VBR TURBINE PARTNERS
support beyond expectation

INFORMATION ABOUT THE LM6000 GAS TURBINE TRAINING COURSE BASED ON ALL LM6000 MODELS (PA – PF, SAC & DLE)

Week 46 (5-days, November 09 – 13, 2020) in Elst, The Netherlands.

Course Objective:
This course is intended for customer personnel concerned with day-to-day on-site operations and maintenance of the GE LM6000 aero-derivative gas turbine models. The purpose of the training is to provide the knowledge required to ensure consistent, trouble-free performance of the engine and its associated equipment.

For Whom?
Operators and Maintenance engineers (mechanical as well as I&C).
In general for those who need an in-depth understanding of the LM6000 gas turbines and the related auxiliary systems. The ones who need the ability to perform in dept troubleshooting in case of reliability issues.

The training course is meant for employees of companies that are (future) end users of LM gas turbines or contractors that operate the gas turbines on behalf of those companies.

Entry Level
The course participants should have some basic knowledge of operation and maintenance of rotating equipment, not necessarily gas turbines.

Course manual
Participants will receive a training manual (approximately 850 pages in full color), covering the relevant subjects of the training course both on paper and in digital format. The manual consists of equipment descriptions, schematics and operating and maintenance instructions. The text is supplemented by a large number of illustrations, drawings and photographs of the equipment.
The manual also contains an abundance of reference information, for further private studies. Additional information will be supplied on a memory stick.

Language
The training will be executed in English. The manuals are in the English language as well.

Trainer
A qualified English-speaking senior instructor with over 20 years of experience will present the course.

Course content:

- **Make acquaintance and presentation of the program**
- **Introduction to gas turbines**
  - Where it all started
  - Introduction to various GT models LM6000 (SAC & DLE)
  - Gas turbine basics
- **Major Components of the LM6000 where applicable**
  - Inlet Section
  - Variable Inlet Guide Vanes Assembly (VIGV)
  - Low Pressure Compressor (LPC)
    - Principle of operation, Rotor parts, Stator parts
  - High Pressure Compressor (HPC)
    - Principle of operation, Rotor parts, Stator parts
  - Variable Geometry Control System (VGC)
    - Principle of operation, Details of the VSV system
  - Combustion system (SAC & DLE)
    - Principle of operation, Details of the combustion system
  - High Pressure Turbine (HPT)
    - Principle of operation, Rotor parts, Stator parts
  - Low Pressure Turbine (LPT)
    - Principle of operation, Rotor parts, Stator parts
  - Bearings, sumps and frames
    - The bearings, Principle of a sump, The A, B, C, D and E sumps
  - Accessory Drive Assembly & Accessories
  - The Inlet Gearbox (IGB), Radial Drive Shaft, Transfer Gearbox (TGB) and Accessory Gearbox (AGB)
- **Auxiliary Equipment & Systems of the gas turbine**
  - Introduction
  - Flow & Instrument Diagrams (F&IDs / P&IDs) and Device List
  - Instrumentation on/around the gas turbine
  - Hydraulic starting system
  - Gas turbine lube oil system
  - Generator/load gearbox lube oil system
  - Hydraulic oil system
  - Fuel systems (SAC & DLE)
  - SPRINT system
  - Inlet air and ventilation system
  - Fire protection system
  - Compressor water wash system

- **Gas Turbine Operation**
  - General operating instructions
  - Gas turbine performance calculations
  - Start and stop sequences and graphs
- **Gas Turbine Maintenance**
  - LM gas turbine maintenance philosophy
  - Levels of maintenance
  - Service Bulletins and Service Letters
  - Maintenance manuals
- **Introduction to the LM Control Systems**
  - Gas turbine control system, general
  - HMI <-> Control System <-> Hardware interaction
  - Principle of fuel control (including DLE)
  - Protection systems
- **Troubleshooting and Cases**
  - Benefit of Package documentation for troubleshooting
  - Start permission definitions
  - Troubleshooting principles
  - Review of Instrumentation data
  - Alarm messages analysis
  - Trip Trend Log analysis
  - Practical cases
- **Remaining subjects and answers to questions**
- **Evaluation of the training course**
  - Course evaluation and issue of certificates

After completion of this training the student knows:

- The principles, the construction, the operation and maintenance aspects of the LM6000 (PA – PF) (SAC & DLE) gas turbines.
- How to perform in dept troubleshooting in case of reliability issues.
- The participant will also be introduced to the gas turbine control and protection systems.

Certificate

Every participant will receive a personal certificate at the closing of the course.

Training Duration

Monday/Tuesday/Wednesday/Thursday	09:00 – 16:00
Friday	09:00 – 14:00
Lunch provided by VBR	12:00 – 13:00

Pricing / Payment conditions

For the LM6000 (PA – PF), (SAC & DLE) gas turbine training course, the cost will be:
€ 2 200.- per person. (excl. VAT, lodging and travel expenses).

Registration

If you wish to participate in the course please visit Registration LM6000 training and register on-line at least two (2) weeks prior to the start of class.
You can also request a registration by e-mail training@vbr-turbinepartners.com.

Cancellation

If you have received a registry confirmation but are forced to cancel due to circumstances beyond your control, you can cancel the registration up to two (2) weeks before the course commencement date. The paid amount will then be refunded. After this date, or in the event of a no-show, no amount will be refunded.
VBR reserves the right to cancel or defer the course. Cancellation or deferment of the training course will be notified by VBR two (2) weeks prior to the course date. VBR is not responsible for any expenses incurred due to non-refundable airline tickets or hotel accommodations.

Hotel accommodation

As an attachment to the registry confirmation, you will receive a list of hotels in or near Elst, and a map showing the route to the training location.

Further information

Further information, also about in company training, can be found by visiting our training webpage.
For all training related questions please contact the VBR Turbine Partners training department: e-mail: training@vbr-turbinepartners.com, or call +31 (0)88 010 9000.

Customer- or site-specific training courses

If you wish information about site-specific training courses please contact the VBR Turbine Partners training department: e-mail: training@vbr-turbinepartners.com, or call: +31 (0)88 010 9000.

Best Regards,

Stephen Heemink

Education & Training Manager