MJB International Ltd Capabilities Overview
OUR BUSINESS
Geographical Markets

Lower Gulf

Middle East, Africa, Former Soviet Union, Asia, Oceania

Europe, Scandinavia, Americas
Overview

2,000 man years: Offering global & local expertise

Glasgow UK Office:
Sales, Engineering and Logistics
Support Headquarters

Management System Certification:
ISO 9001:2008
ISO 14001: 2004
OHSAS 18001: 2007

Dubai Facility:
Facility Area 8000m²
Overhead lifting Cap.Up to 150 Tons

Current Capability:
Repair of combustion hardware, nozzles & diaphragms of (GE) Frame size 3,5,6,7 & 9 units.
Turbine & Compressor rotor refurbishment Frame 3, 5,6,7&9
Refurbishment of Siemens V64.3 & Rotors ABB 11D4&5.
Generator Services.
MJB International Ltd

- New company registered in UK January 2012 to expand the global market presence of the parent company Masaood John Brown LLC.
- Primary Market Areas – Europe, Scandinavia and Americas
- Business Activities in ROW regions conducted by Masaood John Brown from 1969 to date.
- Business Activities in region(s) from year 2000 to year 2012 were segmented under agreement with previous JV partner; Turbine Services
  - Previous JV partner ultimately owned by Carlyle Private Equity (PE) Company – JVs not good for PE groups as plan will always be to sell and have strict operating procedures in terms of market and P&L – JVs make this difficult to control
  - JVs activities in US Defence, Aerospace and parts development are a greater priority than being a total GT service provider
- JV ended in December 2011 although some levels of cooperation ongoing via reciprocal agreements.
- MJBI Ltd retains the majority of Engineering and Logistics support at time of segmentation
Our History

1969

First Gas Turbine Sold in Middle East
Our History

Since formation in 1979, Masaood John Brown Ltd was owned by Mohammed Bin Masaood (51%) in partnership with John Brown Engineering (and later with a name change to Kvaerner Energy at 49%).

In April 2000, the General Electric Company (USA) acquired Kvaerner Energy, but this did not include the equity shareholding in Masaood John Brown. MBM purchased the balance of shares outright, formed an affiliate company called MJB International Ltd.
MJB International Ltd is staffed and managed by senior personnel and engineers retained from the previous shareholder, formerly John Brown Engineering. The combined resources of the joint venture will provide all MJB International customers and gas turbine operators with an array of support services using formidable and advanced technological expertise in the repair and manufacture of gas turbine engine parts, field maintenance support and technical assistance.
Our History

Expansion of MJB Jebel Ali Repair Facility including Rotor Repair Facility

2003
Masaood John Brown (MJB) has added a new 4,000 square meter repair facility to its two existing facilities in Dubai’s Jebel Ali Free Zone Area (JAFZ). This new facility almost doubles MJB’s total operating footprint to 8,000 square meters of best-in-class air conditioned shops and warehouse space.

The new facility has been specifically designed to allow MJB to expand its capabilities to include repair work on Frame 7E and 9E repairs. Ceiling height and high technology cranes allowing ingress and egress of complete Frame 5, 6 & 9 engines for complete tear-down and overhaul.

MJB becomes a 100% Al Masaood Group Company.
MJB DUBAI FACILITY
MJB FACILITY

• MJB facility houses and operates three state-of-the-art repair facilities that has witnessed significant investment over the last 10 years.

• Customized air conditioned workshops now extends to 8000 sq. m.

• Full capability to repair heavy industrial gas turbine stationary and rotating parts including FA & DLN Technology.

• MJB can now offer re-blade and balancing of rotors up-to and including Frame 9.

• MJB stock exchange pool rotors across the full range of GE Frame gas turbines, including a FS9 turbine section and re-bladed compressor section.

• MJB also perform extensive Gas Turbine package refurbishment including full zero-hour remanufacture of the GE range of Frame gas turbines.
MJB FACILITY
Our Services

- Sentinel C
- Field Service Capability & Training
- Engineering Services
- Component Repair
- Condition Monitoring
- Gas Turbine Spares & Replacement Parts
- Long Term Service Agreements
- Refurbishment Gas Turbine Packages
GAS TURBINE SPARES AND REPLACEMENT PARTS
Spare Parts:

- Middle East and UK facilities operational for 20 years.
- MJB have retained & developed the original supply chain when John Brown Engineering were a GE Frame Licensee.
- All parts meet the highest standards and carry full warranty.
- MJB have invested and developed our own IP, tooling and procedures to manufacture parts and high technology components.
- Capital Parts (including Rotors)
  - MJB's re-engineering capabilities, techniques and processes enable us to maximize benefits in terms of diversity, quality, price and delivery.
- Combustion Equipment
  - Caps and Liners, Transition Pieces, Cross fire tubes, etc are available ex-stock for scheduled and unscheduled requirements.
Spare Parts : (Cont..)

- **Auxiliary Parts**
  - Warehouses at Jebel Ali and Glasgow UK, carry necessary stock to cover likely emergency requirement for pumps, valves and other auxiliary parts.

- **Consumable Parts**
  - Warehouses at Jebel Ali and Glasgow UK, carry extensive inventory for scheduled and unscheduled overhauls for GE frame and other OEM type gas turbines.

- **Component Exchange**

- **Just-in-time inventory**
## Product Development - History

<table>
<thead>
<tr>
<th>Date</th>
<th>Product Groups</th>
<th>Fr</th>
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<tbody>
<tr>
<td>1995 - 2000</td>
<td>Shroud Blocks</td>
<td>3,5,6,7,9</td>
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<tr>
<td></td>
<td>Un Cooled Bucket S1, S2</td>
<td>5</td>
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<tr>
<td>2000 - 2004</td>
<td>Combustion Liners</td>
<td>6,9</td>
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<tr>
<td></td>
<td>Transition Pieces</td>
<td>6,9</td>
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<td>CIEK</td>
<td>6,9</td>
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<tr>
<td></td>
<td>Cooled Buckets S1</td>
<td>6,9</td>
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<td>2005 – 2008</td>
<td>Buckets S2 and S3</td>
<td>6,7</td>
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<td></td>
<td>Nozzles S1, S2, S3</td>
<td>6,7</td>
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<td>2008 - Onwards</td>
<td><strong>Hi Tech / Re configured</strong></td>
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<tr>
<td></td>
<td>HR120 Shrouds</td>
<td>6</td>
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<tr>
<td></td>
<td>Bucket S1, S2, S3</td>
<td>6, 9</td>
</tr>
<tr>
<td></td>
<td>Nozzles S1, S2, S3</td>
<td>6, 9</td>
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<tr>
<td></td>
<td>TP’s</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Compressor Blades</td>
<td>5, 6, 7 &amp; 9</td>
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Component Repairs

Stationary Component Repairs
FS3002 – FS9001F
- Nozzles
- Shrouds
- Liners incl DLN
- Transition Pieces
- Fuel Nozzles incl DLN
- Flow testing

Rotating Equipment Repairs:
- Turbine Rotors (FS3002 – FS9, ABB 11D4/5, Siemens, V64.3)
- Compressor Protective Overlay Coatings
Component Repairs

Thermal Spray Coatings
- Air Plasma and HVOF
- Robotic Systems
- Thermal Barrier Coatings
- MCrAlY’s
- Hardface Coatings
- Abradable Coatings

Vacuum Heat Treatment
- Braze Repairs
- Blast Cleaning
- Machining - Manual & CNC
- EDM
- Component Modifications & Upgrades
Component Repairs

Metallurgical Laboratory Services

- Microscopy
- Mechanical Testing
- Failure Investigations
- Research and Development
- Life Assessment
Bucket Repairs

- Direct Welding of missing/burnt areas
- Tip restoration by laser welding
- High temperature brazing of eroded aerofoil surfaces
- ‘Z’ notch restoration
- Angel wing restoration by welding
- Heat Treatment
- Coating
**Performance Upgrades**
- Increased Firing Temperature
- Honeycomb shrouds
- Brush Seals
- HR120 & abradable coating Stg 1 shrouds
- Frame 6 inlet plenum redesign
- IGV upgrades

**Engineering Support**
- Gearbox design
- Off base systems – Fuel Skids, Fin fans, Ducting & Filter houses, etc..
- Vibration Analysis
- Field Balancing
- Technical Consultation Services
- Failure Investigations
- Reverse Engineering

**Engineering Services**
- Inspection & Plant Overhaul
- Site management
- Operations & Maintenance
- Control systems
- Control Retrofit
- Fuel Conversions
- Technical Support
- Quality Assurance & Advice
- Plan Commissioning
- Plant Relocation
- Generator Overhauls
- Plan Uprate & Improvement
- Field Refurbishment
- Turnkey plant overhaul
- Total Maintenance Concepts
Field Engineer Resources

Field Engineer Resources UK and UAE

- Mechanical
- Instrumentation & Controls
- Electrical & Generation
- Condition Monitoring

- Scheduled Maintenance
- Emergency Breakdown Maintenance
- Borescope Inspections
- Controls Troubleshooting
- Unit Start Up
REFURBISHMENT
GAS TURBINE PACKAGES
Long Term Service Agreement
Provision of...

- **Dedicated** contract management
- Spares management & inventory control
- **Remote** monitoring
- Technical support
- Scheduled & unscheduled overhauls
- **Component** repairs
SENTINEL C and TRAINING
Control Systems…
Sentinel C

- Advanced gas turbine control retrofit system
- PLC based gas turbine control and protection
- Replaces older technology systems such as Mark II, III & IV
- Improves control accuracy and operation reliability
- Optimises gas turbine performance
- Common spares with other industries utilising similar PLC system

sentinel™ C
advanced gas turbine control system
Training Courses

Deliver training to over 1,000 engineering personnel to educate and enhance skills

Modular courses by classroom and hands on training

Training partnerships
Specialist training packages customised to clients needs

Operational maintenance of gas turbines

Electrical, mechanical control systems site safety
Condition Monitoring

- Comprehensive automated fault detection
- Turbine specific knowledge & models included
- Performance, maintenance, vibration, emissions, compressor efficiency
- Fault manager summary of events
- Full data archive, display and trending
- Corporate-wide remote monitoring via networks, internet and dial-up
Thank you for your kind attention

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