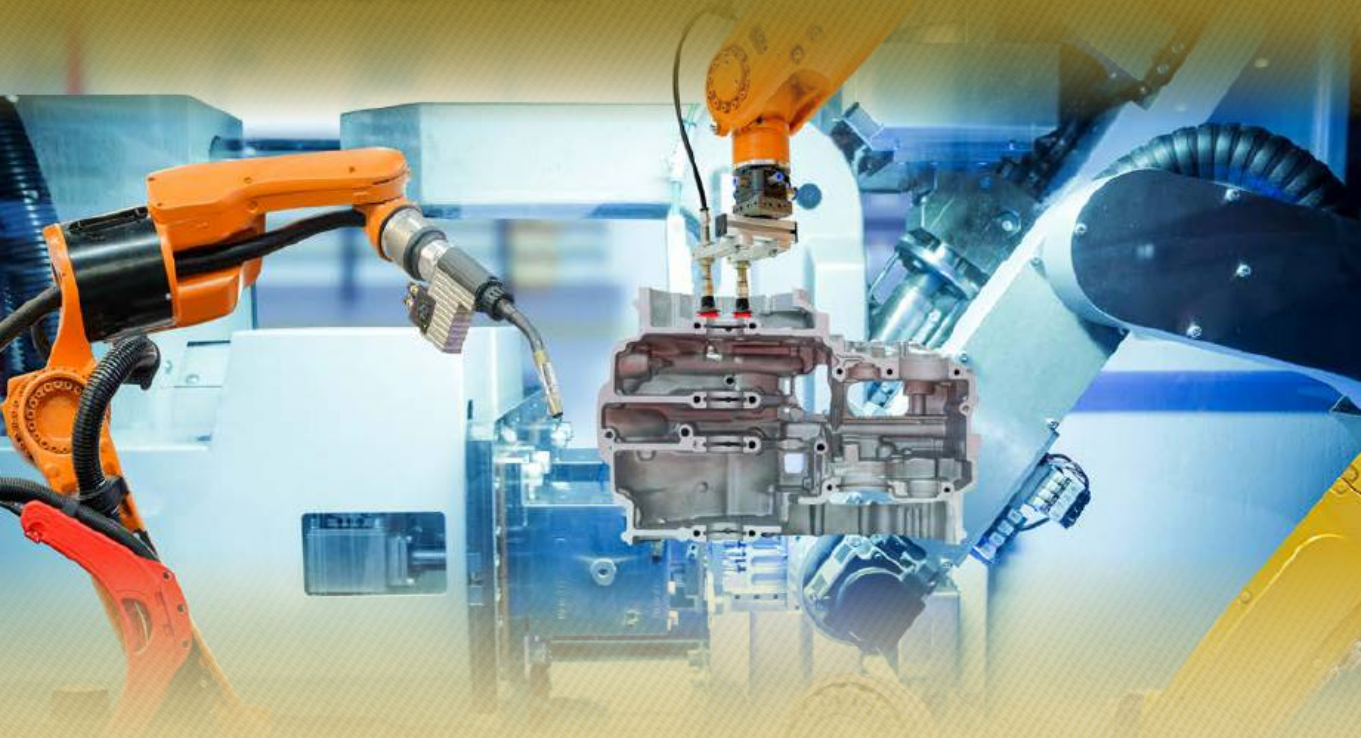


Malaysia's Machinery & Equipment and Engineering Supporting Industries



THE MACHINERY AND EQUIPMENT (M&E) INDUSTRY

Malaysia hosts world renowned advanced and sophisticated M&E manufacturers such as AIDA, SKF, Cohu, VAT, Oerlikon Balzers, Favelle Favco, Bromma, Vitrox, Besi, Mühlbauer, SRM ,FMC that leverages on the nation's conducive business eco-system.

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 & components and engineering services.
- Attractive incentives for the manufacture and assembly of high technology and specialised M&E.
- A strategic gateway to the ASEAN market population of 634 million people in 2017 and total GDP of US\$6.7 trillion by 2030.
- Well-developed infrastructures including excellent land, sea and air connectivity, and integrated telecommunication systems.

- Malaysia as the Regional Production Hub for M&E
- To Promote High Technology & High Value Added M&E
- Centre for Training, Reconditioning & Upgrading of M&E, Sales and Distribution Center



Promoting M&E Growth

Machinery and Equipment (M&E) industry is one of the catalytic subsector identified under the 11th Malaysia Plan to spur the country's economic transformation to greater prosperity, due to its cross cutting linkages with all economic segments such as the primary, manufacturing and services sectors. The adoption of technological advancement would steer the country's progression to become a high income nation by 2020.

To enhance the growth and encourage investments in the M&E sector, the Government offers the following:-

- **Normal tax incentives :**
 - (a) Pioneer Status with tax exemption of 70% of statutory income for a period of 5 years, or
 - (b) Investment Tax Allowance of 60% on qualifying capital expenditure incurred within a period of 5 years. This allowance can be offset against 70% of the statutory income for each year of assessment.
- **Special tax incentives :**
 - (c) Pioneer Status with tax exemption of 100% of statutory income for a period of 10 years, or
 - (d) Investment Tax Allowance of 100% on qualifying capital expenditure incurred within a period of 5 years. This allowance can be offset against 100% of the statutory income for each year of assessment.

Targeted sub-sectors for these special incentives are as follows: -

- machine tools;
 - material handling equipment;
 - robotics and factory automation equipment;
 - packaging machinery;
 - specialised process machinery or equipment for specific industry; and
 - modules and components of the above
- **Reinvestment Allowance** of 60% on qualifying capital expenditure for 15 years.
 - **Import duty for machinery and equipment; raw materials and components.**



Opportunities

The M&E industry is highly competitive and consistently striving to innovate new production systems and provide integrated solutions with the most advanced technologies and automation.

The Asia Pacific region is poised to be the epicentre of business and trade in the future coming years. An increasing number of MNCs are choosing Asia Pacific as the hub to manage their business and trade in Asia as well as considering alternative locations within this region, outside China and India. ASEAN economies being the second-fastest growing in Asia after China have the potential to be their second hub in Asia.

From serving as contract manufacturers to Original Equipment Manufacturers (OEMs), more local companies are already undertaking R&D, engineering design, innovation and system integration and developing proprietary M&E for global exports. Thus Malaysia is increasingly becoming a choice destination for Multinational companies seeking to outsource their manufacturing processes. Malaysia's engineering supporting companies have been also groomed to provide consistent quality of production and on-time delivery.

Exports of M&E have exceeded more than RM40.2 billion (*US\$10.3 billion*) in 2017 which stood at RM41.4 billion (*US\$9.5billion*) in 2019. Export destinations include Singapore, the USA and Japan.

Imports have also increased from RM31.9 billion (*US\$10.6 billion*) in 2000 to RM69.7 billion (*US\$15 billion*) in 2019, indicating Malaysia's dynamic and rapidly growing economy. Imports are mainly for advanced, high-tech machines and components and some general machinery & equipment that are not available locally.

Exports

Sub-Sectors	2014	2015	2016	2017	2018	2019	Major Destinations
	RM bil (US\$ bil)*	RM bil (US\$ bil)**	RM bil (US\$ bil)*	RM bil (US\$ bil)'	RM bil (US\$ bil)'	RM bil (US\$ bil)''	
Power Generating M & E	2.3 (0.7)	2.6 (0.7)	2.6 (0.6)	3.4 (0.8)	3.3 (0.8)	3.9 (0.9)	Singapore, USA, Japan, Germany, UK,
M & E for Specific Industries	10.7 (3.1)	14.5 (4.1)	15.2 (3.5)	16.2 (4.2)	16.1 (4.1)	16.2 (3.7)	Singapore, USA, Japan Indonesia, Thailand
Metalworking M & E	1.7 (0.5)	1.6 (0.5)	1.5 (0.3)	2.0 (0.5)	1.9 (0.5)	1.5 (0.3)	Singapore, Hong Kong, Japan, USA,
General Industrial M&E, Components and Parts	15.3 (4.4)	17.6 (5.0)	18.4 (4.3)	18.6 (4.8)	19.2 (4.9)	19.8 (4.5)	Singapore, Hong Kong, Japan, USA, Australia
TOTAL	30.0 (8.6)	36.3 (10.4)	37.7 (8.4)	40.2 (10.3)	40.5 (10.3)	41.4 (9.5)	

Imports

Sub-Sectors	2014	2015	2016	2017	2018	2019	Major Sources
	RM bil (US\$ bil)*	RM bil (US\$ bil)**	RM bil (US\$ bil)*	RM bil (US\$ bil)'	RM bil (US\$ bil)'	RM bil (US\$ bil)''	
Power Generating M&E	11.0 (3.1)	11.7 (3.3)	14.3 (3.3)	15.1 (3.9)	15.0 (3.8)	15.3 (3.5)	USA, Japan, Singapore, China, Thailand
M&E for Specific Industries	16.3 (4.7)	17.2 (4.9)	17.3 (4.0)	25.1 (6.4)	23.9 (6.1)	21.0 (4.8)	Japan, Germany, USA, Taiwan, Singapore
Metalworking M&E	4.2 (1.2)	3.9 (1.1)	3.6 (0.8)	4.6 (1.2)	4.7 (1.2)	4.7 (1.2)	Japan, Germany, USA, Taiwan, Singapore
General Industrial M&E, Component and Parts	23.1 (6.6)	26.7 (7.6)	29.9 (7.0)	33.7 (8.6)	30.1 (7.7)	28.7 (6.6)	Japan, USA, Germany, Singapore, Taiwan
TOTAL	54.6 (15.6)	59.5 (17.0)	65.1 (15.1)	78.5 (20)	73.7 (18.8)	69.7 (16.0)	

US\$ 1 = RM3 *US\$1 = RM3.5 **US\$1 = RM4.3 'US\$1 = RM3.9 ''US\$1=RM4.35

Source: Malaysia External Trade Development Corporation (MATRADE)

The growth of Malaysia’s M&E industry is driven by the continuous inflows of both foreign direct investments and domestic investments in various sectors; among the major sectors are the semiconductor, electrical & electronics, automotive, oil & gas, aerospace, medical and food processing. The need for high-technology M&E in these industries is key to their survival within a global environment and will accordingly continue to grow in the future. According to IHS,

Malaysia’s M&E industry is forecasted to grow at 10.1% per annum from 2018 until 2027.

Not only will M&E production continue to be the field of interest for foreign investment, other areas of the value chain also provide opportunities for profitable investment. Service and maintenance, repair and overhaul (MRO) are also in high demand due to high density of plants and M&E installations in this region.

Malaysia's M&E Sector

Malaysia's M&E manufacturing offers opportunities in four major sub-sectors:

- Specialised process machinery or equipment for specific industry
- Metalworking machinery
- Power generating machinery and equipment
- General industrial machinery & equipment, components and parts

1. SPECIALISED PROCESS M&E FOR SPECIFIC INDUSTRY	
<p>This sub-sector refers to M&E which is specifically designed and customized for use in a specific sector or process. Industries targeted include electrical & electronics, solar/ photovoltaic, semiconductor, oil and gas, automotive, packaging, plastic extrusion & injection, agriculture, etc.</p> <p>In the electrical & electronics sector, Malaysia is a production base for the world's top electronics companies such as Intel, NXP, Renesas, Keysight, Agilent LDA, Hitachi, Infineon, Texas Instruments, and X-Fab. In addition, world's top solar companies i.e. First Solar, Hanwa Q-Cells and Sunpower have set up their operations in Malaysia. M&E manufacturers have the advantage of producing machinery at competitive prices and benefit from the close proximity to clients for back-up service and after sales service. The local companies are capable of producing various types of M&E with international quality standards for these manufacturers.</p> <p>In the oil & gas sector, the world's leading manufacturers of machinery and equipment have located their operations in Malaysia for deep water production equipment. With increasing growth of deep water activities in the South China Sea and off North-West Australia, the market for subsea oil and gas production equipment and technology is expected to increase.</p> <p>In the packaging sector, they are increasing demand for automated specialized packaging machine from the pharmaceutical and medical devices industries. A well designed packaging machine in cleanroom environment for medical industry will provide effective sealing against bacteria and facilitate aseptic presentation to the packaged product.</p> <p>Local manufacturers are capable in providing various industrial packaging solutions for liquid, powder and other industrial products. This include bottling, sealing, filling wrapping, boxing, cartoning and shrink wrapping machines.</p> <p>The industry is quite established and able to engage in customize integrated packaging solutions especially in food & beverages industry.</p> <p>The increasing mechanization of the agriculture sector has created vast investment opportunities in the manufacturing of M&E to meet the needs of the sector. Agricultural M&E manufactured/ assembled by the local companies include rotavators, rotaslashers, fertilizer spreaders, tractors, mulchers, related attachments, poultry rearing & processing equipment, and egg cleaning, grading & packing machines.</p> <p>The plastic sector is considered a well established industry in Malaysia. However, there are currently only three local companies manufacturing plastic extrusion machines.</p>	<p>Specialised M&E for Specific Industry</p> <p>Major Companies in Production:-</p> <p>(i) Electrical & Electronics M&E :</p> <ul style="list-style-type: none"> • Semiconductor <ul style="list-style-type: none"> - SRM - ViTroX - Cohu - Pentamaster - MI Equipment - BESI Apac - ASM - Visdynamics - Muehlbauer <p>(ii) Oil & Gas M&E :</p> <ul style="list-style-type: none"> • Exploration and production <ul style="list-style-type: none"> - FMC - Aker Solutions - OneSubsea - Halliburton - Asiaflex - Baker Hughes - Schlumberger • Engineering and fabrication <ul style="list-style-type: none"> - Sime Darby Energy - KNM Group - SapuraKencana - MHB • Solar <ul style="list-style-type: none"> - TT Vision - Greatech Integration - Waftech • Hard disc drive <ul style="list-style-type: none"> - Genetec - Walta - Ibronx • LED <ul style="list-style-type: none"> - AGS Automation - Dominant Opto Technologies <p>(iii) Packaging M&E :</p> <ul style="list-style-type: none"> • Fluidmech Engineering • Serac Asia • Master Hi-Tech • AFA Automation • MH Multipack • Easypack <p>(iv) Agricultural M&E :</p> <ul style="list-style-type: none"> • Cultivation <ul style="list-style-type: none"> - Emdek Engineering - Howard Alatpertanian - Changlin Machinery - Sime Darby TMA • Poultry <ul style="list-style-type: none"> - BD Agriculture - Eurasia - Nabel Asia - GSI Asia - Kyoritsu - GSI Group <p>(v) Plastic Extrusion Machine :</p> <ul style="list-style-type: none"> • Micromagna Engineering • Sunrich Engineering • Sama Plastic



2. METALWORKING MACHINERY

The metalworking machinery sub-sector presents vast opportunities in the manufacture of M&E such as **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.**

Several Malaysian and Malaysian/Foreign joint-venture companies are currently undertaking the manufacturing of metalworking machinery for various industrial user such as automotive, electrical & electronics as well as other engineering supporting sectors.

AIDA, a world renowned leading Japanese metal forming system builder, is currently engaged in the manufacture of high precision single/ double crank mechanical and servo presses from 80 to 300 tonnes. It exports 90% of its products to Asia Pacific, North and South America and Europe.

Local company, Sunfluid Engineering manufactures various types of hydraulic machines, with press capacity ranging from 20 to 3,000 tonnes for the local market and for export to ASEAN countries, Saudi Arabia and Japan.

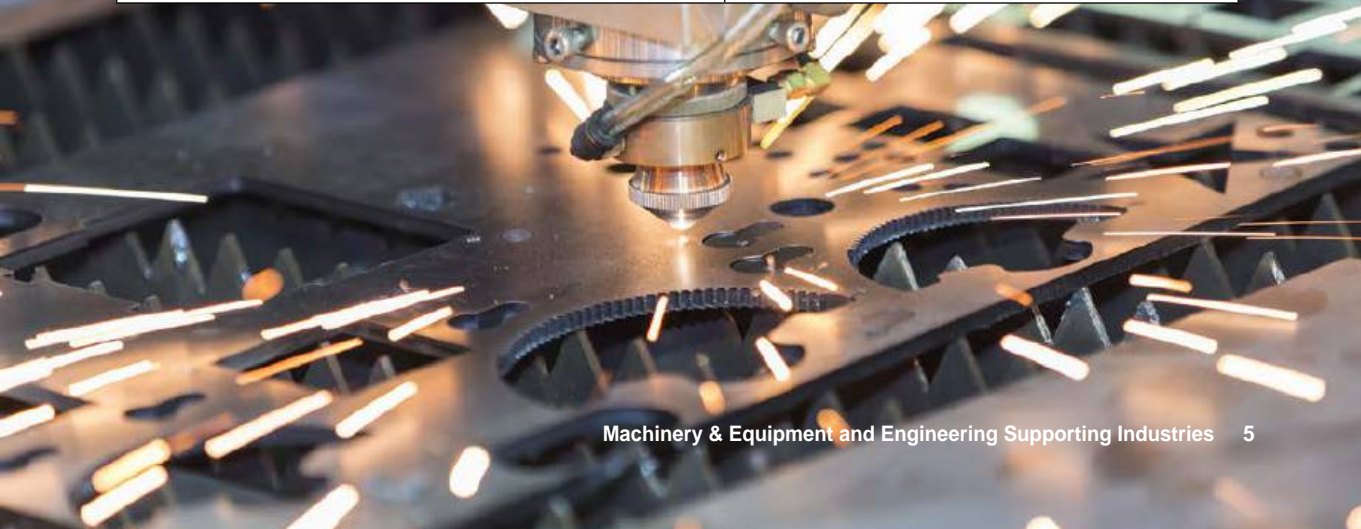
There is great potential for the manufacture of metalworking machinery and the government's emphasis is on high technology, NC and CNC machines.

The government is also encouraging companies in the metalworking machinery sector to set up training, reconditioning, upgrading, sales and distribution centre to support their customers in this region.

Metalworking Machinery

Major Companies in Production:-

- AIDA Engineering
- Sunfluid Engineering
- Hydra-Link Engineering
- Eonmetall Technology
- Makino Asia



3. POWER GENERATING MACHINERY AND EQUIPMENT

The power generating M&E sector mainly comprises boilers, condensers, electric generating sets, turbines and engines.

Malaysia is currently the largest manufacturing hub of boilers in the South East Asia region. Most of the boilers manufactured cater for the local demand from various industries ranging from oil & gas, oleochemicals, petrochemicals, food and beverages, 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. These boilers are exported to neighbouring countries such as Indonesia, the Philippines, Thailand and Cambodia.

Apart from boilers, four companies are producing generating sets for power plants, refinery, exploration platforms, petrochemical plants and commercial buildings. The generators are also exported to countries such as Singapore, Cambodia and Korea.

Power generating M&E is projected to be among the fastest growing M&E driven by energy needs from expansion of facilities and operations across various industries. Opportunities also exist for local players to provide reconditioning/ refurbishing of power generating equipment such as industrial turbines and generators.

Power Generating M&E

Major Companies in Production:-

(i) **Boilers :**

- Mechmar Boilers
- Vickers Hoskins
- Advance Boilers
- Amalgamated Metal Corp.
- Enco Systems
- Petra Boilers
- Tenaga Tiub
- Transtherm Engineers

(ii) **Generators :**

- Sime Darby Industrial
- UMW Industrial Power
- Hong Seng Generator
- MTU Services

(iv) **Turbines and components :**

- Turboservices Overhaul
- Noorisba Energy
- Serba Dinamik Turbo Machinery
- Galaxy Energy Technologies
- CS Wind Malaysia





4. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT, COMPONENTS AND PARTS

The **general industrial machinery and equipment, components and parts sub-sector** covers a broad category of products such as **air-conditioning plants, cold room equipment, elevators, cranes, conveyor systems, pumps, compressors, welding machines, fans & blowers, heat exchangers, pressure vessels, filtering equipment, valves, bearings, gears, actuators, etc.**

General Industrial M&E is the largest subsector and export contributor to the M&E sector. They are over 500 companies consisting local and foreign. In this subsector, Malaysia is recognized as a major supplier of high speed heavy lifting tower cranes, oil & gas pedestal cranes, process automation system and HVAC unit. Malaysia is currently one of the largest exporters of air conditioning equipment.

Within the general industrial M&E product segment, automated material handling equipment (AMHE) and factory automation is currently gaining traction as the manufacturing sector is moving towards industry 4.0 and smart manufacturing. This is due to the fact that AMHE and factory automation are critical factors when adopting smart manufacturing to help increase efficiency of the workflow in manufacturing process and enhanced product quality.

General Industrial M&E, Components and Parts

Major Companies in Production :

(i) **Elevators :**

- MS Elevators
- UWC Technology

(ii) **Conveyor/Factory Automation :**

- Cheng Hua Engineering
- BBS Automation
- AT Engineering Solution
- GSE-M
- FlexMove System
- AFA Technologies
- TXMR
- Pentamaster Berhad
- Greotech Integration

(iii) **Air-Conditioning Plants :**

- Dunham-Bush
- OYL Industries
- TM Air Conditioning
- Carrier International
- Citec International

(iv) **Pressure Vessels/Process Equipment :**

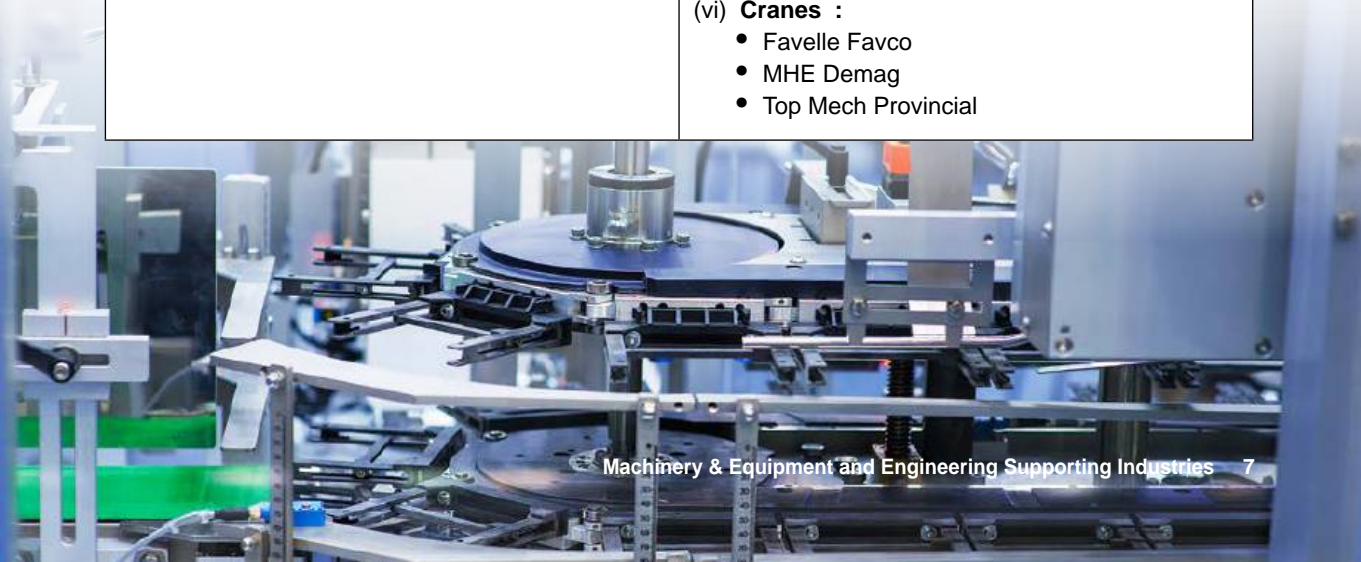
- KNM Process Systems
- Asturi Metal
- Jutasama
- Mechmar

(v) **Cooling Towers :**

- BAC Cooling Technology
- Linear Cooling Industries
- Panwater Engineering

(vi) **Cranes :**

- Favelle Favco
- MHE Demag
- Top Mech Provincial





Examples of Leading Local and Foreign M&E Companies in Malaysia

AIDA, a world renowned leading Japanese metal forming system builder, is currently engaged in the manufacture of high precision single/double crank mechanical presses from 80 – 300 tonnes. The company is planning to further strengthen its presence in Malaysia and also has expanded worldwide market with more competitive supreme quality products. AIDA exports 90% of its products to Asia Pacific, North & South America and Europe.

Cheng Hua specializes in providing total integrated engineering solutions for material handling and conveyor system. The company is backed by a long and respectable legacy spanning over four decades of automated material handling system design, manufacture, installations and software solutions. The company's capability and capacity to innovate and serve their customers with highly reliable and cost effective customized solutions has allowed them to maintain a strong market position as a 'system integrator' and partner-of-choice with many of the key customers in automotive, tyre manufacturing and logistics industries. 80% of the company's total revenue comes from its export sales to ASEAN countries, Europe, India, Australia, South Africa, America, and Middle East.

UWC Group, started its operation in year 1990 and has evolved from a trading company to a significant large local company (LLC) with 6 manufacturing plants all over the world. From initially focusing on only in vertical transport

industry (i.e. Elevator) and industrial fabrication, UWC made the strategic shift towards producing parts, components and full turnkey assembly for high-applications in the semiconductors, telecommunications, life science, medical and heavy-duty machinery. The company is also focusing on contract manufacturing and will equip themselves with state of the art machines and equipment to cater for the demand of MNCs from all over the world.

Oerlikon Balzers, the world leading supplier of surface technologies through its new coating centre in Johor, Malaysia is currently serving customers from the whole ASEAN region. The centre is one of the 109 coating centres in 35 countries worldwide. Oerlikon balzers is currently serving various clients from automotive, aerospace, medical and engineering industries in Malaysia and Singapore. Oerlikon Balzers is using Physical Vapour Deposition (PVD), Plasma-Assisted Chemical Vapour Deposition (PACVD), Heat treatment and Nitriding process in a vacuum condition to enable deposition of thin films with defined compositions and specific characteristics. The full strength of Oerlikon Balzers' high-end surface treatments is especially apparent for stringent clients requirement i.e when process-acceleration is required, difficult materials must be cut, or when high-grade optics are important. Oerlikon Balzers, through their PVD and PACVD – based coating solutions are able to coat between 0.5 µm and 14 µm which produce low-friction, wear resistant, chemically inert thin film coatings.

Pentamaster Corporation Berhad is a world class automation and technology solutions provider serving MNCs from various part of the globe such as United States, Europe, Africa, Asia Pacific & ASEAN Countries. With over 25 years providing integrated and customized solutions in semiconductor, automotive, electrical & electronics, pharmaceutical, medical devices, food & beverages to general manufacturing, their core competencies include mechanical engineering design, software programming technologies, control engineering, imaging vision and instrumentation design. Jumping into the smart manufacturing race, all of their products such as semiconductor test handlers, hospital equipment and material handling system are equipped with smart manufacturing technology such as smart sensors and big data analytics. They are also providing Smart Solutions such as shopfloor management system, warehousing management system, computerized management systems and smart control management system. These solutions are equipped with data traceability, online monitoring, alert system and predictive maintenance functions to the user industry.

Greatech Integration, a Malaysian owned company which provides factory automation solutions for various industries particularly in solar, smart devices, semiconductor, energy storage, life science, consumer goods and automotive. They provide innovative design and proof of concept process to solve customer's challenge during customer automated process of their factory. With a fully capable in-house manufacturing facility complete with precision machine shop, sheet metal fabrication, assembly, commissioning and world class service support, they are positioned to serve the Fortune 500 companies with innovative, cost effective solutions and support services. The company currently employs 275 employees.

Mühlbauer Group, which was founded in 1981 has grown into a one-stop-shop technology partner with nearly 3,000 employees, technology centers in Germany, Malaysia, the US and Slovakia, and a worldwide sales and service network. Today, the group is the world's market leader in innovative systems and software solutions for the production and personalization cards, passports and RFID applications. Other business fields include the areas of die sorting, carrier tape as well as production solutions for flexible solar technology. To support its M&E production, the group has its own precision

parts manufacturing facilities in-house. The company has also embarked on industrie 4.0 technology by combining 100 different highly sophisticated production systems with intelligent software solutions for production management and personalization. In addition to the turnkey solutions for high-quality ID document, Smart Card and RFID Smart Label production, Mühlbauer also develop and manufacture innovative Die Sorting systems for the semiconductor industry.

Sunfluid is Malaysia's pioneer in manufacturing sheet-metal working machinery. Since 1988 the company has made reliable and high quality hydraulic shear, hydraulic press brake, bending machines and other custom-built machines. Sunfluid's range of products also includes factory automation development and trading of machine tools.

ViTrox Technologies specializes in the manufacturing of high-speed vision inspection systems for the semiconductor industry. The company provides innovative 3D digital vision inspection solutions to a broad range of semiconductor IC packages for major semiconductor manufacturers from Malaysia, Thailand, the Philippines, China, Taiwan, Japan, Korea, India, Europe and the United States of America. Vitrox provide a complete range of inspection system 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 provides 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 & cost effective I/O and motion embedded solutions for the automation industries. ViTrox also invested in a Center of Excellence (CoE) for machine vision. The COE will create innovative communities and develop integrated supply chains via sharing and collaborative concept among automation system integrators, MNCs and Institute of Higher Learning. Vitrox also provides a highly customizable one-stop platform which offers data driven decisions in manufacturing by allowing stakeholders to remote, visualize, monitor, control and implement condition-based alerts to reduce downtime and increase throughput.

Conducive Environment for Investment

Malaysia's market-oriented economy forms an encouraging backdrop for M&E companies. The pro-business policy of the Government, attractive incentives, good infrastructure, and educated and trained workforce and laws that govern ethical business practices are among the many reasons Malaysia stands tall as a leading investment centre in this region. The following are comments from the industry players.

Oerlikon Balzers Coating Malaysia Sdn. Bhd.

"Malaysia offers investors a dynamic and vibrant business environment with the ideal prerequisites for growth and profits. Malaysia's key strengths include well-developed infrastructure and productive workforce. A politically stable country with a well-developed legal system, Malaysia also provides attractive incentives for investors through its local authority such as MIDA & IRDA supported by a market-oriented economy and pro-business Government policies."

Pentamaster Corporation Berhad

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

Cheng Hua Engineering Works Sdn. Bhd.

"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."

Fluidmech Engineering 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."

UWC Group

"With more than 40 years of industrial experience and having been trained by global industry leaders, Malaysia has one of the strongest supply chains in the region. This makes Malaysia the preferred investment destination."

Mühlbauer Technologies Sdn. Bhd.

"Malaysia's industry-support incentives, the 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."

Greatech Integration

"Malaysia is an attractive destination for investors as the Malaysian government is business friendly, supported by few government agencies such as MIDA, MATRADE and etc. to provide support to businesses. Strategic geographical location further strengthen Malaysia position in attracting international corporations as Malaysia is in the middle of ASEAN with access to worldwide airports and ports across the country. Furthermore, Malaysia had more than 40 years of industry life with effective and efficient supply chain on well-developed local suppliers, vendors and supporting industries. Malaysian government also plays a significant role in enhancing and developing skills-based education and training to develop workforce capability across the industry for better quality talents pool."

ViTrox Technologies Sdn. Bhd.

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

The **ENGINEERING SUPPORTING** Industry

- **Malaysia as the Global Outsourcing Centre**
- **Strengthening the Engineering Support Industries**
- **To Supply Integrated Services or Total Solutions**
- **Moving Towards Complex & Diverse Products**

In Support of Growth Opportunities

The engineering supporting industry in Malaysia has developed to be an important driving force for growth of not only the M&E industry, but also for every industry sector. Malaysia's engineering supporting industry has earned strong international recognition for its world-class manufacturing standards. With the long-standing presence of various MNCs within the country, the industry possesses the expertise and experience to supply products and services that are globally competitive in quality, value and delivery time.

There are over one thousand engineering support and services companies in Malaysia which include **integrated or total solution providers**. These companies have advanced themselves to supply **low volume** and **high mix products** as well as types of parts and modules to cater for the outsourcing and procurement needs of high technology industries.

Malaysia - Your Preferred Location for Outsourcing

Non-equity mode of investments is currently on the uprising trend, Malaysia's engineering supporting industry are currently positioning themselves to become a 'One Stop Centre' by offering total solutions to their customers. This is made possible by upgrading of facilities and acquiring technologies to meet the stringent requirements of Original Equipment Manufacturers (OEMs) for parts and components and precision engineering services. These 'One Stop Centres' would offer integrated services ranging from product conception, including design and prototyping to serial production and managing the entire process flow including procurement, logistics, packaging, testing and certification.

Malaysia has much to offer to companies searching for a strategic and cost effective engineering supporting outsourcing destination. 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. There is also the added benefit of government-backed investment incentives.

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 in the country simply because they enjoy promising rates of return. Malaysia makes for an extremely competitive destination for regional outsourcing of engineering supporting services and the nation looks forward to welcoming future investors.

Incentives

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

- ✓ **Tax incentives :**
 - (a) Pioneer Status with tax exemption of 70% on statutory income for a period of 5 years, or
 - (b) Investment Tax Allowance of 60% on qualifying capital expenditure incurred within a period of 5 years. This allowance can be offset against 70% of the statutory income for each year of assessment.
- ✓ **Reinvestment Allowance** of 60% on qualifying capital expenditure for 15 years.
- ✓ **Import duty exemption for machinery and equipment; and raw materials and components.**



Malaysia's Engineering Supporting Sector

Malaysia's engineering supporting industry encompasses the mould, tools and die, machining, metal stamping, metal casting, surface engineering, heat treatment, forging and metal fabrication activities, provides vital support to the manufacturing and services sectors.



Mould, Tools and Dies

- This industry is recognized as a leading engineering supporting industry.
- Malaysian's mould, tools and die industry has the capability to manufacture most types of moulds, dies and tooling to complement the needs of the manufacturing sector.
- More than 350 companies are in operations and some of the leading companies include Sum Hing Engineering Works, Miyazu (M), Ingress Katayama, H&L Engineering, HH Precision Mould, Fuji Dies Kogyo, Zeno Tech and HPMT.
- Opportunities and large market potential exist for large moulds & dies which is more than 10 MT and High Precision mould & dies for E&E





Machining

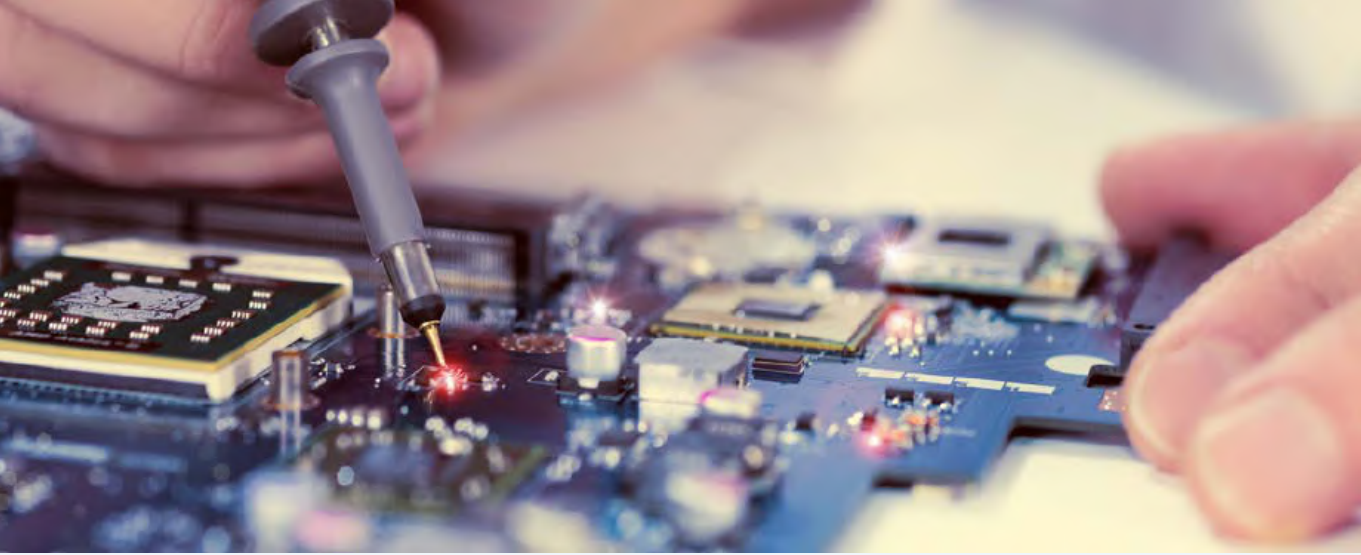
- The local machining industry is able to meet most of the machining needs and provide total machining solutions to the manufacturing sector. More than 250 companies are in operation undertaking specialized precision services and general supporting machining services.
- Companies in the industry have attained high levels of technological capabilities and utilize state-of-the-art CNC machine tools for most of their operations. They are able to undertake high precision multi-axes, large format, and free form machining activity.
- A number of companies have diversified into the design and manufacture of modules, particularly for semiconductor, electrical and electronics industries. They also have move 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 oil & gas, aerospace and medical industries.
- Major companies include, UMS, Jecmetal, New Billion, Kobay Technology, UPECA Group, Eng Teknologi, Curge Advanced, TNH Metal Engineering, UWC Holdings, AKTY Technologies, Alpha Precision, Wanjun Precision Machining, Synturn and SME Aerospace.
- Opportunities and large market potential exist for specialised machining services for selected industries i.e. oil & gas, aerospace and medical.



Metal Casting

- The foundry industry in Malaysia over the last 50 years has attained a significant level of technological expertise in serving the traditional industries of tin, rubber and palm oil.
- About 70 companies are currently in operation, making castings for engineering spare parts, quality machinery spare parts, pumps and pump parts, palm oil mill machinery parts, automotive components, elevator parts and other machinery parts.
- Leading companies with comparatively modern facilities such as Yoonsteel, MMC Metal, Swanmet Engineering, Altum Precision, Hicom Die Castings and Dynacast Malaysia produce castings of good quality and low dimensional tolerances in compliance with International Standards for both local and export markets.
- Opportunities and large market potential exist for larger custom – made sand casting and component casting for selected industries i.e. oil & gas aerospace and medical.





Metal Stamping

- The metal stamping industry in Malaysia is an established industry supplying stamped parts to a wide range of industries such as electrical and electronics, automotive, machinery and equipment, precision measuring and testing equipment.
- The industry has acquired the capacity and technical capabilities to serve the various market needs of multinational corporations such as Panasonic, Sony, Hitachi, Toshiba, Dell, Yamaha, Thomson, Philips and Hewlett Packard.
- There are about 140 companies in operations throughout Malaysia with such leading companies as JP Metal, Kobakin, NJ Manufacturing, Cybron TL, Wong Engineering, Kein Hing, KM Precision, DZ Capital, VSP Technology, Tohoku-Wada and Seksun Precision.

Surface Engineering

- The industry has the capability and capacity to cater for most of the requirements of the manufacturing industry, which include a variety of plating operations such as batch and continuous precision electroplating, electroless plating, cathodic electrodeposit, phosphating, passivation, anodizing, chromating, sinter plating, physical vapor deposition (PVD) and chemical vapor deposition (CVD), Plasma assisted chemical vapor deposition (PA-CVD).
- About 110 companies are in operations which include leading companies such as ATC Surface Treatment, Asahai Aero, Optics Bazlers, Oerlikon Balzers, Wasco Coating, SII Ishizaki and Jiwei.
- These companies are currently servicing the needs of notable multinationals such as Panasonic, Toshiba, Hitachi, Infineon, Keysight, Agilent LDA, ON Semiconductor and Osram in the electrical and electronics and automotive industries.
- Opportunities and large market potential exist for services for the oil & gas, aerospace, medical, LED and solar/photovoltaic industries.





Heat Treatment

- Malaysia's heat treatment industry offers continuous mesh-belt heat treatment, vacuum hardening, carburizing, carbonitriding, nitriding, nitro-carburizing, annealing, normalizing and tempering for a diverse range of metal products.
- Heat treatment services on 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.
- The heat treatment service industry in Malaysia has about 17 companies in operation, which include leading companies such as Micromagna Engineering, Yeh Chang Heat Treatment, Tohken, Oriental Heat Treatment, Umetoku, Vital Scale, HK Lamination and Yong Shen Heat Treatment.
- Expansion activities in the mould and die, as well as the M&E manufacturing industries, and production of downstream products of iron and steel, secondary products, automotive parts and component manufacturing offer good prospects for the growth of the heat treatment service industry. Investments in new ventures with state-of-the-art facilities that are also environmentally friendly are encouraged, especially those incorporating the latest vacuum carburizing and vacuum hardening technology.

Forging

- Malaysia's forging industry comprises of companies producing small and medium forged parts for the automotive and general manufacturing sector. Most of the companies have the capabilities to produce components of up to 200mm in size and 50kg in weight with press machine capability ranging from 16MT to 600MT.
- The forging industry in Malaysia has 7 major companies in operation, namely Galperti, Billion Fortune, YMC Forging, MKF Metal & Plastic Industries, Kentzu Industries, Unique Forging & Components, Geen Screw Industries, and Power Steel & Electroplating Works.
- The setting up of many leading global oil and gas M&E manufacturers in Malaysia such as FMC, Aker Solutions, Halliburton, Cameron International and Technip provides opportunities and large market potential for large forgings, not only to support the oil & gas industry in the country but also to cater for the requirements of the region. All requirements for large forgings are currently being imported from overseas i.e. Korea, Italy, Germany, India and other Eastern European countries.





Metal Fabrication

- Metal fabrication activities in which Malaysian companies have developed world-class capabilities can be classified into four categories; namely fabrication for the offshore/onshore oil and gas industry; building and civil construction fabrication; fabrication of processing and manufacturing plants and industrial machinery and equipment structures and component fabrication.
- Local companies undertake fabrication for the offshore/onshore oil & gas industry, which includes fabrication works for the offshore oil drilling platform requirements such as jackets, production modules, platform decks, accommodation modules, line-pipe & spool and related industrial onshore activities such as petroleum refineries, petrochemical plants and storage facilities.
- In the building and civil construction fabrication category local companies fabricate steel superstructures for high-rise buildings, bridges, flyovers, transmission towers and other infrastructural facilities such as ports and airports.
- In the processing and manufacturing plant fabrication, companies undertake turnkey projects to build, install and commission processing plants in the country.
- As for the industrial machinery & equipment structures and components fabrication category, many companies have the capability to supply the needs of the local machinery & equipment manufacturing industry.
- The metal fabrication industry in Malaysia is considered a fairly established industry. In the building and construction industry, many local fabrication companies have begun to source for jobs outside Malaysia. As a result, several local fabricators have gained international recognition in this industry.
- Leading Malaysian companies which are serving this sector include KNM Group, SapuraKencana, Dialog, Sumatec, Sime Darby Group and Scomi.

Smart Manufacturing : The Way Forward

Driven by industry trends including Industry 4.0 and the Industrial Internet of Things (IoT), M&E companies in Malaysia 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 via ERP systems as well as MES, employing remote monitoring, machine-to-machine (M2M) communication, and fully-robotic, automated assembly lines in their production floors

Adoption of additive manufacturing technology in creating parts or prototype are less time consuming, cost reducing and will give more flexibility in creating higher precision products. 4D simulation of machines, production process or product life cycle through real time data will give engineers more space in doing testing and development prior to commercialization. This will ensure seamless operation and full design optimization.

Crucial data obtained from machines can spur new data driven business such as providing feedback or alert for predictive maintenance, result of diagnostic checking, recovery action, remote monitoring and traceability function through dashboard or platform.

The Industry 4.0 solutions will enable M&E companies in improving their operation via smart processes, new business model innovation and gaining insight into customizing the design of next generation M&E.



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