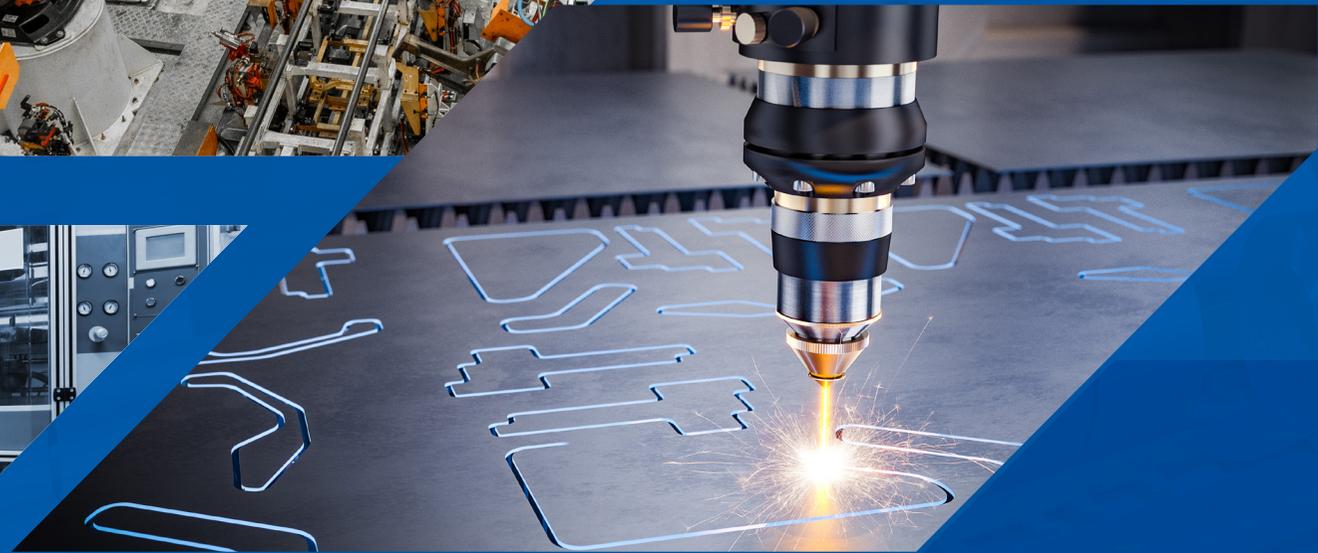




**MALAYSIA'S  
MACHINERY &  
EQUIPMENT AND  
ENGINEERING  
SUPPORTING  
INDUSTRIES**



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# MALAYSIA'S MACHINERY & EQUIPMENT (M&E) AND ENGINEERING SUPPORTING INDUSTRIES

**From humble beginnings in servicing equipment for the resource and agriculture-based industries in the 1970s, Malaysia's Machinery and Equipment (M&E) industry has grown by leaps and bounds in its short history. Today, the sector is a significant contributor to the country's GDP and stands ready to play a major role in transforming the M&E industry within the ASEAN region.**

Owing to its linkages to various large-scale economic sectors, such as manufacturing, construction and services, Malaysia's M&E industry has catalysed the country's transition into a high-technology nation ready for Industry 4.0. It has enabled the production of a wide range of goods that combine electronics, advanced materials and software integration.

The highly competitive M&E industry is consistently strives to innovate new production systems and provide integrated solutions with the most advanced technologies and automation. Today's industry players focus their capabilities on producing high-value-added and high-tech machinery and equipment, emphasising conducting modular manufacturing, research and development (R&D), and design and development (D&D) activities for low-volume, high-complexity and high-mixed products.

Leveraging technology to develop better business practices and approaches has never been more urgent. Automation is no longer an option but a necessity, given the unprecedented level of disruption brought on by the COVID-19 pandemic and movement restrictions. Malaysia's M&E

industry is well-poised to ramp up innovation, automation and smart manufacturing to increase productivity and remain competitive.

Malaysia's capabilities in the robotics and factory automation sub-sectors hold much promise for investors. We are home to approximately 120 major companies that produce advanced, fully automated handling systems incorporate intelligent robotics and Machine-to-Machine (M2M) communication. Prospective investors are invited to consider financing the research and commercialisation of disruptive technologies related to automation and digitalisation for a much-needed boost for business continuity.



# AREAS OF OPPORTUNITY

The United Nations Standard International Trade Classification categorises the M&E industry into four main sub-sectors, each offering investors invaluable prospects for growth, both in Malaysia and by extension, within ASEAN:



Specialised machinery or equipment for specific industry



Metal working machinery and equipment



Power generating machinery and equipment



General industrial machinery and equipment, components and parts



# SPECIALISED MACHINERY OR EQUIPMENT FOR SPECIFIC INDUSTRY

This sub-sector focuses on machinery or equipment that is specially designed and customised for use in a specific sector or process. Targeted industries include semiconductor, electrical and electronics (E&E), solar/photovoltaic, oil and gas, automotive, packaging, plastic extrusion and injection, and agriculture. This sub-sector has attracted top global and capable local manufacturers, providing vast opportunities for growth.

- ▶ Malaysia has attracted some of the world's leading companies in the front-end semiconductor sector such as LAM Research, Ultra Clean Technology (UCT) and COMET.
- ▶ Malaysian M&E manufacturers have the advantage of producing high quality customised machinery with competitive pricing to meet international standards.

- ▶ In the packaging sector, there is an increased demand from the pharmaceutical and medical device industries for automated specialised packaging machines. To meet the medical industry's needs, a well-designed packaging machine in a cleanroom environment would provide effective sealing against bacteria and facilitate the aseptic requirements of the packaged product. Local manufacturers have the capacity to provide various industrial packaging solutions for liquid, powder and other industrial products, including bottling, sealing, filling, wrapping, boxing, cartoning and shrink-wrapping machines.



agriculture sector has created vast investment opportunities for local M&E manufacturers. Agricultural M&E manufactured or assembled by local companies include rotavators, rotaslashers, fertilizer spreaders, tractors, mulchers, poultry rearing and processing equipment, and egg cleaning, grading and packing machines.



# METALWORKING MACHINERY AND EQUIPMENT

This sub-sector offers opportunities in the manufacture of laser cutting machines, machining centres, electro-discharge machines (EDM), milling machines, drilling machines, lathes, shearing machines, bending rolls, stamping machines, press brakes, forging machines and presses. The government is also placing emphasis on the manufacture of high technology numerical control (NC) and computer numerical control (CNC) machines, as well as encouraging companies in the metalworking machinery sub-sector to set up training, reconditioning, upgrading, sales, and distribution centres to support their customers in this region.

- ▶ A number of Malaysian and Malaysian/foreign joint-venture companies are currently undertaking the manufacturing of metalworking machinery for various industrial users such as those in the automotive, E&E as well as other engineering - supporting sectors.
- ▶ Local company Sunfluid Engineering manufactures various types of hydraulic machines, with a press capacity ranging from 20 to 3,000 tonnes for the local market and for export to ASEAN countries, Saudi Arabia, and Japan.



- ▶ AIDA, a world-renowned Japanese metal forming system builder, manufactures high-precision, single- and double-crank mechanical and servo presses from 80 to 300 tonnes. It exports 90 per cent of its products to Asia Pacific, North and South America, and Europe.



# POWER GENERATING MACHINERY AND EQUIPMENT

This sub-sector mainly focuses on boilers, condensers, electric generating sets, turbines, and engines. While most boilers are manufactured for local demand, they are also exported to neighbouring countries such as Indonesia, Philippines, Thailand, and Cambodia. There is also room for growth for local players in the reconditioning or refurbishing of power - generating equipment such as industrial turbines and generators.

► Malaysia is currently the largest manufacturing hub for boilers in Southeast Asia. Boilers are manufactured for various industries, including oil and gas, oleochemicals, petrochemicals, food and beverage, palm oil, rubber, wood, textile, and hospitals.

- Local producers have the capabilities to manufacture internationally acclaimed products and supply industrial boilers, such as utility boilers, water tube boilers, fire tube boilers, package boilers, and combination boilers.
- Generating sets are also being produced for power plants, refineries, exploration platforms, petrochemical plants, and commercial buildings, and are exported to countries such as Singapore, Cambodia and Korea.



Malaysia is projected to be among the fastest growing, driven by increasing energy demands from the expansion of facilities and operations across various industries.



# GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT, COMPONENTS AND PARTS

This is the largest M&E sub-sector, with over 500 local and foreign companies, covers a broad category of products such as air-conditioning plants, cold room equipment, elevators, cranes, conveyor systems, pumps, compressors, welding machines, fans and blowers, heat exchangers, pressure vessels, filtering equipment, valves, bearings, gears and actuators.

▶ Malaysia is recognised as a major supplier of high-speed heavy - lifting tower cranes, oil and gas pedestal cranes, process automation systems and heating, ventilation and air conditioning (HVAC) units. It is also currently one of the largest exporters of air conditioning equipment.

▶ Within this sub-sector, automated material handling equipment (AMHE) and factory automation are gaining traction as the manufacturing sector moves towards Industry 4.0 and smart manufacturing. AMHE and factory automation are critical factors in the adoption of smart manufacturing to help increase workflow efficiency and enhance product quality.



# M&E INDUSTRY EXPORTS AND IMPORTS

The value of Malaysia's M&E exports increased from RM37.7 billion in 2016 to RM57.2 billion in 2023, showcasing the industry's robust growth, anchored by companies focusing on high-tech products such as semiconductors, intelligent machines, advanced metrology and analytical laboratory equipment, robotics and autonomous guided (self-driving) vehicles. Export destinations included Singapore, the USA, Japan, Indonesia and Thailand.

Most M&E imports were advanced, high-tech machines and some general machinery and equipment that were not available locally. Major import sources for Malaysia's M&E industry were China, Japan, USA, Germany and Singapore.

The growth of Malaysia's M&E industry is driven by the continuous inflow of both foreign direct investments and domestic direct investments in various sectors, with the semiconductors, E&E, automotive, oil and gas, aerospace, medical and food processing being among the major ones. The need for high-technology machinery and equipment in these sectors is key to their survival in a highly competitive global environment.

Data provider IHS Markit forecasts Malaysia's M&E industry to grow at 10.1 per cent per annum between 2018 and 2027. Not only will M&E production continue to be a field of interest for foreign investment, other areas of the value chain also provide opportunities for profitable investment. Alongside maintenance, repair and overhaul (MRO), service is also expected to be in high demand due to the high concentration of plants and M&E installations in this region.

SUB-SECTORS	2023 EXPORTS RM BIL (US\$ BIL)**	MAJOR DESTINATIONS	2023 IMPORTS RM BIL (US\$ BIL)**	MAJOR SOURCES
POWER GENERATING M&E	3.3 ( 0.71 )	Singapore, USA, Japan, Germany, UK	14.9 ( 3.24 )	USA, Japan, Singapore, China, Thailand
SPECIALISED MACHINERY OR EQUIPMENT FOR SPECIFIC INDUSTRY	27.8 ( 6.0 )	Singapore, USA, Japan, Indonesia, Thailand	31.1 ( 6.77 )	Japan, Germany, USA, Taiwan, Singapore
METALWORKING MACHINERY AND EQUIPMENT	1.8 ( 0.39 )	Singapore, Hong Kong, Japan, USA	4.6 ( 1.0 )	Japan, Germany, USA, Taiwan, Singapore
GENERAL INDUSTRIAL M&E, COMPONENTS AND PARTS	24.1 ( 5.25 )	Singapore, Hong Kong, Japan, USA, Australia	38.9 ( 8.47 )	Japan, USA, Germany, Singapore, Taiwan
<b>TOTAL</b>	<b>57.2 ( 12.4 )</b>		<b>89.7 ( 19.5 )</b>	

\*\*US\$1=RM4.59 | USD Billions | Source: <https://metsonline.dosm.gov.my/>

# INCENTIVES - M&E INDUSTRIES

To enhance growth and encourage investments in the M&E industry, the Government offers:

## TAX INCENTIVES

- Pioneer Status with a tax exemption of 70% on statutory income for a period of five years; or
- Investment Tax Allowance (ITA) of 60% on qualifying capital expenditure incurred within a period of five years. This allowance can be offset against 70% of the statutory income for each year of assessment.



## REINVESTMENT ALLOWANCE

60% on qualifying capital expenditure for 15 years



## IMPORT DUTY EXEMPTION

For machinery and equipment, raw materials and components



## SPECIAL TAX INCENTIVES

- Pioneer Status with a tax exemption of 100% on statutory income for a period of 10 years; or
- Investment Tax Allowance (ITA) of 100% on qualifying capital expenditure incurred within a period of five years. This allowance can be offset against 100% of the statutory income for each year of assessment.



## SUB-SECTORS TARGETED FOR SPECIAL INCENTIVES

- Machine tools
- Material handling equipment
- Robotics and factory automation equipment
- Packaging machinery
- Specialised process machinery or equipment for specific industries
- Modules and components of the above



# INDUSTRY LEADERS

**Malaysia's M&E industry stands as one of the largest and strongest in ASEAN, offering a wide range of customised products such as end-to-end manufacturing solutions, from design to logistics. This positions the country to meet the increasing demand from both domestic and international manufacturing industries. Currently, an estimated 120 major companies are capable of producing state-of-the-art machinery and equipment integrated with Industry 4.0 technologies, serving various sectors.**

In 2010, Malaysia had 25 locally-owned automation and technology equipment companies with a total market value of RM234 million. By 2023, the number of automation companies had more than doubled to over 50, with the top 10 companies holding a combined market capitalisation exceeding RM25 billion.

The M&E industry, known for its high-technology manufacturing and modern services sectors, demands highly skilled talent. Wages in this sector typically range between RM5,000 to RM10,000. With a strong emphasis on research and development (R&D), design and development (D&D), integration, and customisation, the sector is heavily reliant on skilled manpower. The M&E sector typically generates over 70% of employment opportunities at the managerial, supervisory, and technical levels, making it a talent-driven industry rather than heavily capital-intensive.

Malaysia hosts world-renowned, advanced and sophisticated M&E manufacturers such as AIDA (Japan), VAT (Switzerland), COHU (USA), SKF (Sweden), Bromma (Sweden), Besi (the Netherlands), Lam Research (USA), Bruker (USA), Towam (Japan), ASM (Singapore), Ultra Clean Technology (USA), Comet (Switzerland) and Muehlbauer (Germany).

Malaysian-owned companies have also grown and established themselves as internationally recognised providers of advanced machinery and equipment particularly for the semiconductor and electric vehicle industries. Leading Malaysian firms include ViTrox, Pentamaster, Alliance Contract Manufacturing (ACM), Greatech Integration, Genetec Technology, Cheng Hua Engineering Works, TXMR, Vepro Group, XTS Technologies and SRM.

# SUCCESS STORIES



# SUCCESS STORIES

## LAM RESEARCH



A global leader in semiconductor manufacturing, this US Fortune 500 company announced an investment to build a high-tech manufacturing facility in Penang, Malaysia. This adds to its existing global production footprint, which includes locations in the United States of America, South Korea and Austria. LAM's products are used to make microchips found in electronic devices such as cell phones, laptops, digital cameras, and cars. Today, nearly every advanced microchip in the world is built using LAM technology. LAM Research is the first semiconductor front - end processing equipment company to set up its manufacturing facility in Penang, Malaysia.

## BRUKER



Listed on NASDAQ, this US company is a global developer, manufacturer and distributor of high-performance scientific instruments and analytical and diagnostic solutions. Bruker's expansion of its Malaysian operations is central to its strategy of delivering best-cost, state-of-the-art products from Southeast Asia. The company's product portfolio enables scientists and engineers to explore life and materials at the molecular, cellular and nanoscale levels. These scientific instruments play a vital role in driving customer innovation, productivity and breakthrough discoveries in applied and pharmaceutical applications, microscopy and nanoanalysis, and industrial applications.

## CHENG HUA ENGINEERING WORKS SDN. BHD.



Specialising in providing total integrated engineering solutions for material handling and conveyor systems. Cheng Hua boast a legacy spanning over four decades in automated material handling system design, manufacture, installation and software solutions, It's capacity for reliability and cost-effectiveness has allowed it to maintain a strong market position as a "system integrator" and partner of choice with key customers in automotive, tyre manufacturing and logistics industries.

## UWC GROUP

Evolving from a trading company in Penang to a large local company (LLC) with six manufacturing plants all over the world, UWC shifted from its initial focus on the vertical transport industry (i.e. elevators) and industrial fabrication to producing parts, components and full turnkey assembly for high-applications in the semiconductor, telecommunications, life sciences, medical and heavy-duty machinery sectors. The company is also offering on contract manufacturing and will equip themselves with state-of-the-art machines and equipment to cater for the demand of MNCs from around the globe.

## OERLIKON BALZERS COATING MALAYSIA SDN. BHD.

This Liechtenstein-based company is the world's leading supplier of surface technologies. Through its coating centre in Johor, Malaysia—one of the 109 coating centres worldwide—the company currently serves various customers in the ASEAN region, including those in the automotive, aerospace, medical, and engineering industries in Malaysia and Singapore. Oerlikon Balzers uses Physical Vapour Deposition (PVD), Plasma-Assisted Chemical Vapour Deposition (PACVD), heat treatment and nitriding processes in a vacuum condition to enable the deposition of thin films with defined compositions and specific characteristics.

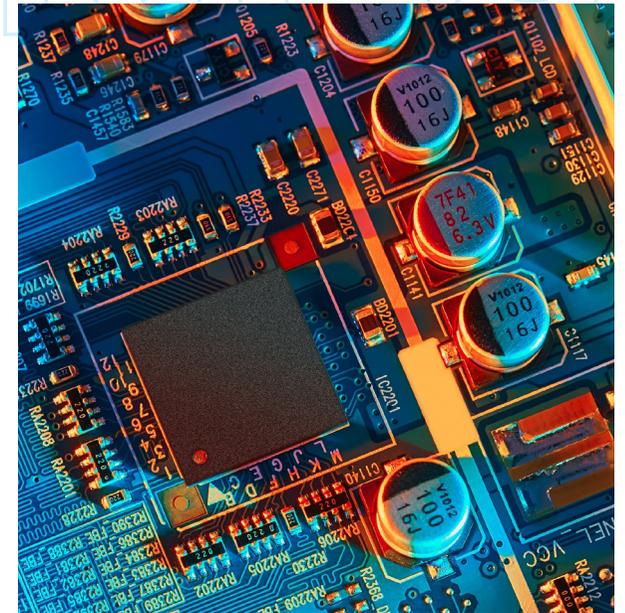
Through its PVD- and PACVD-based coating solutions, Oerlikon Balzers is able to provide low-friction, wear-resistant, and chemically inert thin film coatings of between 0.5  $\mu\text{m}$  and 14  $\mu\text{m}$ . The full strength of Oerlikon Balzers' high-end surface treatments is especially apparent for stringent client requirement i.e. when process-acceleration is required, difficult materials must be cut, or when high-grade optics are important.

# SUCCESS STORIES

## PENTAMASTER CORPORATION BERHAD

This company is another Penang success story, now recognised as a world-class automation and technology solutions provider serving MNCs from various regions, including the United States, Europe, Africa, Asia Pacific, and ASEAN countries. All its products, including semiconductor test handlers, hospital equipment, and material handling systems, are equipped with smart manufacturing technologies such as smart sensors and big data analytics.

Backed by over 25 years of experience in providing integrated and customised solutions for semiconductor, automotive, E&E, pharmaceutical, medical devices, food and beverage and general manufacturing sectors Pentamaster's core competencies include mechanical engineering design, software programming technologies, control engineering, imaging vision and instrumentation design. Pentamaster also provides Smart Solutions such as shop floor management, warehousing management, computerised management and smart control management systems.



## **GREATECH INTEGRATION**

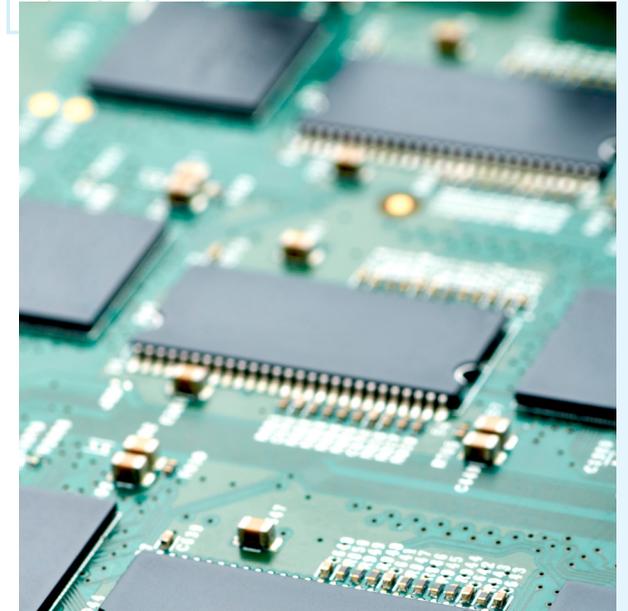


This Malaysian company is one of the world's leading providers of factory automation solutions for various industries, particularly solar, smart devices, semiconductor, energy storage, life sciences, consumer goods and automotive industries. The company boasts a fully capable in-house manufacturing facility, complete with a precision machine shop, sheet metal fabrication, assembly, commissioning and world-class service support. They are well-positioned to serve Fortune 500 companies with innovative and cost-effective solutions and support services.

## **SUNFLUID ENGINEERING SDN. BHD.**



Since its inception in 1988, this company has stood as a pioneer in Malaysia's sheet-metal working machinery sector. It has been steadfast in producing reliable and high-quality hydraulic shears, hydraulic press brakes, bending machines and other custom-built machinery. Sunfluid's range of products also includes factory automation development and trading of machine tools.



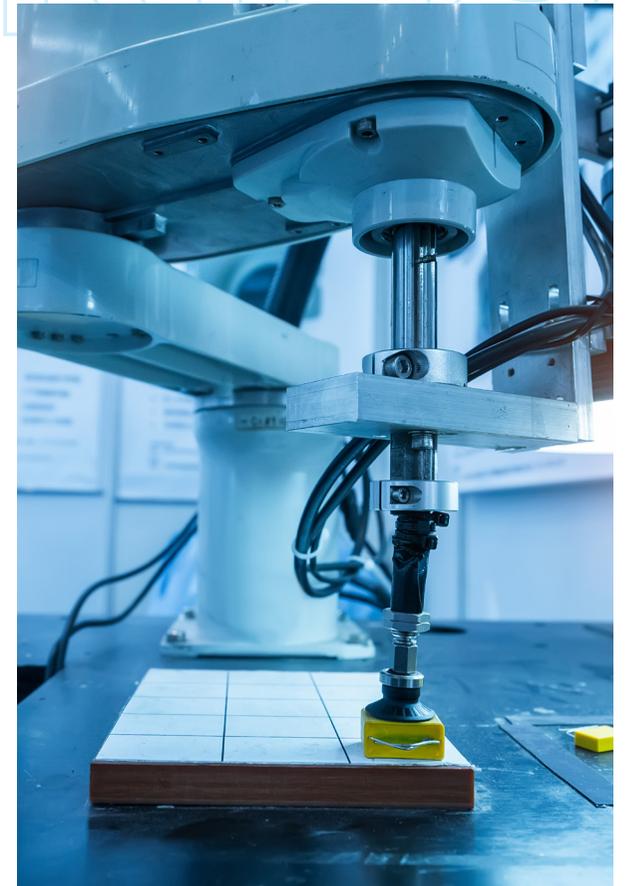
# SUCCESS STORIES

## VITROX TECHNOLOGIES SDN. BHD.

Operating out of Penang, ViTrox specialises in high-speed vision inspection systems for the semiconductor industry. The company provides innovative 3D digital vision inspection solutions for a broad range of semiconductor integrated circuit (IC) packages to major semiconductor manufacturers in Malaysia, Thailand, the Philippines, China, Taiwan, Japan, Korea, India, Europe and the United States of America. ViTrox offers a complete range of inspection systems and a highly customisable one-stop platform that offers data-driven decisions in manufacturing. This platform allows stakeholders to remotely and to visualise, monitor, control and implement condition-based alerts to reduce downtime and increase throughput.

ViTrox provides a complete range of inspection systems namely Machine Vision

System (MVS) which provides reliable, high speed and cost effective inspection solutions to detect semiconductor and optoelectronic components' dimensional and visual defects; Automated Board Inspection (ABI) which can provide superior Advanced X-ray Inspection (AXI) and Advanced Optical Inspection (AOI) solutions for SMT and PCBA lines, and the V2000 AOI for flex and PCB bare boards, and Electronic Communication System (ECS) for high speed, reliable and cost effective I/O and motion embedded solutions for the automation industries. ViTrox has also invested in a Center of Excellence (CoE) for machine vision which aims to create innovative communities and develop integrated supply chains via the sharing and collaborative concept among automation system integrators, MNCs and Institutes of Higher Learning.



## AMERIX METAL MACHINING TECHNOLOGY SDN. BHD.



This wholly owned Malaysian company transitioned from the fabrication of tooling parts to a technology-driven operation by adopting sophisticated, high-precision manufacturing concepts in Computer Integrated Manufacturing (CIM) and process tracking models within a customised Enhanced Resource Planning (ERP) system. Amerix transformed from producing moulds, tools, dies, jigs and fixtures, to making automatic electro-mechanical servo reel-to-reel moulding systems for the back-end semiconductor industry. The machines serve to carry-out the encapsulation of integrated circuits (ICs), a process of which involves coating ICs with an epoxy moulding compound (EMC), a type of plastic widely used in the semiconductor industry.

## ENG TEKNOLOGI SDN. BHD.



Founded in Penang, this regional manufacturing powerhouse specialises in precision casting and machining has commenced the switch from its labour-intensive operations to smart manufacturing processes. This modernisation effort is to reduce its unskilled foreign staff, increase its local technical and highly skilled workers, and enable the production of new high-end products for use in autonomous (“self-driving”) vehicles, semiconductor and optics. The project will focus on production automation via digital shop floor management and automation, smart quality assurance and smart warehousing. Existing local manpower will also be upskilled to facilitate for the adoption of Industry 4.0 technologies such as machine-to-machine (M2M) communication, predictive maintenance, supply chain management and data management.

## PENANG AUTOMATION CLUSTER (PAC)



This joint venture (JV) consisting of three local companies have undertaken a small and medium enterprises (SMEs) cluster project to produce factory automation machines, related modules and components. The cluster will build and manage the local supply chain ecosystem, supporting large local companies (LLCs) and MNCs with regard to advanced, innovative and cost-effective engineering of sheet metal fabrication, tooling, machining, and metal finishing services. The cluster will employ Industry 4.0 technology to enable clients to track and monitor their orders in real-time and enhance efficiency and traceability in the production process. The JV company will provide training and assistance to the SME cluster to develop and elevate local SME capabilities.

# CONDUCTIVE INVESTMENT CLIMATE

Malaysia's sound infrastructure, attractive incentives, skilled workforce, laws and pro-business policies form a conducive environment for investment, earning recognition from both local and international industry players.

“Malaysia offers investors a dynamic and vibrant business environment with the ideal prerequisites for growth and profits. Malaysia's key strengths include a well-developed infrastructure and a productive workforce. A politically stable country with a well-developed legal system, Malaysia also provides attractive incentives for investors through its collaboration with ministries, agencies and stakeholders.”

- Oerlikon Balzers Coating Malaysia Sdn. Bhd.

“Relative to its global and regional peers, Malaysia is highly rated for its open market-oriented economy. With supportive government policies such as, its liberal investment policies and tax incentives, coupled with a sound and stable financial system, Malaysia's conducive environment has enabled companies like us to grow by leaps and bounds. A special thanks to MIDA for its support, and we are heartened to witness our success in delivering high technology and quality solutions through our sustained R&D effort.”

- Pentamaster Corporation Berhad

“The Penang Automation Cluster (PAC) is the first-of-its-kind, state-of-the-art integrated high precision parts and fabrication cluster set up by three LLCs in Penang, namely ViTroX, Pentamaster and Walta Engineering. It is showcasing a one-stop local supply chain ecosystem supporting LLCs and MNCs on advanced, innovative and cost-effective precision parts and fabrication. PAC is equipped with Smart Manufacturing V-One system for real-time monitoring and triggering control of machines utilisation, machines capacity and advance data analysis. PAC has continuously enjoyed pro-business government policies, the well-developed infrastructure and vibrant business environment in Malaysia.”

- Penang Automation Cluster (PAC)

“Malaysia’s market-oriented economy, supportive government policies and a large local business community that is ready to do business with international corporations have made Malaysia an attractive export-based manufacturing hub in the region.”

- Cheng Hua Engineering Works Sdn. Bhd.

“Malaysia’s industry-friendly incentives and stable economic policies allow companies tapping into the global market to remain competitive with countries like Korea, Taiwan, Japan and the EU.”

- Sunfluid Engineering Sdn. Bhd.

“Malaysia is ideal for equipment design and development. It also has strong supporting industries to facilitate equipment manufacturing.”

- ViTrox Technologies Sdn. Bhd.

“With more than 40 years of industrial experience and trained by global industry leaders, Malaysia has one of the strongest supply chains in the region, making Malaysia the preferred investment destination.”

- UWC Group

“Malaysia’s industry-support incentives, economically driven policies as well as a well-educated and reliable workforce have enabled Mühlbauer to remain competitive in an increasingly price-driven global market.”

- Mühlbauer Technologies Sdn. Bhd.

“Malaysia is an attractive destination for investors as the Malaysian Government is business friendly, supported by ministries, agencies and stakeholders. Its strategic geographical location in the middle of ASEAN further strengthens Malaysia’s position in attracting international corporations, with access to worldwide airports and ports across the country. Furthermore, Malaysia more than 40 years of industry experience has cultivated effective and efficient supply chains with well-developed local suppliers, vendors and supporting industries. The Malaysian Government also plays a significant role in enhancing and developing skills-based education and training to develop workforce capability across the industry for a better quality talent pool.”

- Greatech Integration

# ENGINEERING SUPPORTING INDUSTRY (ESI)

Malaysia's Machinery and Equipment (M&E) industry is heavily bolstered by the Engineering Supporting Industry (ESI), which has become a key driver not only for the M&E sector but for nearly all industries. Recognised globally for its world-class manufacturing standards, Malaysia's ESI demonstrates expertise in providing products and services that are competitive in quality, value, and delivery timelines on the global stage.

With over 1,000 engineering support and services companies across the country, Malaysia's ESI includes integrated and total solution providers. These companies have progressed to supply low-volume, high-mix products, as well as various parts and modules that cater to the outsourcing and procurement needs of high-tech industries.

## ONE-STOP-CENTRE

With over 1,000 engineering support and services companies across the country, Malaysia's ESI includes integrated and total solution providers. These companies have progressed to supply low-volume, high-mix products, as well as various parts and modules that cater to the outsourcing and procurement needs of high-tech industries.

# ESI SUB-SECTORS

Malaysia's ESI encompasses eight activities that provide vital support to both the manufacturing and services sectors inclusive of mould, tools and dies, machining, metal casting, metal stamping, surface engineering, heat treatment, forging, and metal fabrication.

## MOULD, TOOLS AND DIES

- Recognised as a leading sub-sector of ESI.
- In Malaysia, this sub-sector has the capability of manufacturing most types of moulds, dies and tools to complement the needs of the manufacturing sector.
- Over 350 companies operates in this space, including Sum Hing Engineering Works, Miyazu (M), Ingress Katayama, HL Engineering, HH Precision Mould, Fuji Dies Kogyo, Zeno Tech and HPMT industries.
- Opportunities and large market potential exist for large mould and dies that are more than 10 MT and for high-precision moulds and dies for the E&E industry.

## METAL CASTING

- › Over the past 50 years, Malaysia's foundry industry has attained a significant level of technological expertise in serving the traditional industries of tin, rubber, and palm oil.
- › More than 70 companies currently operate in this field, producing castings for engineering spare parts, quality machinery spare parts, pumps

## MACHINING

- › The local machining industry is highly capable of meeting the country's machining needs and provide total machining solutions to the manufacturing sector. More than 250 companies are undertaking specialised precision services and general supporting machining services.
- › Companies have high levels of technological capabilities and utilise state-of-the-art computer numerical control (CNC) machine tools for most of their operations. They are able to undertake high-precision multi-axes, large format and free-form machining activities.
- › A number of companies have diversified into the design and manufacturing of modules, particularly for the semiconductor and E&E industries. They have also moved up the value chain from making standard parts (high volume, low mix) to more complex and precise parts (low volume, high mix) using exotic materials, especially for the oil and gas, aerospace, and medical industries.
- › Opportunities and large market potential exist for specialised machining services for selected industries, i.e. the oil and gas, aerospace and medical sectors.

and pump parts, palm oil mill machinery parts, automotive components, elevator parts and other machinery parts.

- › Opportunities and large market potential exist for larger custom-made sand casting and component casting for selected industries, i.e. oil and gas, aerospace and medical industries.

## METAL STAMPING

- › The metal stamping industry in Malaysia is an established industry supplying stamped parts to a wide range of industries such as E&E, automotive, machinery and equipment, precision measuring and testing equipment.
- › Companies in this sub-sector have acquired the capacity and technical capabilities to serve the various market needs of MNCs such as Panasonic, Sony, Hitachi, Toshiba, Dell, Yamaha, Thomson, Philips and Hewlett Packard.



# ESI SUB-SECTORS

## **SURFACE ENGINEERING**

- ▶ This sub-sector has the capability and capacity to cater diverse needs of the industry requirements, offering a variety of plating operations such as batch and continuous precision electroplating, electroless plating, cathodic electrodeposit, physical vapor deposition (PVD), chemical vapor deposition (CVD) and plasma-assisted chemical vapor deposition (PACVD).
- ▶ Companies in this sub-sector serve of notable multinationals in the E&E and automotive industries. Opportunities and large market potential exist for services for the oil and gas, aerospace, medical, LED and solar/photovoltaic industries.

## **HEAT TREATMENT**

- ▶ This sub-sector offers continuous mesh-belt heat treatment, vacuum hardening, carburising, carbonitriding, nitriding, nitro-carburising, annealing, normalising and tempering for various of metal products.
- ▶ Heat treatment services for high-carbon steel and alloy steel materials such as moulds and dies, critical parts for bearings and automotive components, are the latest additions to the list of products already serviced, which include bolts, nuts, shafts, gears, pins and springs.

## **FORGING**

- ▶ This sub-sector comprises companies that produce small and medium forged parts for the automotive and general manufacturing sectors. Most companies have the capability to produce components of up to 200mm in size and 50kg in weight with press machine capability ranging from 16MT to 600MT.
- ▶ The growth of global oil and gas machinery and equipment (M&E) manufacturers setting up in Malaysia has created substantial opportunities for the local forging industry. At present, larger forgings are primarily imported from countries like Korea, Italy, Germany, India, and Eastern Europe, presenting a significant market potential for local players.

- ▶ Prospects for growth are available through expansion activities in the mould and dies sub-sector, M&E manufacturing industries, and production of downstream products of iron and steel, secondary products, automotive parts and component manufacturing. Investments encouraged, especially those incorporating the latest vacuum carburising and vacuum hardening technology.

## **METAL FABRICATION**

- ▶ Malaysia's metal fabrication sub-sector has developed world-class capabilities, which can be classified into four key categories:
  - Fabrication for the offshore/onshore oil and gas industry – Work includes fabrication for offshore oil drilling platforms (e.g., jackets, production modules, decks, accommodation modules) and related industrial onshore activities such as petroleum refineries, petrochemical plants, and storage facilities.
  - Fabrication for building and civil construction – Companies fabricate steel superstructures for high-rise buildings, bridges, flyovers, transmission towers and other infrastructural facilities like ports and airports.
  - Fabrication for processing and manufacturing plants – Companies undertake turnkey projects to build, install and commission processing plants in the country.
  - Fabrication for industrial machinery and equipment structures and components – Many companies have the capability to supply the needs of the local machinery and equipment manufacturing industry.
- ▶ This sub-sector is considered to be fairly established. In the building and construction industry, many local fabrication companies have begun to source projects internationally. As a result, several local fabricators have gained international recognition for their expertise and capabilities.

# INCENTIVES - ESI - SUBSECTORS

To enhance growth and encourage investments in the engineering supporting sector, the Malaysia Government offers:

## TAX INCENTIVES



- Pioneer Status with a tax exemption of 70% on statutory income for a period of five years; or
- Investment Tax Allowance of 60% on qualifying capital expenditure incurred within a period of five years. This allowance can be offset against 70% of the statutory income for each year of assessment.

## REINVESTMENT ALLOWANCE



- 60% on qualifying capital expenditure for 15 years

## IMPORT DUTY EXEMPTION



- For machinery and equipment, raw materials and components



# SMART MANUFACTURING: THE WAY FORWARD

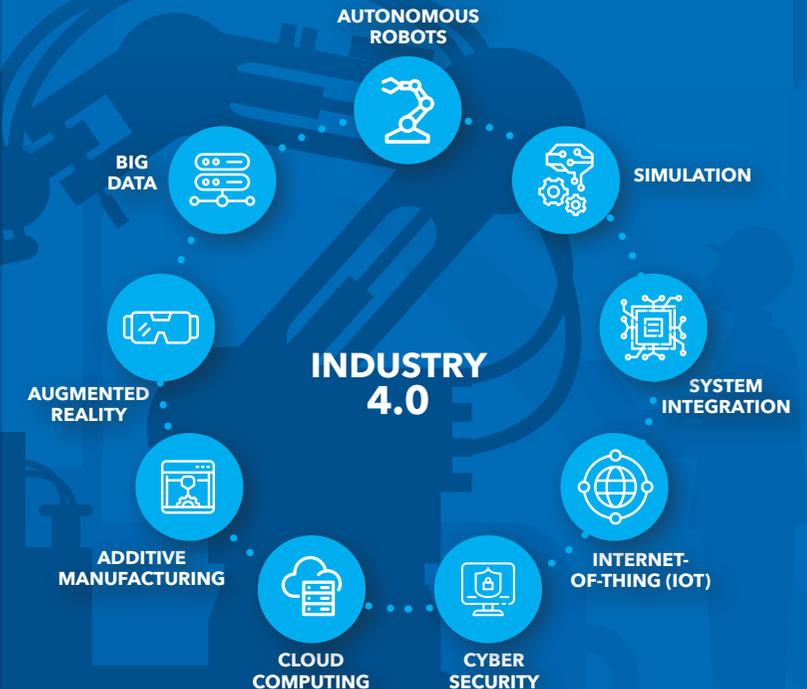
Malaysia has embraced Industry 4.0 – the digitisation of manufacturing – through its Industry4WRD policy, positioning the country as a strategic partner for global manufacturers and a primary hub for high-tech sectors. Malaysia’s M&E sector is a key beneficiary of this policy, with local manufacturers increasingly revolutionising their production processes and benefitting from cutting-edge Industry 4.0 technologies such as the Industrial-Internet-of-Things (IIoT), robotic process automation, artificial intelligence, cloud and edge computing, and big data analytics.

The adoption of additive manufacturing technology in creating parts or prototypes consumes less time, reduces cost and provides more flexibility in creating higher precision products. 4D simulation of machines, production processes or product life cycle through real-time data give engineers more space for testing and development prior to commercialisation. This ensures seamless operations and full design optimisation.

Crucial data obtained from machines spurs new data-driven business such as

providing feedback or alerts for predictive maintenance, results of diagnostic checking, recovery action, remote monitoring and traceability function through accessible dashboards or platforms.

Industry 4.0 solutions help M&E companies improve their operations via smart processes and new business model innovations as well as gain insight into customising designs of the next generation M&E. The rollout of 5G telecommunications in the country by 2023 is also expected to provide fresh momentum to the M&E industry.



Source: Aethon.com

# INDUSTRY4WRD

## THE VISION

Malaysia's **vision** for manufacturing sector in the next 10 years

Strategic Partner for Smart Manufacturing and related services in Asian Pacific

Primary destination for high-tech industry

Total solutions provider for advanced technology

## THE NATIONAL GOALS

Specific **goals** to guide and measure the progress of transformation

Labour Productivity Growth

Manufacturing contribution to economy

Innovation capacity

High-skilled jobs

## THE SHIFT FACTORS

A set **shift factors** that need to be optimised in a balanced manner



## THE ENABLERS

Specific **enablers** that determine the strategies, policies and action plans



Source: miti.gov.my

# MALAYSIA – YOUR LOCATION FOR M&E INVESTMENTS



Highly skilled manpower for research and development, and engineering design activities.



A mature engineering supporting industry for the outsourcing of modules, parts and components, and engineering services.



Attractive and competitive incentives for the manufacture and assembly of high technology and specialised M&E.



A strategic gateway to the ASEAN market, with a population of 664.9 million people in 2021 and projected total GDP of US\$6.7 trillion by 2030.



Well-developed infrastructure which includes excellent land, sea and air connectivity, and integrated telecommunication systems.



Established M&E ecosystems, specifically for high-technology industries such as the semiconductor, palm oil, oil and gas, factory automation, and material handling industries.

# STRATEGIC PARTNERSHIPS

Malaysia offers a compelling proposition for companies seeking a strategic and cost-effective outsourcing destination for engineering supporting services. With its ideal location in the heart of Southeast Asia, a mature and stable economy backed by an integrated infrastructure, it is of little surprise that foreign interest has grown.

The key to considering Malaysia as the region's engineering supporting outsourcing hub of choice is the concept of value and quality. Foreign firms have chosen to remain in Malaysia and many more are looking for joint ventures or seeking to bring business to the country because of the promising rates of return. Malaysia makes for an extremely competitive destination for the regional outsourcing of engineering supporting services and the nation looks forward to welcoming future investors.



**Malaysia has signed and implemented various free trade agreements (FTA), which include seven bilateral FTAs with Japan, Pakistan, India, New Zealand, Chile, Australia and Türkiye. In addition, Malaysia is part of nine regional FTAs, which include the ASEAN Free Trade Area (AFTA) with Brunei, Cambodia, Indonesia, Laos, Myanmar, the Philippines, Singapore, Thailand, and Vietnam, as well as agreements under the Regional Comprehensive Economic Partnership (RCEP) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), further enhancing trade connections across the region and globally.**

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