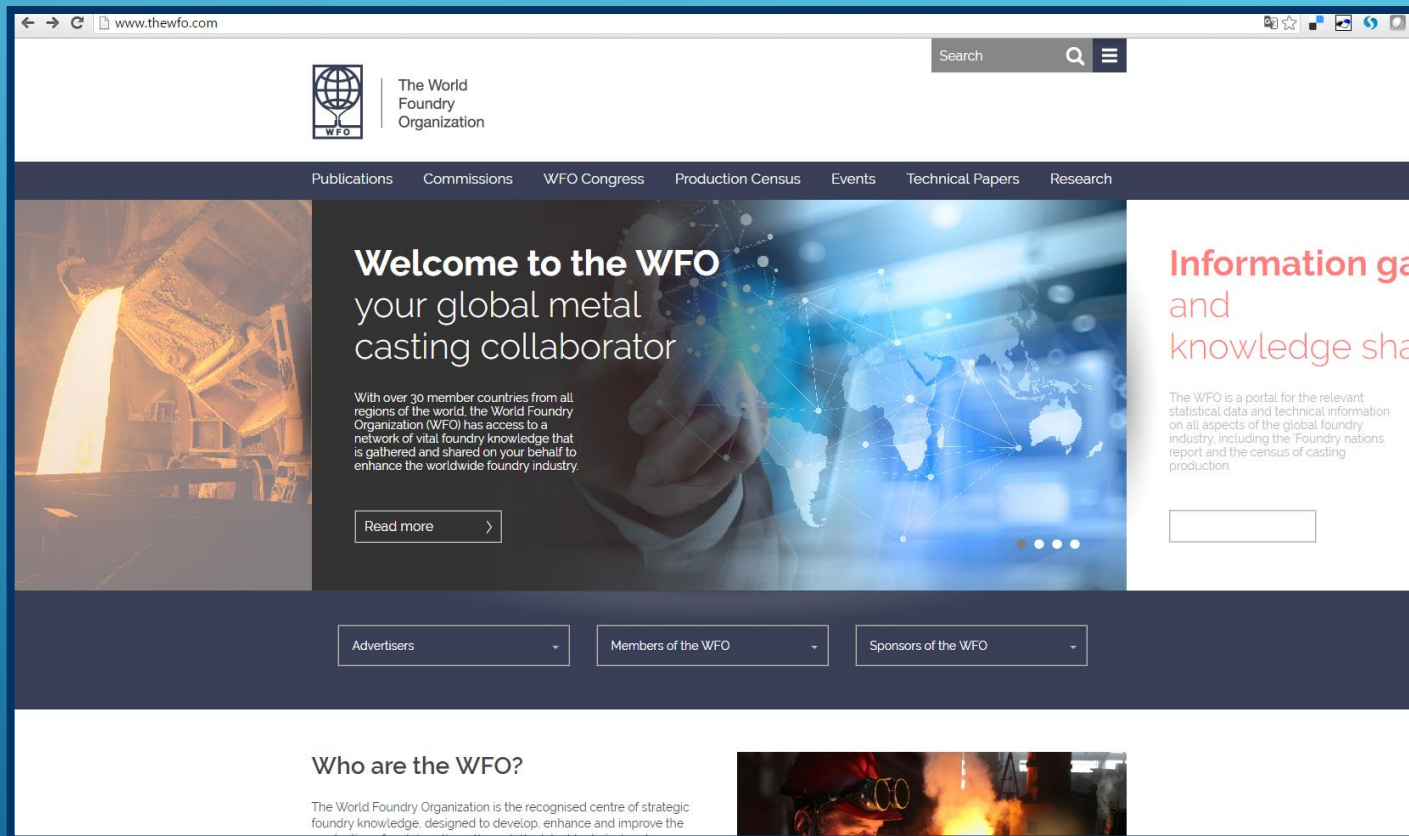
WFO on the move (September 2016)

Networking opportunities for leaders in the Global metalcasting community



WFO on the move (September 2016)

WFO Website



WFO on the move (September 2016)





WORKING GROUPS

- ▶ Training and Professional Development
- ▶ Diecasting
- ▶ Cast Composites
- ▶ Non Ferrous Metals
- ▶ Ferrous Metals
- ▶ Moulding Materials



NEW FOR 2018



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



General Information

www.thewfo.com

WFO Executive Meeting, Krakow, September 2018

Confirmed Speakers

As at 1st August 2018

WFO WORLD FOUNDRY SUMMIT 2018

Rome, Italy
November 8th and 9th



Speakers

Jean Bye of Dotson Iron Castings
FIRE DISASTER - ONE YEAR ON

Serhan Yenner of Agco
AGRICULTURAL PROSPECTIVE

David Weiss of Eck Industries Inc.
EXTENDING THE CAPABILITIES OF ALUMINIUM CASTINGS

Mike Hogg Former Senior Executive Shell UK
THE FUTURE OF ENERGY & HOW TO SURVIVE IT

Jim Jarrell of Linamar Corporation
AUTOMOTIVE PROSPECTIVE

Chris Cordery of Aurora TDS
THE VALUE OF COACHING FOR SENIOR EXECUTIVES

Dr Heinz Jurgen Buechner of IKB Deutsche Bank
FOUNDRY 2025: NEW CHALLENGES DUE TO CHANGING MARKET CONDITIONS

Jose Javier Gonzalez of Institute Tabira
THE WORLD FOUNDRY REPORT - 2018

Prof Paul Theron of Cranfield University
CYBER SECURITY IN THE E CONNECTED INDUSTRIAL WORLD

Tim DiDonato of Triumph Aerostructures
FOUNDRY OPPORTUNITIES IN THE AEROSPACE SECTOR

www.thewfo.com



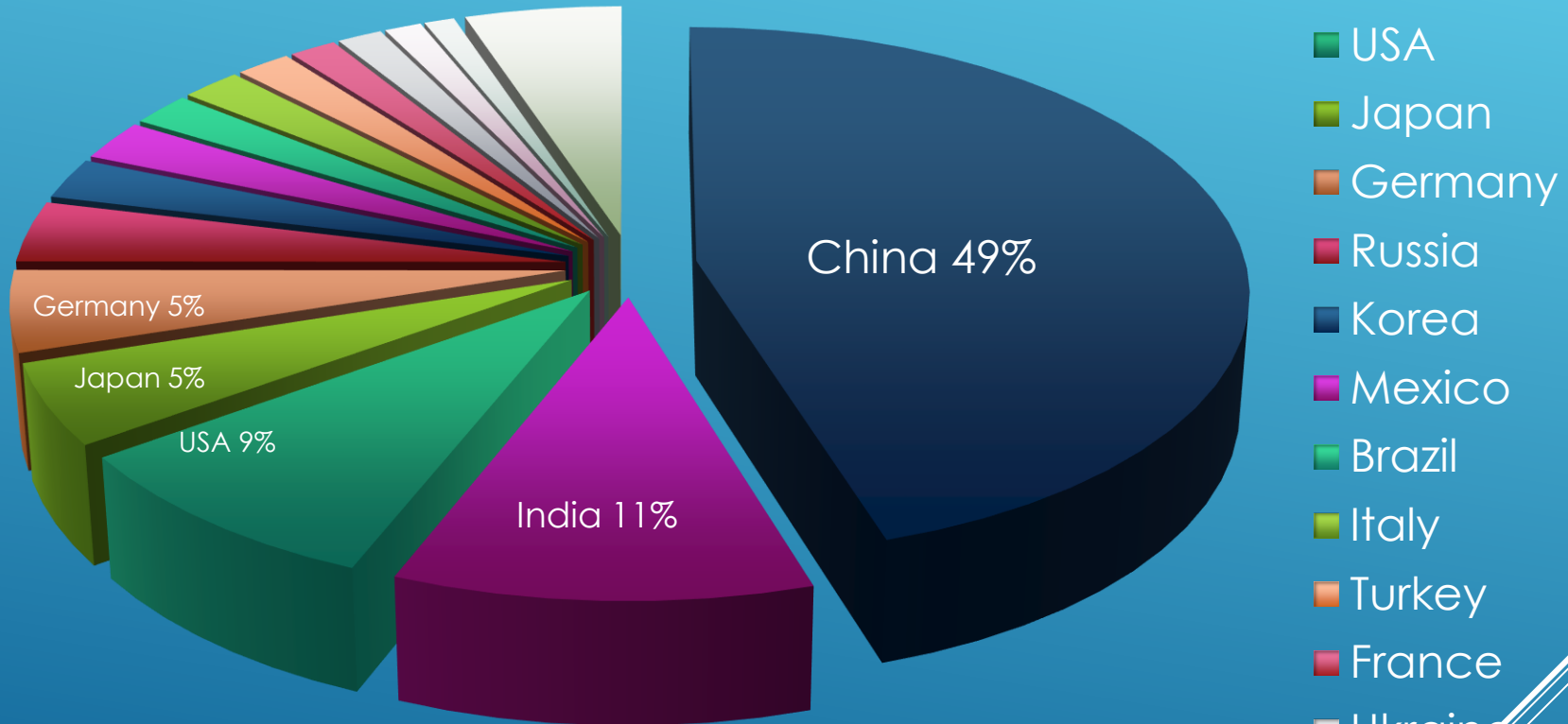
The World Foundry Organization

The reference point for the global metal casting industry



Global Industry

GLOBAL TONNAGE NOW STANDS AT
104.3 MILLION TONNES



- China
- India
- USA
- Japan
- Germany
- Russia
- Korea
- Mexico
- Brazil
- Italy
- Turkey
- France
- Ukraine
- Spain
- Poland

Figures from Modern Castings Dec 2017.



GLOBAL INDUSTRY (Million Tonnes)

1		China 47.2 12 th for Efficiency	6		Russia 3.9 4 th for Efficiency	11		Turkey 1.9 10 th for Efficiency
2		India 11.4 8 th for Efficiency	7		Korea 2.6 5 th for Efficiency			
3		USA 9.4 2 nd for Efficiency	8		Mexico 2.6 6 th for Efficiency			
4		Japan 5.2 7 th for Efficiency	9		Brazil 2.1 9 th for Efficiency			
5		Germany 5.2 1 st for Efficiency	10		Italia 2.1 11 th for Efficiency			

Figures from Modern castings Dec 2017.
Efficiency is tonnage / No of plants



GLOBAL INDUSTRY

Effects on regional production

- Affected by Build near demand
- Mercedes JLR and BMW Cars in China
- Bombardier Aircraft in China
- Hyundai Cars in India
- Construction vehicles in India



GLOBAL INDUSTRY

Influences on Export Markets

- ▶ Currency effects – Strong Euro
- ▶ Energy costs in Europe double that of USA
- ▶ Devaluation in BRICS Countries
- ▶ Growth of New Developing Countries
- ▶ Brexit Effects – Devaluation of the £
- ▶ European Uncertainties



GLOBAL INDUSTRY

Automotive Industry Impact



- ▶ More than half of castings produced are for the automotive industry
- ▶ This will increase with electrification
- ▶ Casting Industry meets weight reduction challenge with:
 - * material substitution
 - * thinner walls
 - * converting fabrications to castings



COUNTRY SPECIFICS

China



- ▶ In 2017, China's casting output was 49.4 million tons, **increasing 4.7%** vs. 2016.
- ▶ From 2002 to 2017, China's casting output has been growing stably moving into a middle- or low-speed development status
- ▶ In 2017, **Automotive, Engineering Machinery and Rail Transportation** contributed a lot to castings' output, which increased by 7.1%, 15.2% and 14.3%, respectively
- ▶ The export tonnage of castings in 2017 has decreased, but the delivery value has increased: the delivery value of castings imports is five times as that of exports, indicating that **most of imported castings are "high-end castings"**



COUNTRY SPECIFICS

China

- ▶ New Government initiatives for development and growth in the sector
- ▶ Heavily influenced by the 13th 5 year plan
- ▶ Foundries are being closed or merged due to program to push for high productivity & pollution control as well as greater focus on quality.



GLOBAL INDUSTRY

India



- The production of castings as for 2016-17 was 11.3 Million Tons which is approx. 6% growth
- The industry has shown signs of growing demand from various sectors such as Tractors, Automobiles & Auto Components, Construction equipment
- The Automotive Mission plan 2016-26 envisages auto sector to grow 3.5 to 4 times of the current value of USD 74 billion to between USD 260 and 300 billion
- The tractor industry grew by 21% in 2016-17 & by 15% in 2017-18 as compared to previous year



GLOBAL INDUSTRY

India



- The exports of castings from India in 2017-18 have shown significant growth after showing declining trends for last few years
- Major Challenges
 1. Rising input material Costs;
 2. Skilled manpower;
 3. Good quality Power at competitive rates;
 4. Sand availability due to mining & environment issues;
 5. Growing Protectionism & Trade wars;



THE SAND MAFIA IN INDIA



ILLEGAL SAND MINING 'SAND MAFIA'

PRESENTED BY:
SNEHA J CHOUHAN
Roll no. B111207



COUNTRY SPECIFICS

USA



- ▶ U.S. metalcasting industry sales are forecast to increase by 4.7% to reach \$33 billion in 2018
- ▶ The U.S. metalcasting industry is made up of 1,952 facilities, with an industry capacity of 15.2 million tons and a forecast capacity utilization of 72% in 2018
- ▶ Nearly 40% of all casting sales are in motor vehicles
- ▶ Currently very optimistic with high growth forecasts due to:
 - * low energy costs
 - * high productivity
 - * reduced shipping costs
 - * trend toward re-shoring

THE TRUMP EFFECT



GLOBAL INDUSTRY

Europe



- ▶ Low GDP Growth (2,4%)
- ▶ Unemployment rate at the euro area level declined from 10% (2016) to 9.1% (2017) but still high youth unemployment
- ▶ High Energy Costs
- ▶ EU Commission Influences
- ▶ Recognizes need for:
 - Industrial Renaissance
 - Solid Manufacturing base to provide growth and employment



COUNTRY SPECIFICS



Europe

- ▶ 16.5 M T current production (4.4 M T in Non Ferrous)
- ▶ 6.3% increase in iron and steel production; 3.3% in Non Ferrous
- ▶ 4500 Foundries, value increased 6.8% in iron and steel, 7.4% in non ferrous
- ▶ Automotive Sector driver for non ferrous output
- ▶ 84.6% of the production of ferrous metal is located in six countries: Germany, Turkey, France, Italy, Spain and Poland.

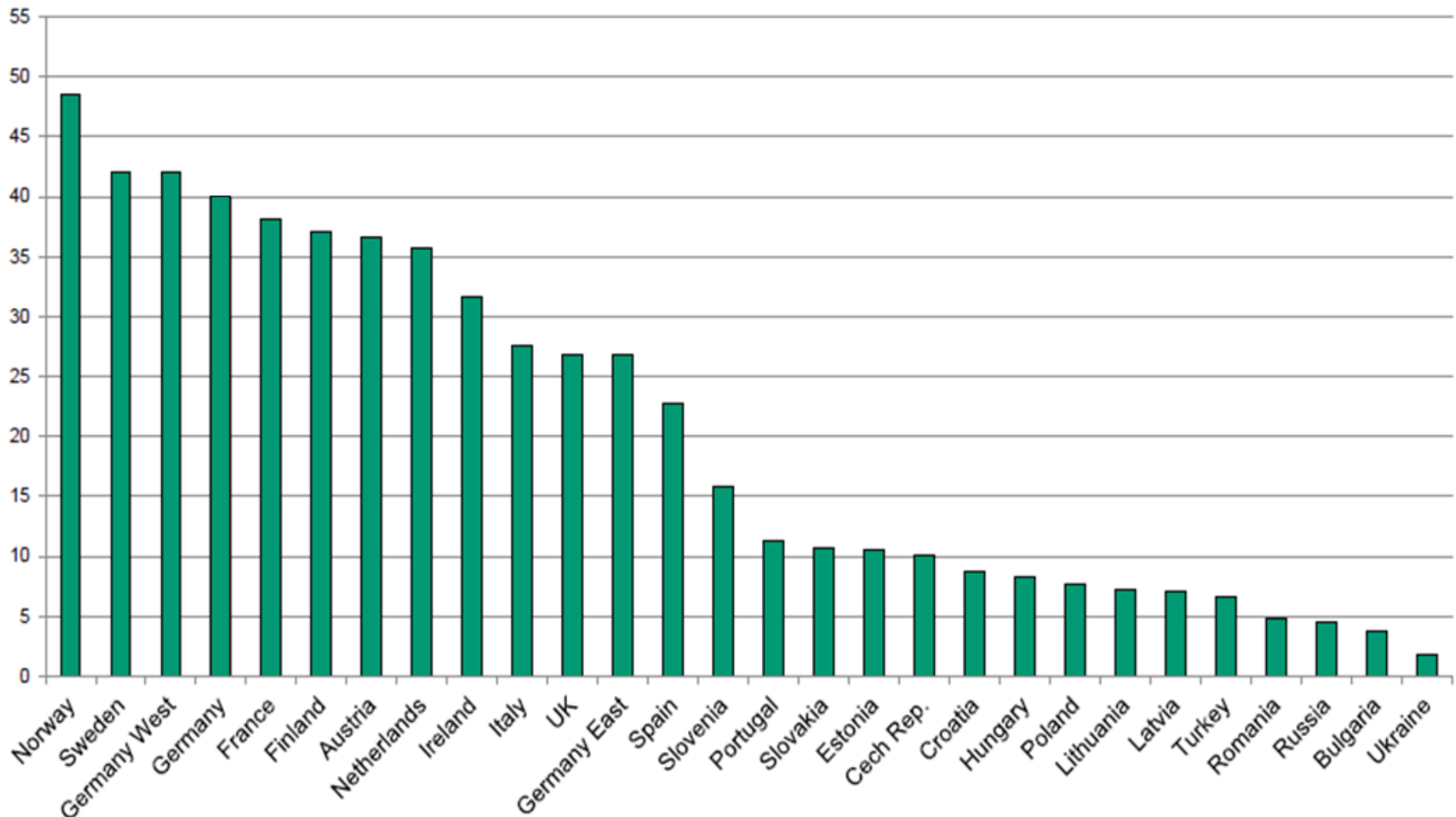


GLOBAL COMPARISONS OF COSTS

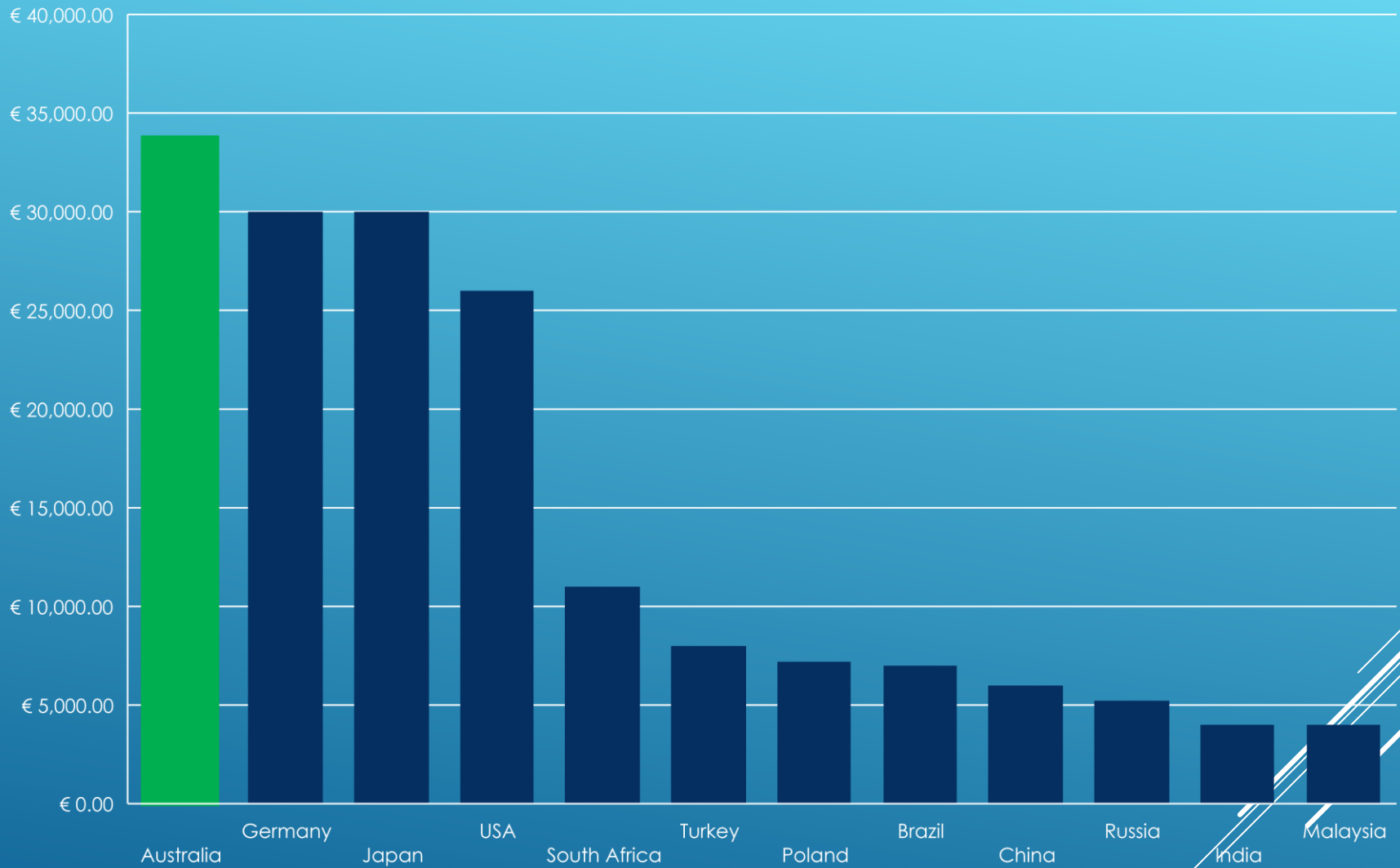
- ▶ FOUNDRY OVERHEADS ARE SPLIT APPROXIMATELY;
- ▶ ONE THIRD LABOUR COSTS
- ▶ ONE THIRD ENERGY COSTS
- ▶ ONE THIRD RAW MATERIALS COSTS

EUROPEAN WORKERS SALARY COMPARISON €000 PA

1 EURO = 1.6 AUS\$

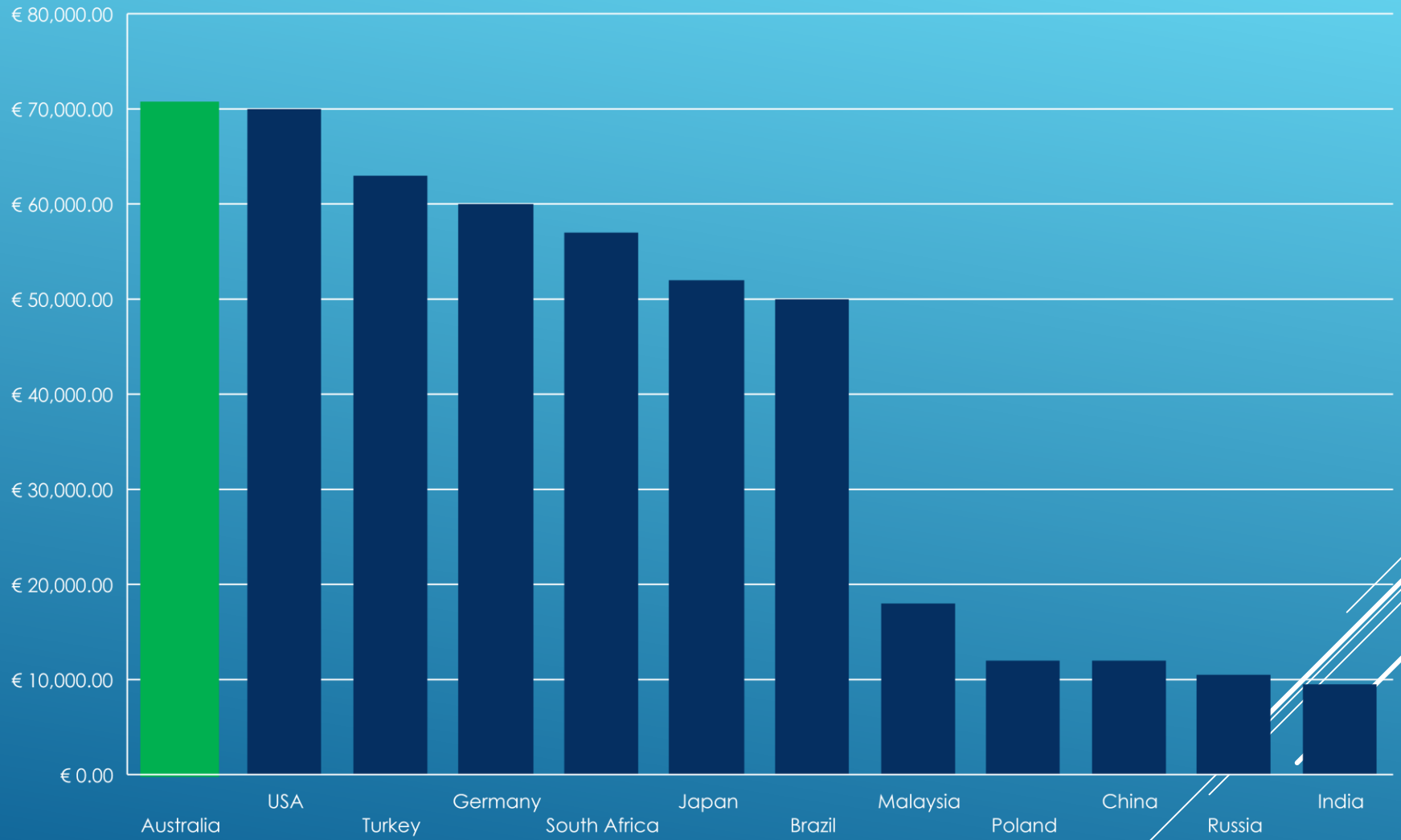


International Wage Level for a non skilled Foundry Worker In Euros

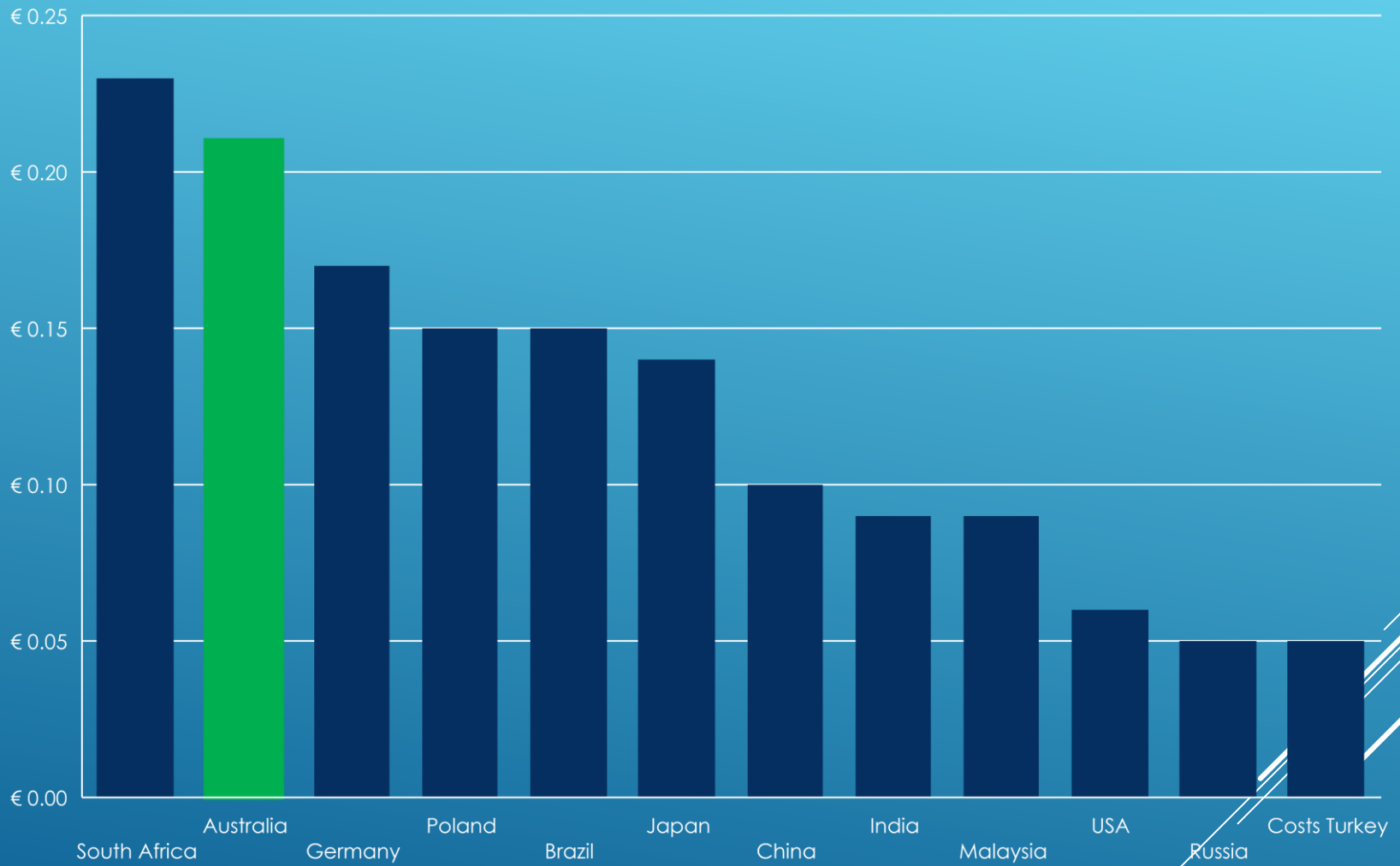


1 EURO = 1.6 AUS\$

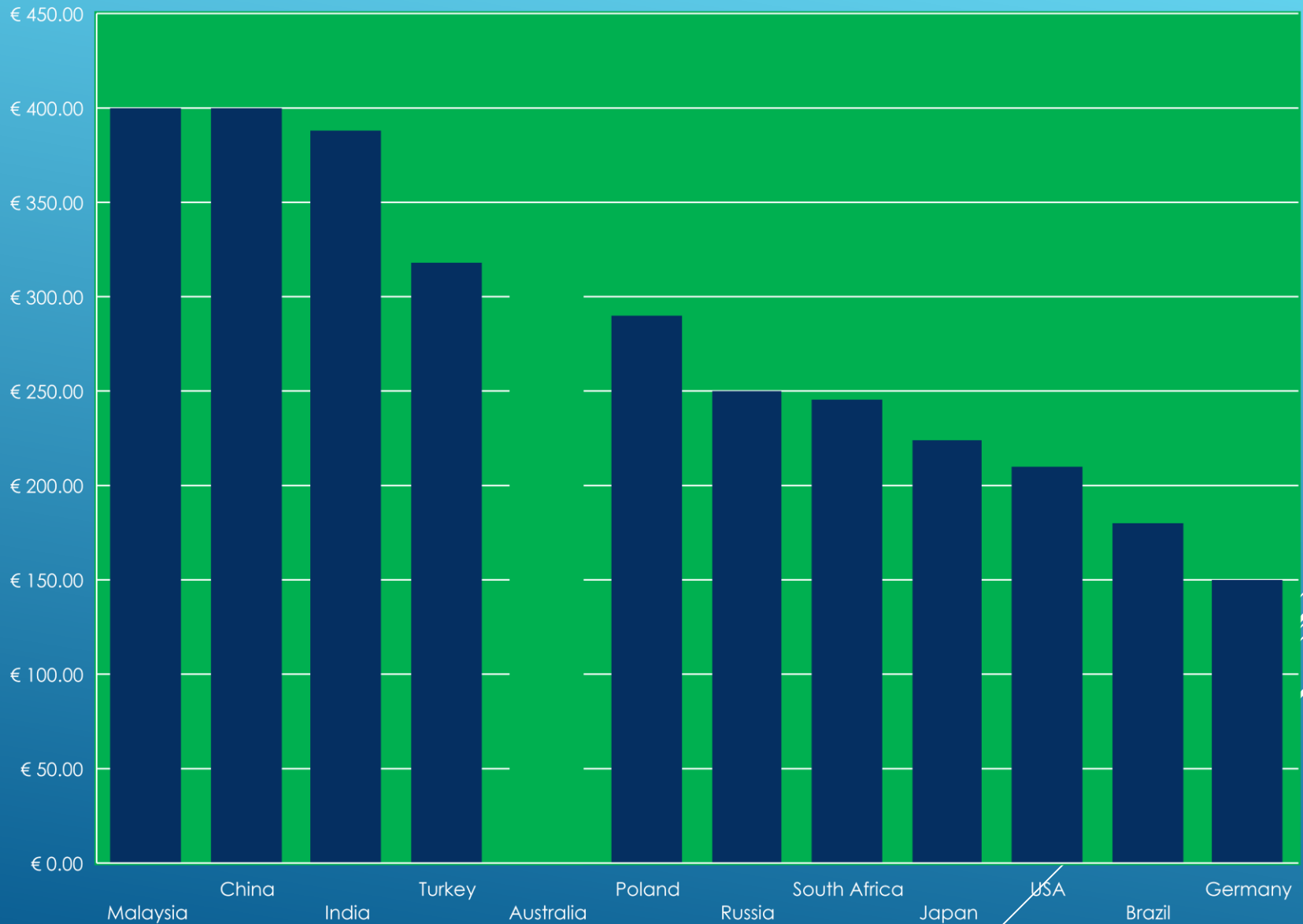
International Wage Level for Foundry Management In Euros



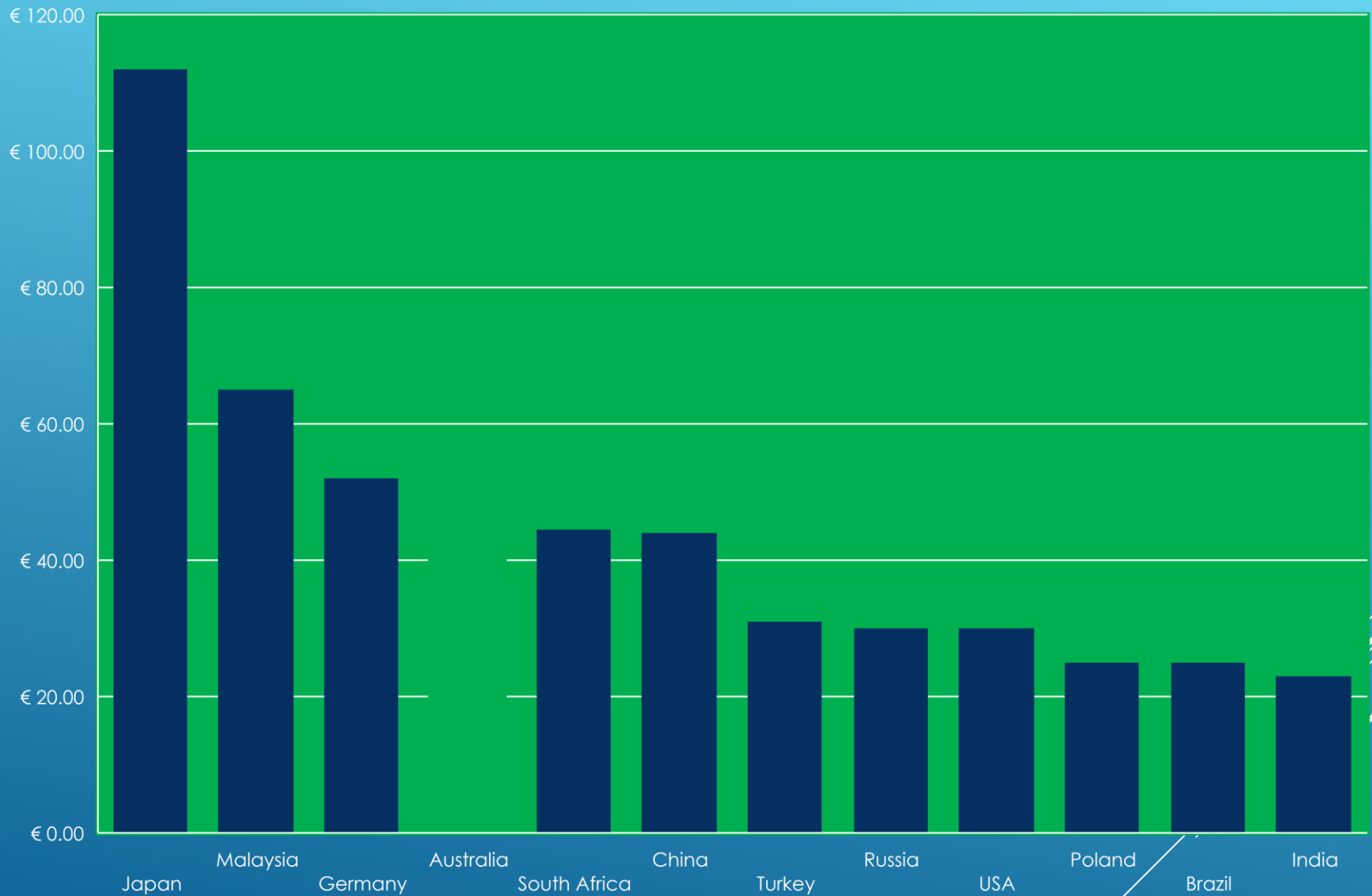
International Cost of Electricity Per Kw



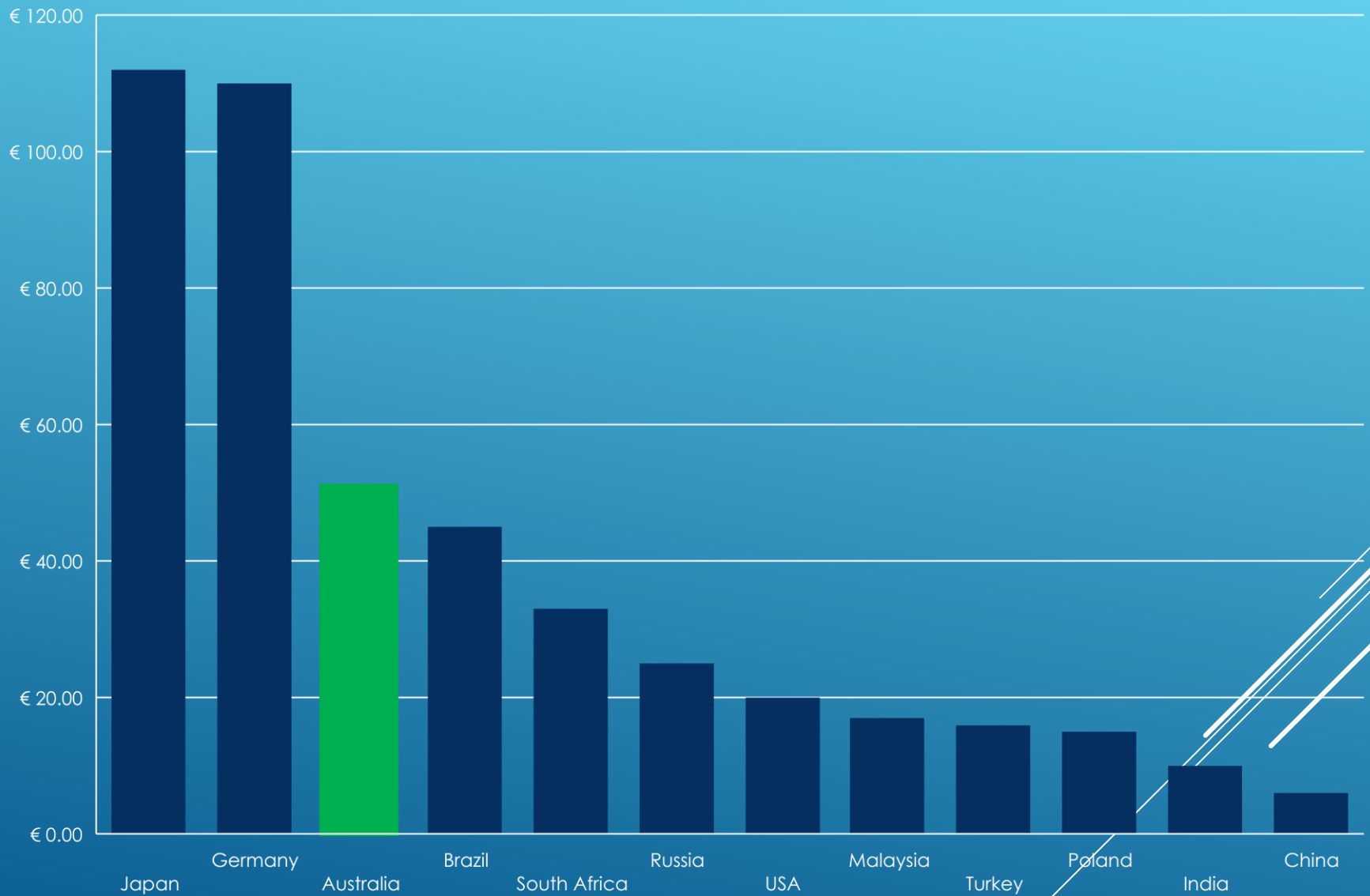
International Cost of Scrap per tonne



International Cost of New Sand Per Tonne

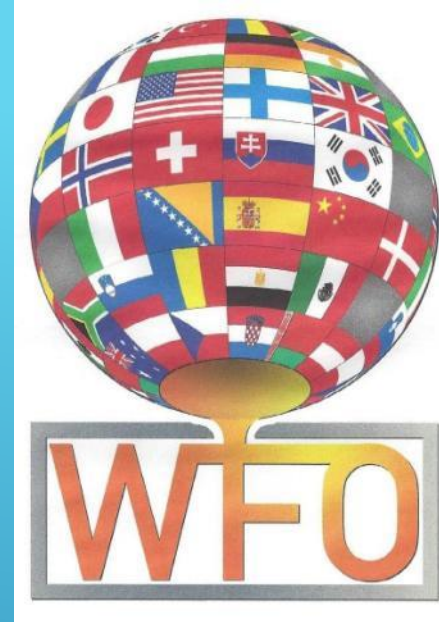


International Cost to Dump Sand Per Tonne



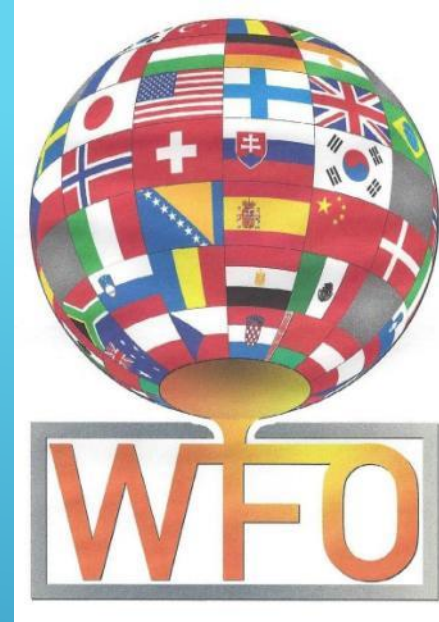
THOUGHT FOR THE FUTURE

- ▶ in 2001 the German car industry made 50% of its cars in Germany and 50% in rest of the world
- ▶ By 2017 that was 30% made Germany 70% ROW
- ▶ Electrification of cars is a positive not a negative, higher volumes of cars with more aluminium castings
- ▶ In Europe Casting production saw little change between 2004 and 2016 in China they had 100% growth and in India 140% growth
- ▶ Castings are still the most important process for manufacturing net shape products
- ▶ We still don't really understand the physics / chemistry of the casting process. Great opportunities still available
- ▶ Huge potential for improvement in all aspects of foundry production



THOUGHT FOR THE FUTURE

- ▶ The industry needs Track, watch, and respond to industry trends. Success in the past is no guarantee
- ▶ China has significant governmental control over foundry development
- ▶ India developing regional clusters for services, which is highly efficient Training, Testing, Simulation, re-cycling
- ▶ Global output predicted to be 107 M T in 2018 a small but real growth
- ▶ The Foundry Industry in general is more efficient than many national economies
- ▶ The main issue globally appears to be people!

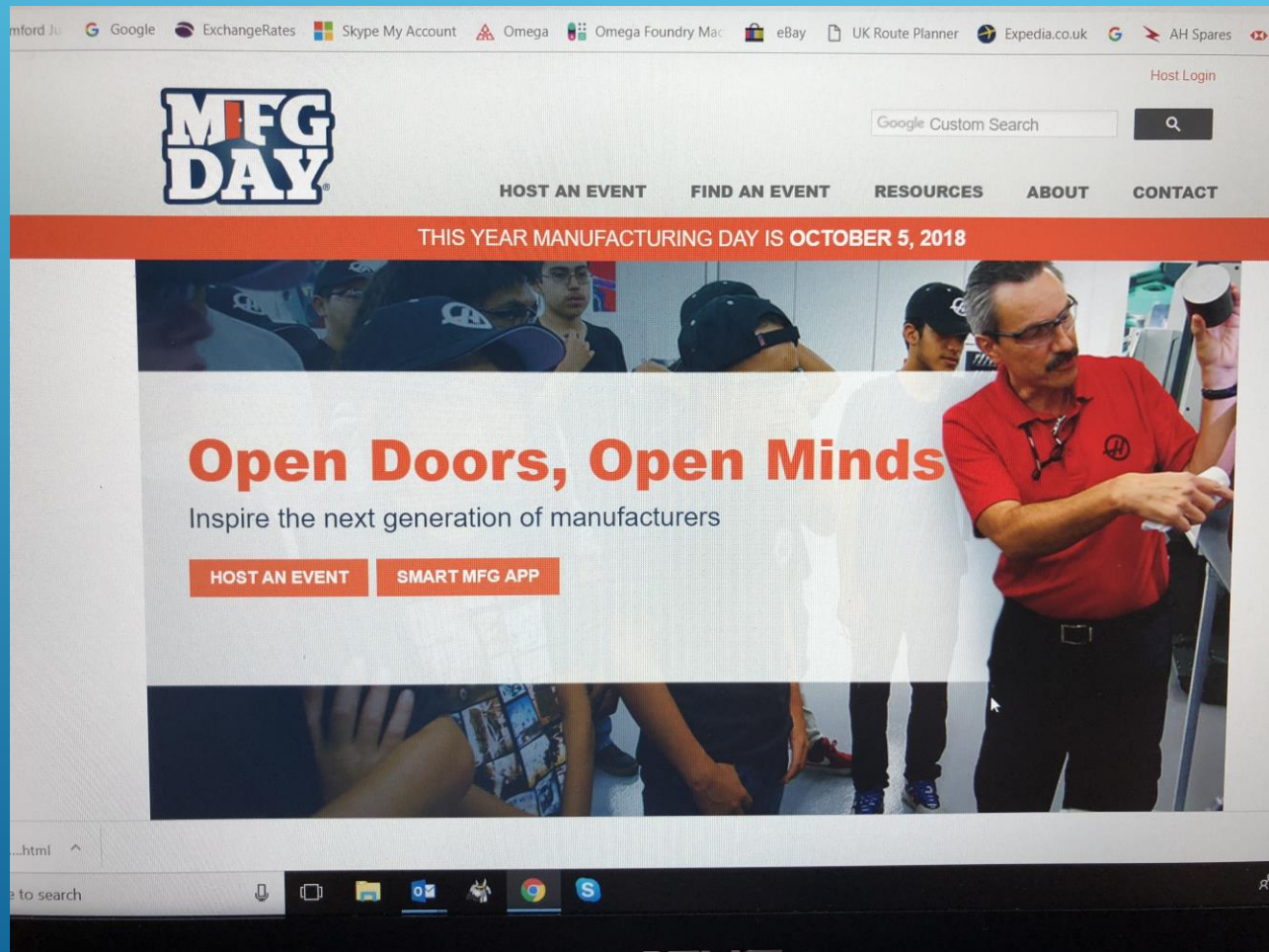


ATTRACTING PEOPLE TO OUR INDUSTRY

WOULD YOU WANT YOUR SON OR
DAUGHTER TO WORK IN A
FOUNDRY?



SOME INITIATIVES FROM AROUND THE WORLD



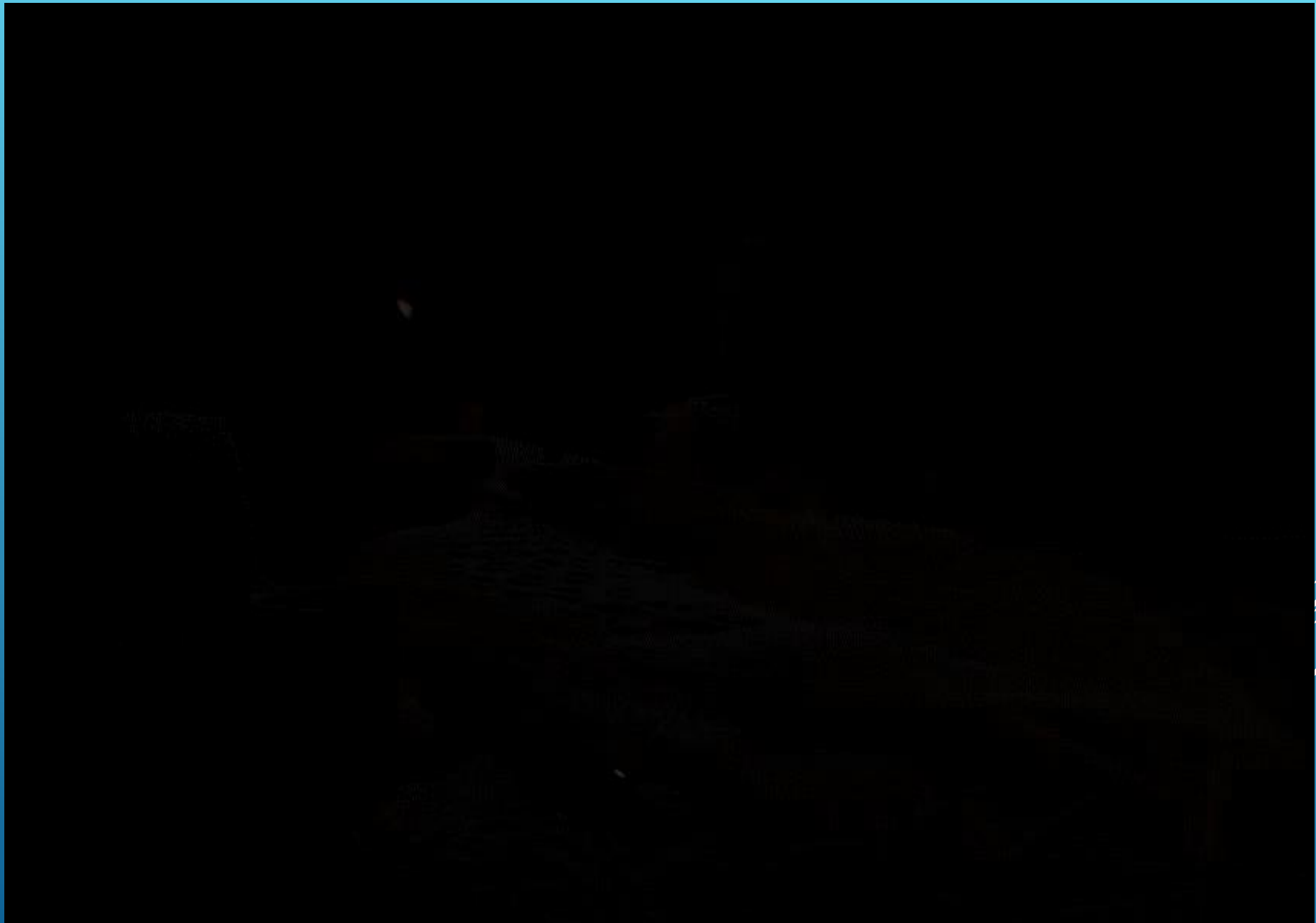
FOUNDRY IN A BOX





ICME INITIATIVE

'CASTING THE FUTURE'



HAVE THE YOUNGEST WITHIN THE ORGANISATION BECOME AMBASSADORS FOR THE COMPANY



Dossmann GmbH



Wir sind eine innovative, moderne Eisengießerei mit über 175 Mitarbeitern und Gründungsmitglied der Überbetrieblichen Ausbildungswerkstätte Buchen e.V. mit Sitz in 74731 Walldürn-Rippberg. Unsere hochwertigen Produkte werden u.a. in Windkraftanlagen sowie im Maschinen- und Schiffbau weltweit verwendet.

Interessierten Jugendlichen wird seit Generationen die Chance für eine anerkannt hochwertige und zukunftsorientierte Ausbildung geboten. Um auch die Zukunft erfolgreich meistern zu können, bieten wir zum 01.09.2018 Ausbildungsplätze für die Berufe:

Elektroniker/-in

- Fachrichtung: Betriebstechnik

Industriemechaniker/-in

- Fachrichtung: Maschinen- und Anlagenbau

Willst auch Du dazugehören und eine gründliche, zukunftsorientierte Ausbildung mit der Möglichkeit zur Übernahme und Weiterbildung erhalten? Dann ergreife Deine Chance und sende Deine vollständigen Bewerbungsunterlagen an Jobs@dossmann.de.

Besuche uns auf:

<http://www.dossmann.de>

Oder bei Facebook:

<https://www.facebook.com/dossmann.karriere/>

Geme steht Dir Frau Klisch auch für weitere Auskünfte unter Tel.: 06286/18-11 zur Verfügung.



Source: Dossmann

BDG Economics

AND DEFINITELY GET THEM TO RUN SOCIAL MEDIA!

The image shows a screenshot of the Facebook profile for Dossmann GmbH. The profile picture features three employees (two women and one man) standing together in a workshop setting. The cover photo is a blurred image of a car's interior.

Left Sidebar:

- Dossmann** (Logo: a red stylized 'D' with a car wheel inside)
- Dossmann GmbH**
@dossmann.karriere
- Startseite**
- Info
- Ausbildungsberufe
- Jobs
- Beiträge
- Fotos
- Videos
- Bewertungen
- Community
- Impressum
- Seiteninfos & Werbung
- [Eine Seite erstellen](#)

Top Navigation:

- Gefällt mir
- Teilen
- Nachricht senden
- Nachricht

Beiträge (Posts):

- Dossmann GmbH**
27. Juli um 08:45 ·
Ferien! 🎉🇪🇺 Wir tauschen Schweißbrille gegen Sonnenbrille und verabschieden uns für drei Wochen in den Betriebsurlaub! 🌞 Ab 20. August geht's dann gut erholt wieder ans Werk.
Gefällt mir · Kommentieren
Andreas Gahn, Daniela Taranto und Gerd Hoerst gefällt das.
- Dossmann GmbH**
26. Juli um 23:42 ·
Blick über den Teilerrand: Bei einer Betriebsbesichtigung haben unsere

Right Sidebar:

- Suche nach Beiträgen auf dieser Se...
- Dossmann GmbH**
Wissenschaft, Technik und Ingenieurwesen in Waldörm
4.9 ★★★★★
Schließt in 69 Minuten
- INFO: DOSSMANN GMBH

ALSO MAKE IT CLEAR WHAT YOU ARE LOOKING FOR; IN
THIS CASE A TOUGH GUY!



Dossmann GmbH hat einen Job gepostet.

7. Juni · 🌐

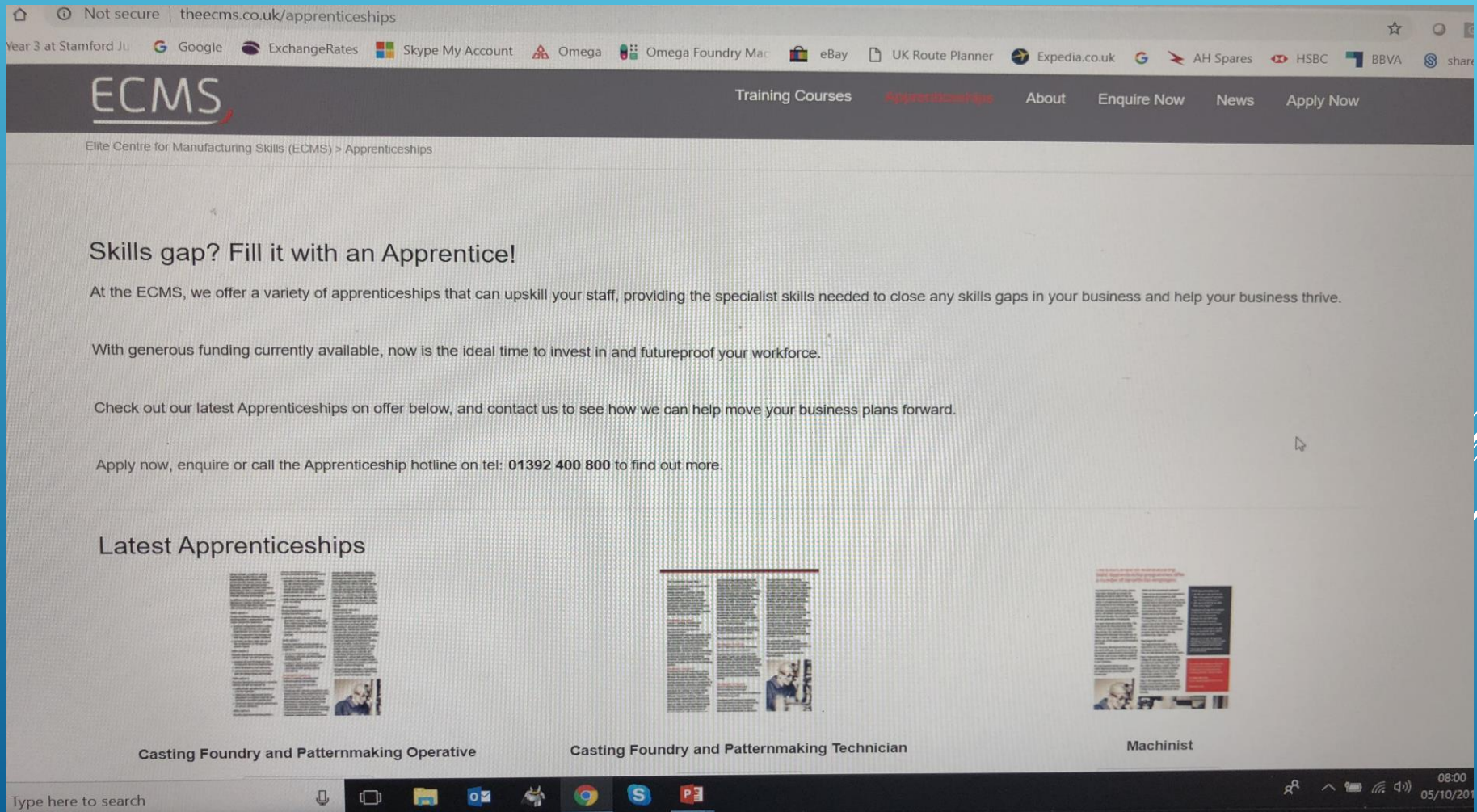


MAYBE THIS ISN'T THE BEST EXAMPLE



TRAINING

► WE NEED 'DO HOW' NOT 'KNOW HOW'



The screenshot shows a web browser displaying the 'Apprenticeships' page of the Elite Centre for Manufacturing Skills (ECMS). The browser's address bar shows 'theecms.co.uk/apprenticeships'. The website's header includes the ECMS logo and a navigation menu with links for 'Training Courses', 'Apprenticeships', 'About', 'Enquire Now', 'News', and 'Apply Now'. The main content area features the heading 'Skills gap? Fill it with an Apprentice!' followed by three paragraphs of text. The first paragraph states that ECMS offers apprenticeships to upskill staff and close skills gaps. The second paragraph mentions generous funding. The third paragraph encourages checking out the latest apprenticeships and contacting the ECMS. Below this, there is a section titled 'Latest Apprenticeships' which displays three job listings. Each listing includes a thumbnail image, a title, and a brief description. The first two listings are for 'Casting Foundry and Patternmaking Operative' and 'Casting Foundry and Patternmaking Technician'. The third listing is for 'Machinist'. The bottom of the screenshot shows the Windows taskbar with various icons and the system clock indicating 08:00 on 05/10/2017.

Not secure | theecms.co.uk/apprenticeships

Year 3 at Stamford Ju | Google | ExchangeRates | Skype My Account | Omega | Omega Foundry Mac | eBay | UK Route Planner | Expedia.co.uk | AH Spares | HSBC | BBVA | share

ECMS

Training Courses | Apprenticeships | About | Enquire Now | News | Apply Now

Elite Centre for Manufacturing Skills (ECMS) > Apprenticeships

Skills gap? Fill it with an Apprentice!

At the ECMS, we offer a variety of apprenticeships that can upskill your staff, providing the specialist skills needed to close any skills gaps in your business and help your business thrive.

With generous funding currently available, now is the ideal time to invest in and futureproof your workforce.

Check out our latest Apprenticeships on offer below, and contact us to see how we can help move your business plans forward.

Apply now, enquire or call the Apprenticeship hotline on tel: **01392 400 800** to find out more.

Latest Apprenticeships



Casting Foundry and Patternmaking Operative



Casting Foundry and Patternmaking Technician



Machinist

Type here to search

ASUS

08:00
05/10/2017



INDIAN INSTITUTE OF FOUNDRYMEN

- ▶ Three centres of excellence within the country
- ▶ 'The aim is to train at least 1,000 workers during 2016 and over 5,000 by 2018' K Samaraj, president IIF.
- ▶ Most of the people on the shop floor get trained on-the-job and there is no formal training.
- ▶ There is a need to grow the foundry capacity three-fold in the next 10 years to support manufacturing in the country.

WHAT DO WE NEED TO DO AS AN INDUSTRY?

- ▶ ATTRACT
- ▶ TRAIN
- ▶ KEEP

FOUNDRIES ARE INTERESTING, AND NOT ALWAYS FOR THE RIGHT REASONS

- ▶ In 32 years I have visited approximately 4,700 foundries
- ▶ In 58 countries
- ▶ I've seen the good, the bad and the ugly
- ▶ And there have been some interesting things experienced on the way

HEALTH AND SAFETY AT WORK



HEALTH AND SAFETY IN THE HOTEL



MAINTENANCE





WFO Executive Meeting, Krakow, September 2018

WHO NEEDS EQUIPMENT ANYWAY?



LAST BUT NOT LEAST

- ▶ My last name is Fenyves
- ▶ However, some variants have been;
- ▶ Feynes
- ▶ Fences
- ▶ Fingers
- ▶ Fiennes



HOWEVER, AROUND 10 YEARS AGO AT THE
INAUGURATION OF A NEW FOUNDRY.....



ON MY NEXT TRIP.....



AND TO EVEN THINGS UP A LITTLE.....



AND AT THE HOTEL.....

欢迎您入住景星酒店。为了您的安全，恳请您在住宿期间遵守中国法律，切勿从事吸毒，嫖娼等违法行为。

多谢合作

景星酒店

2013-2-26

Warm Notice

Dear Guest:

Welcome to our Star Hotel, please obey the Chinese rules during your staying in our hotel. Do not take drugs and go whoring.

Thank you for your co-operation

Star Hotel

2013-2-26

二〃注意

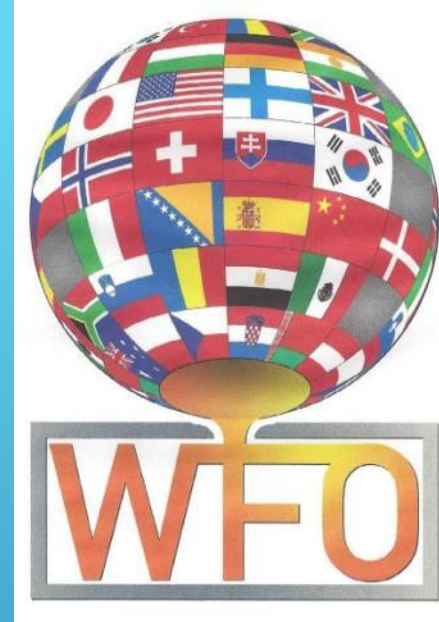
尊敬するお客様:

拝啓! ご滞在いただきまして、どうもありがとうございます

AND IN CONCLUSION

We should remember that our industry:

- ▶ Metalcasting is the oldest production process
- ▶ It fascinates those people who involved in it
- ▶ It is unique in its ability to recycle
- ▶ Exhibits a level of passion from those who are working in it
- ▶ Virtually every nation in the world has a casting industry
- ▶ Worldwide output of castings now exceeds 103M tons
- ▶ Metalcasting is vital to the drive in both aerospace and automotive for fuel efficiency
- ▶ LETS EMBRACE OUR INDUSTRY!





THE GLOBAL CASTINGS INDUSTRY

**Thanks for your
attention**