

your regional center for repair and  
**refurbishment of gas turbines**  
and their components



**Malaysian Advanced  
Refurbishment Services**

A Sapura Energy Company



## 1 INTRODUCTION

Malaysian Advanced Refurbishment Services (MARS) is your regional center for repair and refurbishment of gas turbines and their components. MARS is a company wholly owned by Sapura Energy, part of Sapura Group of Companies.

Sapura is a Malaysian owned company that drives business agility through knowledge and technology. In 1975, a team of six formed Sapura to seize opportunities in the emerging telecommunications sector. It was this unwavering entrepreneurial spirit that gave birth to the Sapura Group.



Today, with over 3,000 employees, this leading technology based company has diverse business interests in energy, technology, industrial, defence, education and other resources.



Business Units in Sapura

## 2 SAPURA ENERGY

The largest business unit in Sapura, the energy group is headed by SapuraCrest Petroleum Bhd (formerly known as Crest Petroleum Bhd), a company listed in the Bursa Malaysia (formerly known as the Kuala Lumpur Stock Exchange). SapuraCrest is the largest local service provider to the oil & gas industry in Malaysia.

SapuraCrest Petroleum					
Business Unit	MARINE INSTALLATION & CONSTRUCTION	DRILLING	MARINE SURVEY, SOIL & TRANSPORTATION	MARINE ENGINEERING	OPERATIONS & MAINTENANCE
Major Subsidiary/ Company	TL Offshore Sdn Bhd	Tioman Drilling Company Sdn Bhd	TL GeoSciences	Sarku Engineering Services Sdn Bhd	Sapura Energy Sdn Bhd
Principal Activities	Install Pipeline Platform & Jackets	Provide Offshore Oil & Gas Drilling	Provide Offshore Soil Investigation & Geophysical Surveys	Provide Underwater Diving, ROV Services, Salvage, Inspection & Repair, Maintenance, Hook-Up and Commissioning Services	Provide Full Service Repair, General Maintenance Services and ICT Solution Services

### 3 SAPURA MARS

**Malaysian Advanced Refurbishment Services (MARS)** is wholly owned by Sapura Energy Sdn Bhd and is strategically placed within the Operation & Maintenance Business Unit to provide service to the power, oil and petrochemical industries. At MARS, we specialises in repair and refurbishment of all types of industrial gas turbines and their components.



MARS Repairshop in Bukit Raja, near Kuala Lumpur

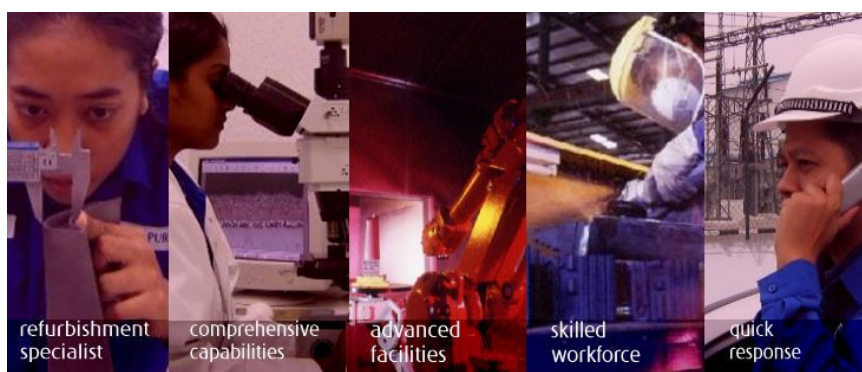
### 4 REFURBISHMENT SPECIALIST

Sapura MARS has the technical capability to repair and refurbish components from all types of industrial gas turbine such as;

- ☑ ABB/ALSTOM: 9, 11, 13
- ☑ GE: 5, 6, 7, 9
- ☑ SIEMENS: V64, V84, V94
- ☑ MITSUBISHI: 701
- ☑ WESTINGHOUSE 91, 251, 501
- ☑ FIAT TG20 & TG50

Apart from provision of services to carry out the full scope of repair and refurbishment of IGT and their components, the other services offered by MARS include the following;

- Defects or failure investigation
- Coordinate Measuring Machine
- Application of Coating
- Alloy analyser
- Other repair & refurbishment activities

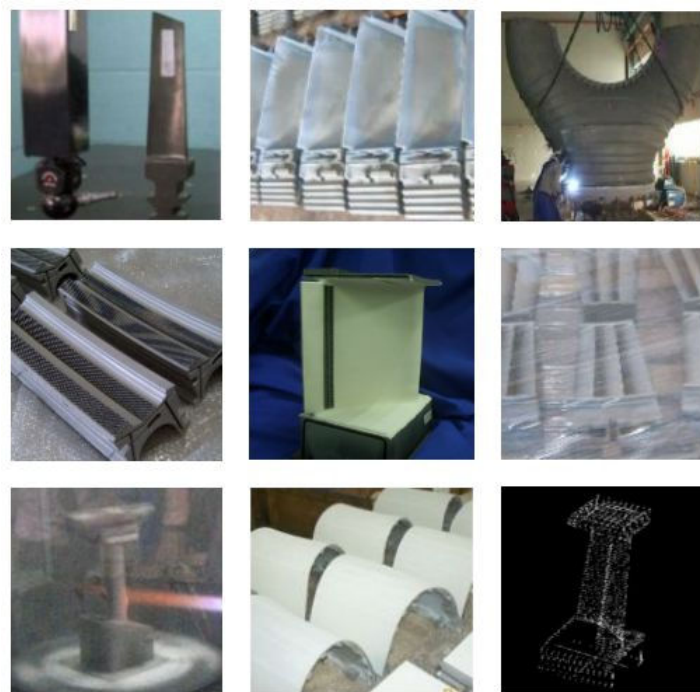


### 5 COMPREHENSIVE CAPABILITIES

At MARS, our technical capabilities encompassed all types of industrial gas turbines. In particular, we have the expertise to refurbish critical components in the hot gas path such as rotating blades, stationary vanes, hot gas casing, c-segments and heat shields amongst others.

GE Fr. 5, 6, 7 & 9		Alstom GT9, 11, 13		Siemens V94, V84, V64		Mitsubishi 501, 701	
Burner Can	✓	Inner Liner	✓	Inner Liner	✓	Burner Can	✓
Transition Piece	✓	Hot Gas Casing	✓	Hot Gas Casing	✓	Transition Piece	✓
Combustion Hardware	✓	C Segments	✓	Segments	✓	Combustion Hardware	✓
All shrouds	✓	Shrouds and Heat Shields	✓	Shrouds and Heat Shields	✓	All shrouds	✓
All Stages Buckets	✓	All Stages TuLa's	✓	All Stages Blades	✓	All Stages Blades	✓
All Stages Nozzles	✓	All Stages TuLe's	✓	All Stages Vanes	✓	All Stages Vanes	✓

Some of the component capabilities at MARS



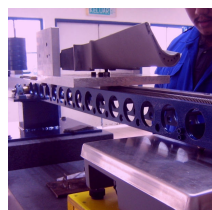
Some of the components repaired at MARS

## 6 ADVANCED FACILITIES

MARS is fully equipped to carry out the entire repair and refurbishment works at our repairshop near Kuala Lumpur in Malaysia. Our facilities enable technically demanding processes to be carried out internally at our repairshop.

At Sapura MARS, our capabilities include;

- ⇒ Full Laboratory facilities  
(including NDT)
- ⇒ Full Inspection Facilities  
(including Coordinate Measuring Machine)
- ⇒ Cleaning & Coating Removal
- ⇒ Blending Lines
- ⇒ Argon Atmosphere Welding
- ⇒ Superalloy Heat Treatments
- ⇒ Application of Coating  
(including MCrAlY coating)
- ⇒ Moment Weigh



### 7 SKILLED WORKFORCE

MARS employs an internal workforce that is fully trained and qualified. Besides having its own staff to carry out repair works, MARS has its own in-house support staff to provide engineering, drafting, QA and laboratory services.

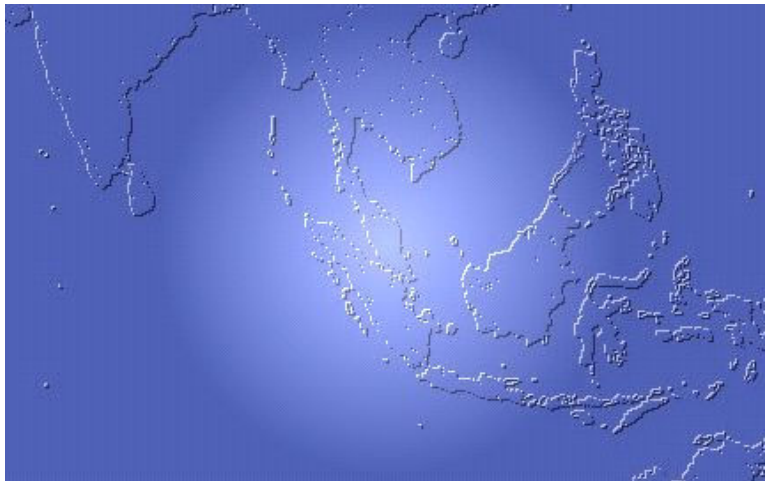


Our skilled workforce is fully trained and qualified

### 8 STRATEGIC LOCATION

MARS is located in the Bukit Raja Industrial Area near Kuala Lumpur. It is strategically located next to an integrated highway system with easy access to Klang Port and Kuala Lumpur International Airport (KLIA).

With a strategic location in the region, MARS offers quick response and support, onsite inspection by specialists, facilitate face to face discussions and negligible transportation time. MARS can be your regional center for repair and refurbishment of gas turbine and their components.



MARS is located in the heart of South East Asia



ISO Certificate issued by BVQI

### 9 ASSURED QUALITY

The quality management system at MARS is certified to ISO9001:2000 since 09<sup>th</sup> July 2004. The rigorous and continuously improving quality procedures ensure that the components repaired at MARS conform to customers' requirements.



malaysian advanced refurbishment services sdn bhd



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