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  BURNER AIR PREHEATING BY MEANS OF A HEAT EXCHANGER SIGNIFICANTLY REDUCES GAS CONSUMPTION

GIFA

GIFA METEC THERM PROCESS NEWCAST

The Bright World of Metals

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DÜSSELDORF
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2019

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Editorial

Southeast Asia has become of ever-increasing importance to the international foundry industry.

Thomas Fritsch

ASEAN represents a region of future markets with about 600 million citizens, where the large, multinational suppliers are already operating.

With Indonesia's domestic capacity to produce significantly lower than the demands of its industries, it is a strong market for exporters, especially in the area of steel. It is also a growing center of development: in its bid to keep up with China, the drive for more modern facilities and technologies is high, and the playing field is open to global companies looking to increase their influence in the Southeast Asian region.

Indometal 2018 is a great opportunity for doing just that. A specialized trade fair with top organization by Messe Düsseldorf provides the perfect opportunity to make connections with the region's domestic producers, who are looking to upgrade their technology and increase their competitiveness in the market. Many are looking to invest and take advantage of Indonesia's current economic transformation.

We would like to thank our partners, VDMA and Messe Düsseldorf, for their cooperation and support for this project! We wish all the exhibitors and visitors of Indometal 2018 success and good business!

Glückauf and Good Luck!

Thomas Fritsch
Foundry-Planet Ltd.

VDMA METALLURGY

VDMA Metallurgy is the joint platform for metallurgical machinery producers within the German Engineering Federation (VDMA) comprising foundry equipment, thermo process technology as well as metallurgical plants and rolling mills. The platform represents the universe of plants, devices, equipment and process technology for metal production and processing – from raw materials to semi-finished products.
The production and processing of steel, aluminium and other non-ferrous metals is the basis for a wide variety of industrial applications and every day activities. The targets of modern production and processing are connected with lightweight design, efficiency, flexibility and the conservation of resources. The member companies of VDMA Metallurgy stand for modern, high-efficiency, environmentally compatible solutions and develop technological innovations in cooperation with their customers. They not only supply tailor-made plants, devices and process technology but are also competent advisors offering holistic solutions to their customers – including system partnership and full service over the entire life cycle.

The foundry machinery manufacturers within VDMA Metallurgy provide their customers with support for the optimisation of process stages with a view to accessing unrealised potential for efficiency improvement and resource conservation. They are highly respected partners of the casting industry and its customers throughout the world. In addition to their export activities, the member companies of VDMA Metallurgy provide local expertise through subsidiaries in many countries around the world.
About VDMA: The German Engineering Federation represents over 3.200 companies in the capital goods industry, making it the largest industry association in Europe. The German mechanical engineering industry is an international leader – in 25 of 31 comparable subsectors, German firms are among the top three providers in the world, and global market leader in as many as half.

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VDMA
Metallurgy

AMAFOND WILL BE PRESENT AT FAIR INDOMETAL 2018

Amafond, as from the first edition, will take part to Fair Indometal in Jakarta from 17th to 19th October 2018 in order to present to visitors the latest news of its Associates.
Amafond is the Italian Foundry Suppliers' Association which was founded in 1946. Currently it encloses the leading companies manufacturers of industrial furnaces, green sand and no-bake plants, core shooters, gravity and low pressure plants, die casting machineries, mould and cores and products for ferrous and non ferrous foundry industry. It represents about 100 manufactures responsible for the majority of Italian output in this sector, which is sold worldwide.
For more information we invite you to visit our website www.amafond.com where you can find all the information about Amafond and its Member Companies.

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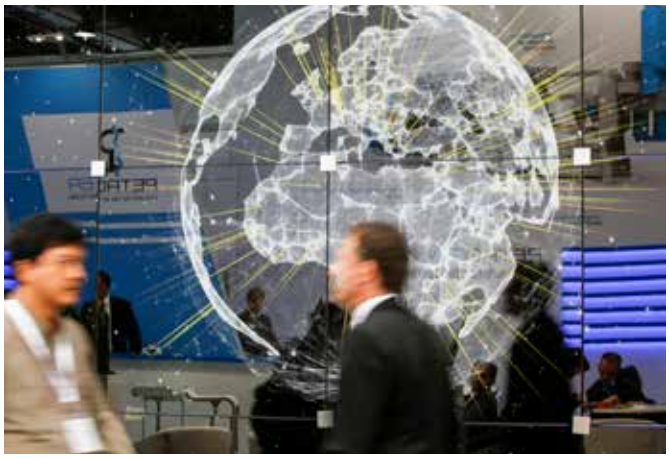
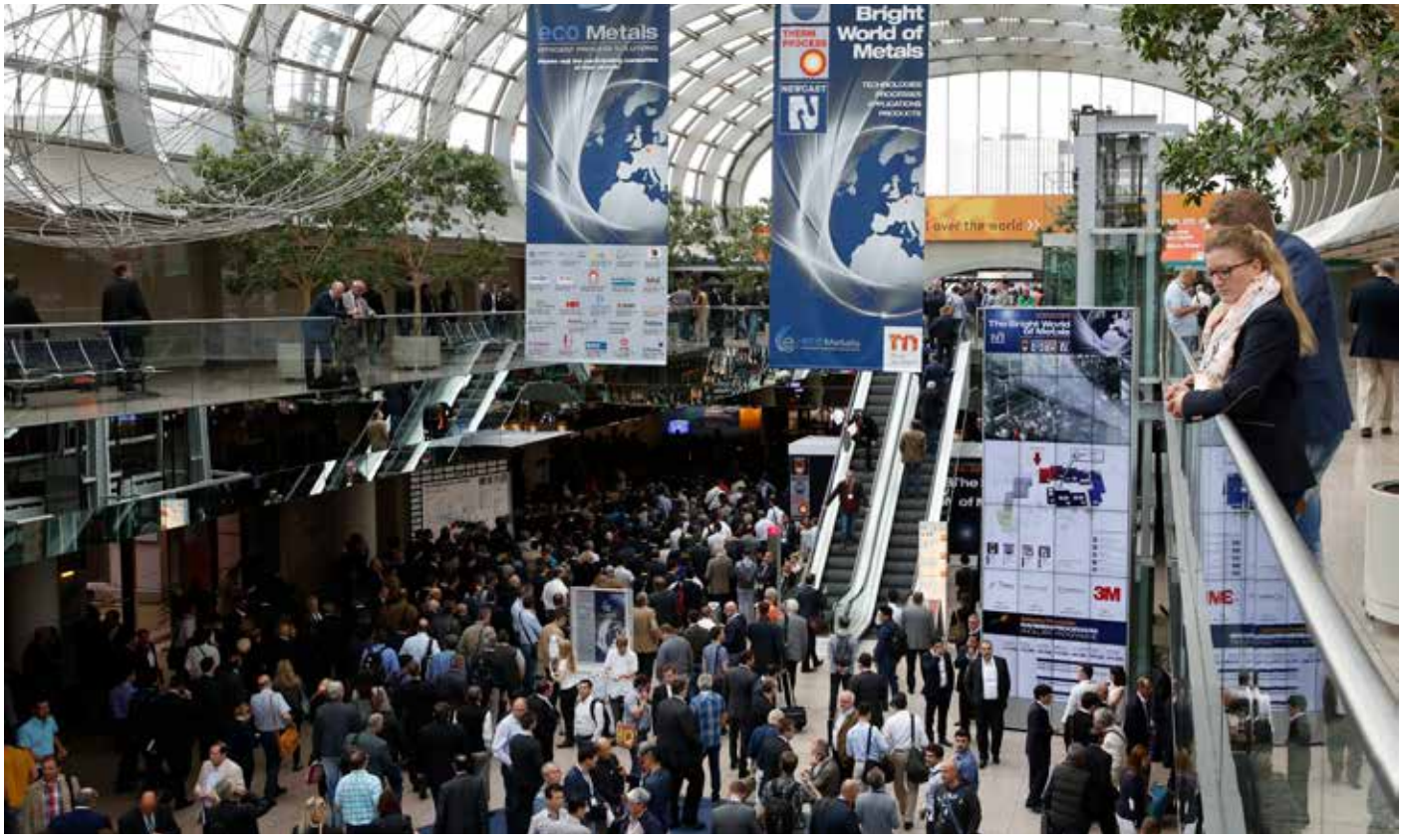
GIFA, METEC, THERMPROCESS AND NEWCAST 2019 ON THE ROAD TO SUCCESS



GIFA, METEC, THERMPROCESS and NEWCAST are set for success once again. Around 2,000 exhibitors and some 78,000 trade visitors from around the world will come together in Düsseldorf from 25 to 29 June 2019, under the slogan "The Bright World of Metals". This long-standing quartet of trade fairs in Düsseldorf proves once more that the heart of trade fair activity for international foundry and metallurgy technology truly beats in Düsseldorf. No other trade fair covers the entire range of foundry technology, casting products, metallurgy and thermal processing technology to this in-depth extent or with such a wide scope. The main players within the industry as well as smaller, innovative companies will be returning to Düsseldorf in 2019. The quartet of trade fairs also addresses and focuses on current and significant topics, such as Industry 4.0, e-commerce within the steel and aluminium industries, lightweight construction for the automotive industry and additive manufacturing. These topics provide important stimuli and require additional investment.

The second significant factor in the success of the "Bright World of Metals" is the supporting program, which includes international congresses and industry meetings such as the GIFA Conference, the European Steel Technology and Application Days/ESTAD, the European Metallurgical Conference/EMC, the THERMOPRESS Symposium and the NEWSCAST FORUM. A Special Show for Additive Manufacturing will make its premier at GIFA. Whether you work in pattern and die making, in core making or in direct metal printing, foundries and their suppliers, additive manufacturing provides foundries and their suppliers with great potential for growth/business. According to a study, alternative drive concepts such as hybrid and electric drives require increasingly high casting quantities in comparison to those for single drives on a combustion motor, and this will continue to be the case up until to 2030.
For further information, please visit www.tbwom.com.



AUTOMOTIVE MANUFACTURING INDUSTRY INDONESIA

The automotive industry of Indonesia has become an important pillar of the country's manufacturing sector as many of the world's well-known car corporations have (re)opened manufacturing plants or expanded production capacity in Southeast Asia's largest economy. Moreover, Indonesia experienced a remarkable transition as it evolved from being a merely export oriented car production center (especially for the Southeast Asian region) into a major (domestic) car sales market due to rising per capita GDP. In this section we discuss Indonesia's car manufacturing industry.

Indonesia is the second-largest car manufacturing nation in Southeast Asia and the ASEAN region (trailing rather far behind Thailand that controls about half of total car production in the ASEAN region). However, due to robust growth in recent years, Indonesia is expected to somewhat limit the gap with Thailand's dominant position over the next decade. To overtake Thailand as the biggest car manufacturer in the ASEAN region will, however, require major efforts and breakthroughs. Currently, Indonesia is primarily dependent on foreign direct investment, particularly from Japan, for the establishment of onshore car manufacturing facilities. The country also needs to develop car component industries that support the car manufacturing industry.

Per 2017 Indonesia's total installed car production capacity stands at 2.2 million units per year. However, the utilization of Indonesia's installed car production capacity is expected to fall to 55 percent in 2017 as the expansion of domestic car manufacturing capacity has not been in line with growth of domestic and foreign demand for Indonesia-made cars. Still, there are no major concerns about this situation as domestic car demand has ample room for growth in the decades to come with Indonesia's per capita car ownership still at a very low level.

In terms of market size, Indonesia is the biggest car market in Southeast Asia and ASEAN. Indonesia accounts for about one-third of total annual car sales in ASEAN, followed by Thailand on second position. Indonesia not only has a large population (258 million inhabitants) but is also characterized by having a rapidly expanding middle class. Together, these two factors create a powerful consumer force.

Car Sales in ASEAN:

Country	2014	2015	2016	2017
Thailand	881,832	799,632	768,788	871,650
Indonesia	1,208,019	1,013,291	1,062,716	1,079,534
Malaysia	666,465	666,674	580,124	576,635
Philippines	234,747	288,609	359,572	425,673
Vietnam	133,588	209,267	270,820	250,619
Singapore	47,443	78,609	110,455	116,148
Brunei	18,114	14,406	13,248	11,209
ASEAN	3,190,208	3,070,488	3,164,742	3,331,468

Car Production in ASEAN:

Country	2014	2015	2016	2017
Thailand	1,880,007	1,913,002	1,944,417	1,988,823
Indonesia	1,298,523	1,098,780	1,177,797	1,216,615
Malaysia	596,418	614,664	545,253	499,639
Philippines	88,845	98,768	116,868	141,252
Vietnam	121,084	171,753	236,161	195,197
ASEAN	3,984,877	3,896,967	4,020,496	4,041,526

Source: ASEAN Automotive Federation

Attracted by low per capita-car ownership, low labor costs and a rapidly expanding middle class, various global car-makers (including Toyota and Nissan) decided to invest heavily to expand production capacity in Indonesia and may make it their future production hub. Others, such as General Motors (GM) have come back to Indonesia (after GM had shut down local operations years earlier) to tap this lucrative market. However, Japanese car manufacturers remain the dominant players in Indonesia's car manufacturing industry, particularly the Toyota brand. More than half of total domestic car sales involve Toyota cars. It is a very difficult challenge for western brands to compete with their Japanese counterparts in Indonesia, known as the backyard of Japanese car manufacturers.

Although the relatively new low-cost green car (LCGC) has gained popularity in Indonesia (see below), most Indonesians still prefer to buy the multipurpose vehicle (MPV). Indonesians love the MPV, known as „people carriers", as these vehicles are bigger and taller than most other car types. Indonesians need a big car because they enjoy taking trips with the family (and/or invite some friends). The MPV can typically carry up to seven passengers. Car manufacturers are aware of high MPV demand in Indonesia and therefore continue to launch new (and better) models. With functionality in check, manufacturers now particularly focus on improving the design of the MPV to entice Indonesian consumers.

Also the low sport utility vehicle (LSUV) has gained popularity in Indonesia. However, it will be very difficult for the LSUV to become the market leader in Southeast Asia's largest economy as the LSUV has limited space for passengers.

While Indonesia has a well developed MPV and SUV manufacturing industry, the nation's sedan industry is underdeveloped. This is a true missed opportunity in terms of export performance because about 80 percent of the world's drivers use a sedan vehicle. The key reason why Indonesia has not developed a sedan industry is because the government's tax system does not encourage the production and export of the sedan vehicle. The luxury goods tax on the sedan is 30 percent, while the tax on the MPV is set at 10 percent. This causes the high sedan price and in order to encourage (domestic or foreign) demand for the sedan its price needs to become more competitive.

The clear market leader in Indonesia's car industry is Toyota (Avanza), distributed by Astra International(one of the largest diversified conglomerates in Indonesia which controls about 50 percent of the country's car sales market), followed by Daihatsu (also distributed by Astra International) and Honda.

Indonesia's automotive industry is centered around Bekasi, Karawang and Purwakarta in West Java, conveniently located near Indonesia's capital city of Jakarta where car demand is highest and an area where infrastructure is relatively well developed (including access to the port of Tanjung Priok in North Jakarta, the busiest and most advanced Indonesian seaport that handles more than 50 percent of Indonesia's trans-shipment cargo traffic, as well as the new Patimban seaport that is being developed in West Java). Good available infrastructure reduces logistics costs. In this area in West Java various big global car-makers invested in industrial estates as well as car and component manufacturing plants. Therefore, it has become the production base of Indonesia's automotive sector (including motorcycles) and can be labelled the „Detroit of Indonesia".

Jongkie Sugiarto, Chairman of the Indonesian Automotive Industry Association (Gaikindo), said the region east of Jakarta is selected by many car manufacturers for their production base since a decade ago as the area's infrastructure is good (including the supply of electricity, gas and menpower). He added that it has now become difficult to find large-sized land for new factories due to the influx of many businesses over the past years. Moreover, land prices have soared over the years.

Automotive Factories in Indonesia:

Location	Company	Production Capacity
Karawang	Toyota Motor Manufacturing Indonesia	250,000
Karawang	Astra Daihatsu Motor	200,000
Karawang	Isuzu Astra Motor Indonesia	80,000
Karawang	Honda Prospect Motor	200,000
Bekasi	Suzuki Indomobil Motor	270,000
Bekasi	Mitsubishi Motors Corporation	160,000
Bekasi	Wuling	120,000
Purwakarta	Nissan Motor Indonesia	250,000
Purwakarta	Hino Motor Manufacturing Indonesia	75,000
Sunter	Astra Daihatsu Motor	330,000
Sunter	Gaya Motor	40,000
Pulo Gadung	Fuso-Mitsubishi	150,000
Gunung Putri	Mercedes Benz Indonesia	20,000

Vision of the Indonesian Government regarding the Automotive Industry

The Indonesian government is eager to turn Indonesia into a global production base for car manufacturing and would like to see all major car producers establishing factories in Indonesia as it aims to overtake Thailand as the largest car production hub in Southeast Asia and the ASEAN region. On the long-term, the government wants to turn Indonesia into an independent car manufacturing country that delivers completely built units (CBU) of which all components are locally-manufactured in Indonesia.

Car Sales & Economic Growth

There exists a correlation between car sales and economic growth. When (per capita) gross domestic product (GDP) growth boosts people's purchasing power while consumer confidence is strong, people are willing to buy a car. However, in times of economic uncertainty (slowing economic expansion and reduced optimism - or pessimism - about future personal financial situations) people tend to postpone the purchase of relatively expensive items such as a car.

This correlation between domestic car sales and economic growth is clearly visible in the case of Indonesia. Between the years 2007 and 2012, the Indonesian economy grew at least 6.0 percent per year, with the exception of 2009 when GDP growth was dragged down by the global financial crisis. In the same period, Indonesian car sales climbed rapidly, but also with the exception of 2009 when a steep decline in car sales occurred.

Economic Growth & Car Sales Statistics of Indonesia:

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
GDP[2] (annual % change)	6.3	6.0	4.9	6.2	6.2	6.0	5.6	5.0	4.9	5.0
GDP per Capita[2] (in USD)	1,861	2,168	2,263	3,167	3,688	3,741	3,528	3,442	3,329	3,603
Car Sales (in million units)	0.43	0.61	0.49	0.76	0.89	1.12	1.23	1.21	1.01	1.06

[1] indicates a forecast

[2] the base year for computing the economic growth rate shifted from 2000 to 2010 in 2014, previous years have been recalculated

Sources: World Bank & Gaikindo

In the post-New Order period, economic growth of Indonesia peaked in the years 2010-2011 at 6.2 percent (y/y). After 2011, Indonesia experienced a period of persistent slowing economic growth between 2011 and 2015, primarily due to international turmoil (sluggish global economic growth and rapidly falling commodity prices).

However, car sales did not immediately follow the slowing economic growth pace and, in fact, still managed to hit an all-time record high sales figure in 2013 (1.23 million sold cars). This delay in falling car sales was partly caused by overly optimistic views of the Indonesian economy. In late-2012, institutions such as the World Bank, International Monetary Fund (IMF), Asian Development Bank (ADB) as well as the Indonesian government failed to understand the exact extent of the global slowdown. Instead, these institutions predicted softer economic growth in Indonesia in 2012 but rapidly expanding growth at +6 percent-levels from 2013 onward. However, as global conditions remained sluggish in the years 2013-2015, these institutions had to downgrade forecasts for Indonesian GDP growth on various occasions in the 2013-2015 period hence causing deteriorating sentiments with regard to views on the Indonesian economy.

Secondly, Indonesian car sales slowed in 2014 (after four straight years of growth) as the Indonesian government raised prices of subsidized fuels twice in order to reduce heavy and rising pressures on the state budget deficit (in June 2013 the government had already raised subsidized fuel prices by an average of 33 percent but this had a limited impact on car sales), while making more funds available for structural investment (for example for infrastructure development). In early 2015, gasoline (premium) subsidies were basically scrapped altogether while a fixed IDR 1,000 per liter subsidy was set for diesel (solar). For many decades Indonesians had enjoyed cheap fuel thanks to generous government energy subsidies but in the years 2013-2014 reforms led to gasoline prices soaring from IDR 4,500 (approx. USD $0.35) per liter in early 2013 to IDR 7,400 (approx. USD $0.57) per liter in mid-2015, a price increase of 62.9 percent.

Moreover, these subsidized fuel price reforms also caused accelerated inflation due to second-round effects (hence curbing Indonesians' purchasing power further) as prices of various products (for example food products) rose due to higher transportation costs. In both 2013 and 2014 inflation reached 8.4 percent (y/y). Meanwhile, per capita GDP was weakening due to slowing economic growth. Lastly, the weak rupiah (which had been weakening since mid-2013 amid the US taper tantrum) made imports more expensive. Given that many car components still need to be imported (in US dollars) hence raising production costs for Indonesian car manufacturers, price tags on cars became more expensive. However, due to fierce competition in the domestic car market not always have manufacturers and retailers been able to pass these costs on to end-users.

Indonesian Car Sales (CBU):

Month	Sold Cars 2013	Sold Cars 2014	Sold Cars 2015	Sold Cars 2016	Sold Cars 2017
January	96,718	103,609	94,194	85,002	86,262
February	103,278	111,824	88,740	88,208	95,163
March	95,996	113,067	99,410	94,092	102,336
April	102,257	106,124	81,600	84,770	89,624
May	99,697	96,872	79,375	88,567	94,085
June	104,268	110,614	82,172	91,488	66,389
July	112,178	91,334	55,615	61,891	85,354
August	77,964	96,652	90,537	96,282	97,256
September	115,974	102,572	93,038	92,541	87,696
October	112,039	105,222	88,408	92,106	94,433
November	111,841	91,327	86,938	100,365	96,191
December	97,706	78,802	73,264	86,547	85,098
Total	**1,229,916**	**1,208,019**	**1,013,291**	**1,061,859**	**1,079,886**

	2014	2015	2016	2017
Car Sales (car units)	1,208,019	1,013,291	1,061,859	1,079,886
Car Production (car units)	1,298,532	1,098,780	1,177,797	1,216,615

	2009	2010	2011	2012	2013	2014
Car Sales (car units)	486,061	764,710	894,164	1,116,230	1,229,916	1,208,019
Car Production (car units)	n.a.	n.a.	n.a.	n.a.	1,208,211	1,298,532

Source: Gaikindo

The central bank of Indonesia (Bank Indonesia) decided to revise the down payment requirements for the purchase of a car in an attempt to boost credit growth (and economic growth). Per 18 June 2015, those Indonesian consumers who use a loan from a financial institution to purchase a passenger car need to pay a minimum down payment of 25 percent (from 30 percent previously). The minimum down payment for commercial vehicles remained at 20 percent. It is estimated that around 65 percent of all car purchases in Indonesia are made through a loan.

Due to the easier monetary policy (besides easier down payment requirements Bank Indonesia also cut its benchmark interest rate heavily in 2016) and the end of the economic slowdown in 2016 (GDP growth accelerated to 5.02 percent y/y), Indonesian car sales finally rebounded in 2016.

Introduction of the Low Cost Green Car (LCGC) to Indonesia

The low-cost green car (LCGC) is an affordable, fuel efficient car that was introduced to the Indonesian market in late-2013 after the government had offered tax incentives to those car manufacturers who meet requirements of the government's fuel efficiency targets. When these LCGC cars were introduced they, generally, had a price tag of around IDR 100 million (approx. USD $7,500) hence being attractive for the country's large and expanding middle class segment. By early the average price of the LCGC had risen to around IDR 140 million (approx. USD $10,500) per vehicle. With the implementation of the ASEAN Economic Community at the start of 2016, the Indonesian government also aims to make Indonesia the regional hub for the production of LCGCs.

The government set several terms and conditions for the manufacturing of LCGCs. For example, fuel consumption is required to be set at least 20 kilometers per liter while the car must consist - for 85 percent - of locally manufactured components (hence making the price of this type of car less vulnerable to rupiah depreciation). In exchange, the LCGCs are exempted from luxury goods tax, which allows manufacturers and retailers to set cheaper prices.

These cars have a maximum engine capacity of 1,200 cubic centimeters, and are designed to use high-octane gasoline. The main players in Indonesia's LCGC industry are five well-known Japanese manufacturers: Toyota, Daihatsu, Honda, Suzuki and Nissan. Various LCGC models have been released since late-2013 (including the Astra Toyota Agya, Astra Daihatsu Ayla, Suzuki Karimun Wagon R, and Honda Brio Satya).

Sales of Low Cost Green Cars in Indonesia:

	2013	2014	2015	2016	2017
LCGC Sales Indonesia	51,180	172,120	165,434	235,171	234,554

Source: Gaikindo

The LCGC has become a very popular vehicle in Indonesia and now contributes nearly 25 percent to total domestic car sales. Considering the nation's per capita GDP is still below USD $4,000, affordability is generally the most important factor for Indonesian consumers when buying a car, and this would explain consumers' shift to the LCGC. This implies it undermines the market share of other vehicles. For example, city car sales in Indonesia have plunged dramatically since the launch of the LCGC. Also the multipurpose vehicle (MPV), which - by far - is the most popular vehicle in Indonesia, felt the impact of the arrival of the LCGC. But the MPV's dominant role in the nation's automotive sector will persist. The MPV is known as „the people carrier" because this vehicle is bigger and taller than other cars (it can carry up to seven passengers). Indonesians enjoy taking trips with the family (and/or invite some friends) and therefore a big car is required.

Meanwhile, the premium car market in Indonesia is actually rather small. Only about 1 percent of total car sales in Indonesia involve premium brands such as Mercedes-Benz and BMW.

Indonesian Car Exports

The Indonesian government also has high hopes for the country's car exports (thus generating additional foreign exchange revenues), particularly since the implementation of the ASEAN Economic Community (AEC), which turns the ASEAN region into one single market and production area. The AEC should unlock more opportunities for exporters as it intensifies regional trade.

Indonesian-made cars that are already exported include the Toyota Avanza and Toyota Fortuner, the Nissan Grand Livina, the Honda Freed, Chevorelet Spin and Suzuki APV. The most important export markets are Thailand, Saudi Arabia, the Philippines, Japan, and Malaysia.

However, it is difficult for Indonesia to boost its car exports because the nation's automotive industry is still at the Euro 2 level, while other nations are already at Euro 5 (Euro is a standard that reduces the limit for carbon monoxide emissions). Other issues that limit car exports are concerns about safety standards and technology.

Indonesian Car Exports:

	2014	2015	2016	2017
CBU (car units)	202,273	207,691	194,397	231,169
CKD (car units)	108,580	108,770	202,626	

	2009	2010	2011	2012	2013
CBU (car units)	56,669	85,769	107,932	173,368	170,907
CKD (car units)	n.a.	n.a.	n.a.	100,074	105,380

CBU = completely built up
CKD = completely knocked down
Source: Gaikindo

Outlook Indonesian Car Sales

The outlook for car sales in Indonesia is dependent on several factors: Indonesia's macroeconomic growth, the direction of commodity prices, loan-to-value (LTV) requirements, interest rates and consumer confidence.
After effectively ending the economic slowdown in 2016, the Indonesian economy is expected to show accelerating economic in the years ahead, something that boosts people's purchasing power as well as consumer confidence. One of the key reasons that explains why Indonesia's economy ended the slowdown in 2016 was because of improving commodity prices (rising commodity prices tend to boost car sales on the resource-rich islands of Kalimantan and Sumatra).
Meanwhile, Bank Indonesia made it easier in 2015 for consumers to purchase a car by cutting the minimum down payment requirement, while in 2016 the central bank significantly cut its interest rate environment (partly possible due to low inflation since 2016), hence making it easier for consumers to purchase a loan.
As such, from a macroeconomic and monetary perspective there is a good context in Indonesia, one that should encourage rising car sales in the years ahead.
There are a few other factors that support car sales in Indonesia. Firstly, Indonesia still has a very low per capita car ownership ratio implying there is enormous scope for growth as there will be many first-time car buyers among Indonesia's rapidly rising middle class. Secondly, the popular and affordable low-cost green car (LCGC) is expected to boost sales. Thirdly, the Indonesian government is eagerly trying to speed up infrastructure development across the Indonesian nation.
The Indonesian Automotive Industry Association (Gaikindo) expects a 5 percent (y/y) increase in car sales in 2017. Meanwhile, London-based BMI Research states that passenger car sales in Indonesia are estimated to rise 11.5 percent per year in the 2017-2021 period supported by Indonesia's expanding middle class, the popular low cost green cars and multipurpose vehicles.

Source: indonesia-investments.com

MACHINERY AND EQUIPMENT

The M&E industry serves to catalyse Malaysia's transition into a high-technology, Industry 4.0-ready nation, due to its linkages to various large-scale economic sectors such as manufacturing, construction and services. According to the IMP3, investments in the M&E industry is targeted to grow by an average annual rate of 3.7 per cent. By 2020, investments in the industry are projected to reach RM30.8 billion, while exports are expected to grow at an average rate of 6.7 per cent per annum, reaching RM48.3 billion.
There are currently 1,418 companies of all sizes in the M&E industry across multiple fields, including power generation, metal working, specialised-process M&E for specific industries, general industrial M&E, modules and industrial parts, and remanufacturing of M&E. These include 197 companies involved in the production of semiconductor M&E, and 143 companies involved in robotics and factory automation systems. Malaysia is the leading manufacturer of specialised-process machinery for the E&E industry and automation equipment in the SEA region.

Malaysian M&E companies are capable of providing a full range of world-class, international quality services, including design & development, test simulation and software programming, structure fabrication, module assembly and integration, as well as automation solutions. They are able to produce advanced machinery with full automation and robotics handling systems, and can easily integrate themselves into global supply chains, exporting their products worldwide. Notable companies in the industry include Advantest, SRM, Vitrox, Muehlbauer, Pentamaster, UMS and Multitest.

Driven by industry trends including Industry 4.0 and the Industrial Internet of Things (IIoT), M&E companies are currently revolutionising their production processes, adopting key Industry 4.0 technologies to increase the level of automation, connectivity, and big data analytics (BDA) required in a smart factory environment. This includes connecting cyber and physical systems via an enterprise resource planning (ERP) system, as well as employing remote monitoring, machine-to-machine (M2M) communication, and fully-robotic, automated assembly lines in their production floors. A local company have ventured into developing software and platforms as well as providing ERP, production monitoring and supply chain management services and solutions to manufacturing companies.

Innovation and R&D will catalyse the growth of more sophisticated M&E. Access to financing for this may prove to be a challenge; especially from the commercial financial sector, which usually evaluates such loan applications conservatively. This could be an area of interest for potential investors seeking to enter the market and help integrate industry players into the global supply chain through strategic collaborations.

In 2017, a total of 77 projects with investments amounting to RM2.2 billion were approved. Of these, 39 were new projects (RM1.3 billion or 61.6%) and 38 were expansion / diversification projects (RM840 million or 39.4%). Compared with 2016, there were 11 fewer projects approved overall, but an additional RM650 million was invested – an increase of 42.3 per cent over the RM1.5 billion in 2016, and an indicator that the M&E sector is moving up the value chain and becoming more capital-intensive.

Supported by: mida.gov.my

METAL+METALLURGY CHINA 2019 IN SHANGHAI POINTS TO A SUCCESSFUL EVENT AHEAD

From 13 to 16 March 2019, Metal+Metallurgy China will be opening the gates at the Shanghai New International Expo Center (SNIEC). Asia's largest and the world's second largest exhibition in metal and metallurgy industry will showcase the entire value chain associated with the foundry, iron and steel industries. It is an exciting opportunity for Chinese and overseas elites to communicate and collaborate, as well as to enhance the brand value.

The signs for the upcoming show are promising. The show's organizers are very pleased with the number of exhibitor registrations to date. Over 1,260 exhibitors from more than 20 nations are expected to exhibit at next year's show; among them well-known companies such ABB, FANUC or KUKA. The exhibition space is expected to exceed 90,000 square meters. Moreover, the organizers expect to welcome around 110.000 visitors.

Following China's rapid industrialization process and the penetration of the complete industrial chain, Metal+Metallurgy China keep on enriching the content and refining the categories. Besides the conventional exhibitions, Metal+Metallurgy China 2019 will have new contents in Industrial Robots and Automation and will incorporate a metal deep processing section that covers the entire industrial chain.

A series of value-added activities such as summit forums that are to be carried out during the Expo period will create excellent opportunities for industry updates, exchange of views and mutual cooperation. These forums and conferences include among others the China International Steel Summit, the 15th Annual Congress of China Foundry Association or China International Aluminum Processing Forum.

Metal & Metallurgy China is jointly organized by China Iron and Steel Association, China Foundry Association, Chinese Mechanical Engineering Society (CMES), Metallurgical Council of CCPIT, Industrial Furnace Institution of CMES and Deutsche Messe subsidiary Hannover Milano Fairs Shanghai.

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CAPITAL INVESTMENT IN THE MANUFACTURING SECTOR REACHED UP TO IDR 122 TRILLION

The development of the manufacturing industry in the first semester of 2018 records positive results. According to the results, the amount of capital investment in this sector reached up to IDR 122 Trillion from 10,049 projects and contribute to the total investment for as much as 33.6 percent from IDR 361.6 Trillion.

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„We are actively encouraging investment in the industrial sector. The construction of factories, certainly brings a multiplier effect on the national economy such as an increase in the value-added of domestic raw materials, employment, and foreign exchange revenues, „said Minister of Industry Airlangga Hartarto in Jakarta, Monday (27/8).

The Ministry of Industry noted that throughout the first half of 2018, domestic capital investment (PMDN) from the industrial sector was at IDR 46.2 trillion. Meanwhile, foreign investment (PMA) from the industrial sector can penetrate up to USD 5.6 billion or IDR 75.8 trillion.

The highest PMDN contributions comes from the manufacturing sector including the food industry by 47.50 percent (IDR 21.9 trillion), the chemical and pharmaceutical industries 14.04 percent (IDR 6.4 trillion), as well as the metal, machinery and electronics industries with their 12,70 percent contributions (IDR 5.8 trillion).

Furthermore, the highest FDI contributions were comes from the manufacturing sector, which included metal, machinery and electronics industries at 39.69 percent (USD2.2 billion), followed by the chemical and pharmaceutical industries 18.84 percent (USD1.1 billion) and the food industry 10.41 percent (USD586 million).

According to the Minister of Industry, the injection of investor funds is a strength for the national economy, since the industry is the main subjects of the national economic growth target.

Therefore, the government continues to be determined to create a conducive business climate that spurs increased investment in Indonesia, whether it is a new form of investment or expansion of business or expansion.

„The government has now issued several policies to further facilitate the entry of investment both from within and outside the country," said Airlangga.

The strategic steps include optimizing the utilization of fiscal facilities such as tax holidays, tax allowances, and exemption from import duties on capital goods or raw materials.

Then, the government improved the licensing procedures both at the central and regional levels. „Currently, licensing procedures have been prepared by using the mechanism of Online Single Submission (OSS)," he added.

In addition, the Ministry of Industry supports the acceleration of increasing the competence of industrial human resources through training programs and vocational education.

The Minister of Industry added, the effort to attract foreign investment became one of the 10 steps of national priority in entering the fourth industrial revolution era according to the road map Making Indonesia 4.0. This can encourage technology transfer to local companies.

In cooperation with: Manufakturindo.com

INDONESIA – INDIA TRADE RISE UP 43 PERCENT IN 2017

Indonesia-India trade in 2017 increased by 43 percent compared to 2016. This value is expected to be increase from year to year. In fact, the Minister of Industry, Airlangga Hartanto believes that there is still much more potential that can be improved from the cooperation of these two countries.

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To follow up the cooperation that has been going for more than 60 years, Minister of Industry and Trade Minister Enggartiasto Lukita held an audience with the Minister of Industry and Trade of India, Nirmala Sitharaman.

„From the meeting, we expect that the Indian industry can be more aggressive in investing in Indonesia, especially in the steel sector, textile and automotive machinery," said Minister of Industry. In addition to these three sectors, India is interested in investing in Indonesia for the pharmaceutical industry sector.

Airlangga continued, the Indian government is expected to send a working group to help in mapping the needs of the pharmaceutical industry in Indonesia.

„We also encourage an expert exchange program and strengthening vocational training between Indonesia and India, especially in the pharmaceutical industry," he said.

In an effort to enhance mutually beneficial cooperation, both countries need to provide facilities and access to trade and market access.

„This is to increase the volume of bilateral trade and pursue the balance of trade balance," Airlangga continued.

Referring to Central Bureau of Statistics (BPS) data, the total value of bilateral trade between the two countries in 2016 reached USD 12.9 billion. Indonesia - India's trade balance in 2016 was a surplus for Indonesia of USD 7.2 billion.

Meanwhile, in January - September 2016, India's investment to Indonesia was at 25th position with realization value reaching USD37.76 million in 335 projects. This amount has increased when compared to the same period in 2015 with the realization of investment reached USD33.2 million on 145 projects.

While Indonesia's exports to India in the period January - June 2017 was recorded at USD 6.9 billion, rise up 51.22% from the same period on the previous year which reached USD 4.5 billion. Indonesia's main export commodities to India include palm oil and its derivatives, coal, copper ore, and natural rubber.

In cooperation with: Manufakturindo.com

MALAYSIA STRENGTHENS COOPERATION IN THE AUTOMOTIVE SECTOR

Indonesia - Malaysia strengthens cooperation in the automotive sector. This step was taken to deepen the manufacturing structure, complement the component needs of the two countries, and an effort to develop a competitive automotive industry in the ASEAN market.

The two countries are officially exchanged Memorandums of Agreement (MoA) represented by the President of the Indonesian Automotive Institute (IOI) I Made Dana Tangkas and the CEO of Malaysia Automotive Institute (MAI) Dato Mohamad Madani Sahari, witnessed by Malaysian Minister of Trade and Industry Darell Leiking and General Director of KPAII from the Ministry of Industry. On that occasion, the General Director of KPAII also held a meeting with Minister Darell Leiking.

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Cooperation

General Directorate of Resilience and International Industrial Access Development (KPAII) from the Ministry of Industry, I Gusti Putu Suryawirawan said that the cooperation will include development of human resource, strengthening supply chains, increase competitiveness between component industries and conduct research and development (R & D) activities.

Putu added, currently the Indonesian government is focusing on spurring the development and competitiveness of the automotive industry. The reason behind this action is because this sector is one of five industries that will become a pioneer in the implementation of the fourth-generation industrial revolution according to the road map Making Indonesia 4.0.

In accordance with the national automotive industry development roadmap, by 2020, 10 percent of the 1.5 million domestically produced cars are low carbon emission vehicles (LCEV). Then, in 2035, it was targeted to increase to 30 percent when production reached 4 million cars.

On the other hand, IOI President I Made Dana Tangkas said, IOI and MAI are encouraging joint ventures between automotive component companies in Indonesia and Malaysia to meet the principal's needs in many countries. In addition, it will initiate the establishment of the ASEAN Automotive Institute Federation.

Malaysia's Minister of International Trade and Industry Darell Leiking said the idea of an ASEAN Automotive was delivered by Prime Minister Mahathir Mohamad. Through the cooperation of the two countries' automotive institutes, it is expected that there will be market expansion for vendors on both countries. Leiking added that the results of this collaboration were followed up to be measurable.

MAI CEO Dato Mohamad Madani Sahari added that both parties would identify companies that could cooperate and be encouraged to produce components for internal combustion engine (ICE) vehicles, then conduct joint research to learn all new technologies, such as electric or hybrid vehicles.

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THE FUTURE OF ASEAN TIME TO ACT

Executive Summary

ASEAN - A Unique Growth Story
The year 2017 marked the 50th anniversary of ASEAN, (the Association of Southeast Asian Nations), which is a unique achievement considering the conflicts and poverty which characterised the region in the first half of the 20th century. Since the inception of the ASEAN 5 (Indonesia, Malaysia, Philippines, Singapore and Thailand) in 1967, the association has not only doubled in membership to include Brunei Darussalam, Vietnam, Lao PDR, Myanmar and Cambodia, but has also successfully weathered both the Asian financial crisis of 1997 and the global economic crisis of 2008-09, to make it the sixth-largest economy globally at present. Along this remarkable growth journey, ASEAN has managed to balance economic growth with human development to lift millions of people out of poverty across the entire region.

ASEAN's growth has been powered by its people, with the establishment of a formidable labour force and the subsequent creation of a wealthier middle class driving domestic consumption. More than 100 million people are estimated to have joined ASEAN's workforce over the past 20 years and another 59 million are projected to be added by 2030, making ASEAN the third-largest labour force worldwide, behind only China and India.
Strengthening employment has fuelled the growth of the ASEAN middle class, which is associated with a higher willingness to pay for quality, convenience, and choice, driving the demand for more discretionary and aspirational product categories in the coming years. A growing and more advanced workforce, together with increasing local consumption, has enabled ASEAN to continue to attract substantial FDI despite rising volatility in capital flows worldwide – thus establishing itself as the fourth most popular investment destination globally, and the second-largest destination in Asia after China.

Although ASEAN as a collective group of nations has made some impressive progress in the past 50 years, regional variations remain in the economic and social status of its individual markets. At present, ASEAN's economy remains highly concentrated in its three leading markets (Indonesia, Thailand, and the Philippines), which collectively account for more than 60 percent of the regional GDP. From a GDP per capita perspective, Singapore and Brunei Darussalam led the group with figures at 13 times and seven times the regional average, respectively, in 2016. On the other hand, although CLMV (Cambodia, Lao PDR, Myanmar and Vietnam) markets remain among the least developed (by GDP per capita) in the region, they are well poised for growth, recording some of the strongest GDP growth rates (more than 6 percent) in 2016.

Acknowledging these variations, ASEAN established the three pronged ASEAN Community agenda in 2015, which focuses not only on economic aspects (AEC), but also on political security (APSC) and socio-cultural issues (ASCC) such as health and education. The AEC has made some progress toward its goals, including most notably a reduction in trade tariffs where almost 99 percent of tariff lines in ASEAN are expected to be at 0 percent levels by the end of 2018. However, across such a vast and diverse set of nations, these measures constitute merely the beginning of what is needed in order to facilitate economic growth and human development across ASEAN.

Time to Act
A number of immediate challenges, including a slowdown in short-term economic growth, weak workforce productivity, over dependence on external trade and major voids in infrastructure and national institutions have raised questions about the sustainability of ASEAN's growth story. Underlying these challenges is the fact that the share of population aged 65 and older is projected to reach close to 2.5 times the current levels in Asia as a whole by 2050.
Consequently, the demographic window to push growth across many ASEAN markets is closing, although at different rates. Therefore, ASEAN as an economic bloc and its individual countries need to make reforms with a sense of urgency, to maximise the growth impact driven by their current demographic dividend, and to prepare themselves for longer-term growth after this window closes.

ASEAN and its individual nations, need to progress from an era of passive growth and take more proactive measures to continue to attract investments, develop its institutions, and evolve its people and technological capabilities. The private sector will also have a major role to play in strengthening the region's growth prospects over the coming years, but this will require companies not only to provide new products and services, to meet varying consumer preferences, but also to work more closely with governments to develop the right conditions for businesses to prosper.
Going forward, we see significant growth opportunities for the private sector across a number of industries in ASEAN — including automotive, financial services, consumer goods, medical devices, fuel refining, telecommunications and transportation. However, given the dynamics and challenges of ASEAN, along with the ever evolving and demanding needs of consumers in the region, companies will need to adopt innovative strategies to succeed. As we will see in the following chapters, there are a number of common themes to these new strategies, such as localised production and the development of regional hubs to serve ASEAN consumers (automotive and medical devices), as well as the adoption of digital capabilities to produce and transport goods, and serve and communicate with consumers (e.g. financial services, consumer goods and telecommunications).

Partnerships and alliances together with vertical integration will also play a more significant role – particularly cross-sector and with industry disruptors (Fintech) – as companies try to stay relevant and competitive, and meet consumers expectations in a profitable manner (e.g. fuel refining, transportation).
ASEAN can be proud of what it has achieved in the past 50 years, but the time of passive growth is over.
Global trade and consumer markets are evolving, and therefore ASEAN and its individual nations need to acknowledge this and proactively develop business environments which are conducive to local production, intra-ASEAN trade and serving local consumers. This will take time, and so companies looking to grow across the region need to be equally proactive and innovative in developing and executing strategies which will fulfil the potential of ASEAN. Global growth needs ASEAN to act now and grab hold of its future.

Read the full report: www.Foundry-Asean.com

In cooperation with: PWC

David Wijeratne
Partner, Growth Markets Centre Leader
PwC Singapore

INCREASING THE ENERGY EFFICIENCY OF ALUMINUM SMELTING: BURNER AIR PREHEATING BY MEANS OF A HEAT EXCHANGER SIGNIFICANTLY REDUCES GAS CONSUMPTION

In 2016, the prototype of an optimized aluminum smelting system was realized as part of a Federal Ministry of Economics and Technology (BMWi)-funded cooperative project between the industrial and business communities. The EDUSAL II project makes it possible to determine the energy-saving potential of the smelting process while at the same time minimizing the resulting smelting loss. In order to further reduce the consumption values of such a system and thus to increase both energy efficiency and resource conservation, the smelting furnace manufacturer, ZPF GmbH, has now extended its concept with additional components: By incorporating a so-called burner air preheating, in which the warm exhaust gas volume flow is passed through a pipe system to a heat exchanger, the system operator has more room for maneuver - with lower pollutant emissions and lower gas consumption. This new system can – with appropriate adjustments - be used as a retrofit kit for existing ZPF melting systems.
The main focus was on the further development of the measurement technology to a sensory detection of the melting shaft, which means that in laboratory operation both the position of the residual material on the smelting link and its quantity can be precisely determined. In addition, a special evaluation algorithm has been developed that has improved the process to the point that an increase in smelting efficiency of up to 15 percent can be achieved. Another focus of the EDUSAL II system was the testing of burner air preheating.


Source: ZPF GmbH


Source: ZPF GmbH


Source: ZPF GmbH

The already heated exhaust gas flow is directed to a heat exchanger via a suitable pipe system.. In the heat exchanger, the energy is released to the secondary air side (burner air) - the cooled exhaust gas is discharged in the other system either directly into the atmosphere or for preheating the melting material in a corresponding chamber.
In this way, not only are operating and energy costs reduced, it also allows for a careful handling of the valuable resource of gas.

(Further information is available at: www.zpf-gmbh.de)

The ZPF GmbH was established in 2013 from ZPF therm Maschinenbau GmbH, which was founded in 1993, and - like its predecessor - focuses on the development, design and manufacture of highly efficient aluminum melting furnaces. The product range also includes chip melting and holding furnaces. The systems are produced at the plant in Siegelsbach, Baden-Wuerttemberg, and where possible already pre-assembled, are delivered to metal processing companies worldwide.

More information for readers / observers/interested parties:

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Internet: www.zpf-gmbh.de

ZPF

WELCOME TO THE GERMAN PAVILION AT INDOMETAL 2018

WELCOME TO THE PRESENTATION OF THE FEDERAL REPUBLIC OF GERMANY!

The Indometal 2018 is the exclusive forum for the metallurgical industry in Southeast Asia. It is THE essential showcase for metallurgical plants and rolling mills, foundry machinery and thermo processing equipmentas well as related products, services and technologies.
The German manufacturers of metallurgical plants and rolling mills, foundry machinery and thermo processing equipment deliver into numerous buyer industries such as steel and non-ferrous metal works, ferrous and non-ferrous metal foundries, automotive industry, mechanical engineering, etc in Southeast Asia. They offer all kinds of components and individual machines as well as complete turn-key solutions including sophisticated electronics and automation systems.
The German Federal Ministry for Economic Affairs and Energy (BMWi) in cooperation with the Association of the German Trade Fair Industry (AUMA) are supporting a German group participation, giving more than 10 companies the opportunity to present their excellent products and to offer their renowned services to key players and decision makers from all over Asia. VDMA Metallurgy as sector group of the German Mechanical Engineering Federation and one of the initiating associations for the German participation is accompanying the German delegation and providing professional advice. On behalf of all exhibitors, the Federal Ministry for Economic Affairs and Energy (BMWi), the Association of the German Trade Fair Industry (AUMA) and the supporting association VDMA Metallurgy wish all participants a successful show and extend a warm welcome to all visitors of the German Pavilion in hall D1, stand E01.

Booth number: Hall D1 - E16
data M Sheet Metal Solutions GmbH
data M specializes in software solutions and services for roll formers. The programs COPRA® RF and COPRA® FEA RF are the leading solutions for design and simulation worldwide.

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EIRICH
EIRICH stands worldwide for a comprehensive range of products and services in the field of preparation technology.

Booth number: Hall D1 - E07
EJP Maschinen GmbH
Combined Drawing Systems (coil-bar,bar-bar), Peeling-, Straightening Machines, Shotblasters, Flying Shears+Saws, Chamfering-, Bundling-, Resawing Machines, Special Equipment.

Booth number: Hall D1 - E01
Federal Ministry for Economic Affairs and Energy

Booth number: Hall D1 - E15
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www.foundry-planet.com is an international B2B internet portal, for foundries, foundry industry suppliers, consultants, investors, students and buyers of metal castings.

Booth number: Hall D1 - E10
Hoppe Schwingtechnik GmbH
We provide to our customers the application of advanced vibration technology in various kinds of field.

Booth number: Hall D1 - E14
International Tube Association e. V.
The ITA is the sole globally active association of tube & pipe engineers from across the industry (supply and manufacture), related services and universities.

Booth number: Hall D1 - E09
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KAMAG is a specialist in developing and manufacturing top class heavy goods vehicles. Whether inside the company or on public roads.

Booth number: Hall D1 - E11
Scheuerle Fahrzeugfabrik GmbH
SCHEUERLE is a specialist in developing and manufacturing top class heavy goods vehicles. Whether inside the company or on public roads.

Booth number: Hall D1 - E12
VDMA Verband Deutscher Maschinen- und Anlagenbau e.V.
VDMA Metallurgy is the joint platform of metallurgical machinery producers including foundry machinery, metallurgical plants, rolling mills and thermo process technology.

Booth number: Hall D1 - E13
ZPF GmbH
ZPF implemented 1993 the idea of an inverted closed furnace system that has an opposite flue gas duct and can thus combine energy and space efficiency.

Read the full report: www.Foundry-Asean.com

In cooperation with: Ipsos Business Consulting

Read the full report: www.Foundry-Asean.com

In cooperation with: Roland Berger

COMPANIES THAT ARE MEMBERS OF APLINDO MEMBERSHIP

Indonesian Foundry Association:

- A. Ferro
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- Barata Indonesia, PT.
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- Geteka Founindo, PT.
- Growth Asia, PT.
- Hansa Pratama, PT.
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- Nakakin Indonesia, PT.
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- Wijaya Karya Industri and Kontruksi, PT.
- Yamaha Motor Parts Manufacturing Indonesia.
- C. Lead & Lead Alloy
- Indra Eramulti Logam Industri, PT.
- Muhtomas, PT.
- Non Ferindo Utama, PT.
- D. Aluminum Alloy (Smelter)
- Climb Aluminum Industry Indonesia, PT.
- Molten Aluminum Indonesian Producer, PT.
- E. Supplier of Foundry Equipment and Materials
- Airblast Equipment Indonesia, PT.
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- Fuji Electric Indonesia, PT.
- Fujita Manufacturing Co., Ltd.
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- Prolimas Utama Jaya, PT.
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- Tochu Silika Indonesia, PT.

EXHIBITING COMPANIES AT INDOMETAL 2018 / JAKARTA

Exhibiting Company	Booth No	Country
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AKBAR BUDI SAKTI, PT	C01	Indonesia
ALLIED MINERAL	J01 / H01	United States
AMAFOND	K07	Italy
AMSKY INDONESIA, PT	J17	Indonesia
APKABEL - INDONESIAN ELECTRIC CABLE MANUFACTURERS' ASSOCIATION		Indonesia
APLINDO - INDONESIAN FOUNDRY INDUSTRIES ASSOCIATION		Indonesia
APRALEX - INDONESIAN ALUMINIUM EXTRUDERS ASSOCIATION		Indonesia
ASPEP - ASSOCIATION OF METALWORK & MACHINERY		Indonesia
BARALOGAM MULTIJAYA, PT	N09	Indonesia
BEIJING JUXIANGZE TRADING CO LTD	L16	China
BEIJING RON-EN MACHINERY & INTEGRATION CO LTD	L03	China
BSN - NATIONAL STANDARDIZATION AGENCY OF INDONESIA		Indonesia
CAPREFINDO, PT	S17	Indonesia
CHINA METALLURGICAL ENGINEERING & PROJECT CORP	F18	China
CHING TAI COG MACHINE CO., LTD	P02	Taiwan
CHS-ASIA CO LTD	S09	Thailand
CMPFA - DEPARTEMAN TEKNIK METALURGI DAN MATERIAL, FAKULTAS TEKNIK UNIVERSITAS INDONESIA		Indonesia
COMETTO SPA	K01	Italy
DAEHONG KOSTECH CO LTD	S13	South Korea
DATA M SHEET METAL SOLUTIONS GMBH	E14	Germany

Exhibiting Company	Booth No	Country
DAZZTECH SOLUTIONS SDN BHD	J11	Malaysia
DIPONEGORO UNIVERSITY SEMARANG (FACULTY OF ENGINEERING)		Indonesia
DIRECTORATE OF METAL BASED MATERIAL INDUSTRY, MINISTRY OF INDUSTRY, REPUBLIC OF INDONESIA		Indonesia
DITEK JAYA, PT	N17	Indonesia
DOERRENBERG SPECIAL STEELS PTE LTD	D17	Singapore
DR REVOTEK	J15	South Korea
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EJP MASCHINEN GMBH	E07	Germany
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ELITE STEELS PVT LTD	K20	India
EXIM & MFR ENTERPRISE	S12	Singapore
FEDERAL ENGINEERS	L01	India
FORACE POLYMERS PVT LTD	G06	India
FOSECO INDONESIA, PT	S08	Indonesia
FOUNDRY - PLANET LTD.	E15	Germany
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GAMMA - FEDERATION OF INDONESIAN METALWORKS & MACHINERY INDUSTRIES ASSOCIATION		Indonesia
GESELLSCHAFT ZUR F&OUML;RDERUNG DES MASCHINENBAUES MBH (GZF)	E10	Germany
GIAMM -ASSOCIATION OF AUTOMOTIVE PART & COMPONENT INDUSTRIES		Indonesia
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GOLDEN SPOT INDUSTRY INC.	P17	Taiwan
GREENPLUS INDONESIA, PT	G05	Indonesia

Exhibiting Company	Booth No	Country
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HAPLI - INDONESIAN FOUNDRYMEN'S ASSOCATION		Indonesia
HARBISON WALKER INTERNATIONAL, PT	TBA	Indonesia
HEBEI MINHAI PIPE FITTING CO LTD	L12	China
HITACHI HIGH-TECHNOLOGIES	D01	Singapore
HOPPE SCHWINGTECHNIK GMBH	E08	Germany
HOREN INDUSTRIAL CO.,LTD	P01	Taiwan
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INDONESIAN ASSOCIATION OF SMALL & MEDIUM ENTERPRISES		Indonesia
INDOTRADING		Indonesia
INDUCTOTHERM INDONESIA, PT	H01	Indonesia
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MAKMUR META GRAHA DINAMIKA, PT	J01 / H01	Indonesia
MASCHINENFABRIK GUSTAV EIRICH GMBH & CO KG	E06	Germany
MASTAN - INDONESIAN SOCIETY FOR STANDARDIZATION		Indonesia
MERAK MAGNESIUMINDO INDUSTRI, PT	S18	Indonesia
METALLURGICAL COUNCIL OF CHINA COUNCIL FOR THE PROMOTION OF INTERNATIONAL TRADE	L04	China
METALURGI MITRA ABADI, PT	G22	Indonesia
MORESCO INDONESIA	J01 / H01	Indonesia
MORGAN MCA	J01 / H01	Singapore
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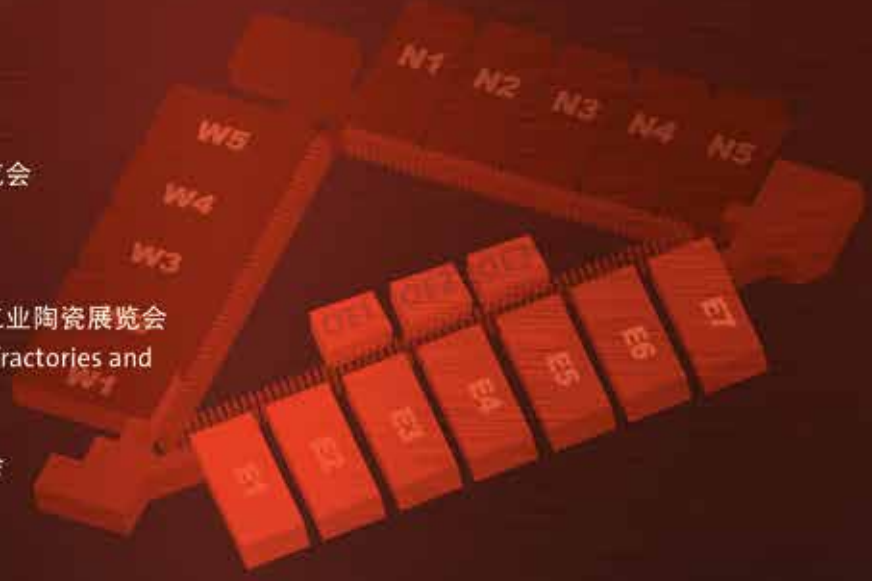

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