



2KG TRAINING

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## TURBO & RECIPROCATING COMPRESSORS: OPERATION, MAINTENANCE & TROUBLESHOOTING

Enhancing compressor uptime and reducing operating costs through best practices and effective maintenance

**Presenter:** Fred Geitner

### ABOUT THE PRESENTER: FRED GEITNER P.ENG



Mr. Geitner is presently the principal engineer of PMES (Process Machinery Engineering Services), an independent consultant and expert litigation witness in the area of process machinery reliability. He has over 40 years experience in the design, operation, maintenance and troubleshooting of compressors used in process plant and transmission pipeline applications. He is a registered professional engineer in the Province of Ontario, Canada.

He has given depositions as an expert witness, has conducted plant site reliability audits and also presented courses and seminars covering process machinery design, operation, maintenance and reliability issues in Canada, United States, South America, Europe, Pakistan and the Middle East.

Together with H.P. Bloch he co-authored several books on process machinery management and reliability assurance.

**Co-author:**

- Machinery Failure Analysis and Troubleshooting (4th Ed., 2012)
- Machinery Component Maintenance and Repair (2nd Ed., 2001)
- Maximizing Machinery Uptime (2nd Ed., 2006)
- COMPRESSORS - How to Achieve High Reliability & Availability (1st Ed., 2012)

**Number of days:** 2

**CPD Points:** 2

## LIVE VIRTUAL CLASSROOM

2KG Training Live Virtual Courses offer participants the same instructors, training systems, course materials, personal support, and face-to-face engagement with instructors and other participants that they would expect to find in a conventional classroom.

The Compressors Live Virtual Course brings participants together in a virtual classroom, where they receive training from an expert via a live video link. Participants are interconnected via audio and video, enabling them to interact both with the instructor and with their classmates. Learners can speak to their instructor at any time to ask questions, request assistance, and instructors can provide hands-on support.

## OBJECTIVE

To assist in increasing turbo and reciprocating compressor availability by enhancing participants' understanding of compressors, their operation, maintenance, methods of servicing, repairing components and troubleshooting problems.

## WHO SHOULD ATTEND

This course is intended for maintenance mechanics/technicians/artisans and those who are involved with compressors, their operation and maintenance. The session could also be beneficial for plant and maintenance engineers, as well as operations contact engineers.

## COURSE DESCRIPTION

High availability of process compressors is not only based on good selection, but also on best operation and maintenance practices. Compressor operation can be compared to the way you drive your car - is it your own or is it a rental? The degree to which compressors are maintained today can range from "wait until destruction" type of negative thinking to a "complete" but extravagant program. This seminar presents operating and maintenance strategies that are economical and yet assure required compressor availability.

You review the fundamentals of compressors and the techniques for operating and maintaining them. You learn to properly overhaul, repair and troubleshoot this type of machinery. You examine proper methods of parts repair techniques as well as diagnostic tests for identifying and determining problems. You study preventive maintenance programs including the purpose of such programs and their planning and implementation.

The course will introduce new concepts and approaches through actual case studies, which will enable you to successfully implement new ideas. You will take away from the session a binder full of tried practical solutions, which will serve as a reference manual resulting in great savings in your operation.

## COURSE OUTLINE

### Compressors and Their Application

- Centrifugal and Axial compressors (Turbocompressors)
- Helical screw Reciprocating
- Compressors Application Ranges

#### DAY 1

### Turbocompressor Operation and Maintenance

- Overview of alignment methods
- Coupling maintenance and upgrading
- Compressor operation: predictive vs. preventive strategies
- Run - lengths extension surveys
- Turnaround/Inspection planning

### Turbocompressor Troubleshooting

- Basic approaches to troubleshooting
- Turbocompressor diagnostics
- Typical problems and solutions
- Examples from recent failure incidents, (e.g., surge control incidents, bearing and seal failures, etc.)

### Mechanical Design of Reciprocating Compressors and Operational Problems

- The compressor cycle Cylinders
- Valves, valve problems and rebuilding Pistons and rods
- Rod packing and packing problems
- Crankcase and frame attachments
- Lubrication and cooling systems
- Capacity control
- Foundations and piping

#### DAY 2

### Reciprocating Compressor Troubleshooting

- Basic approaches to reciprocating compressor troubleshooting -
- Diagnostic tests
- Typical problems and solutions
- Examples from recent failure incidents, (e.g. crankshaft failure, valve and valve cap failures, rod failures, etc.)

### Maintenance, Overhaul and Repair of Reciprocating Compressors

- Types of maintenance programs
- Inspection and inspection forms
- MI&O Planning and implementation
- Vendor and contractor requirements
- Methods of repair and overhaul
- Alignment and piston rod run-out



## Registration Form

**Number of days: 2**

**CPD Points: 2**

### How to register for the course:

1. Complete this registration form and fax it to Phindi Mbedzi: Tel: 011 325 0686 Fax: 011 325 0488 Email: [phindi@2kg.co.za](mailto:phindi@2kg.co.za)
2. Acknowledgement will be emailed to you.
3. Final confirmation and details will be faxed or emailed to you approximately 7 days before the commencement of the seminar.

### Cancellation Policy:

By signing and returning the registration form, the authorizing signatory on behalf of the stated company is subject to the following terms and conditions.

- All cancellations must be received in writing
- Any cancellations received less than 7 working days before the date of the event, the full fee will be payable and the delegate can attend the next scheduled training course.
- In case of insufficient applications for the workshop 2KG reserves the right to cancel the seminar. Applicants will be informed and all fees will be refunded immediately.

### Delegate information:

Title: \_\_\_\_\_ Surname: \_\_\_\_\_ Name: \_\_\_\_\_

Full Company name: \_\_\_\_\_ Job Title: \_\_\_\_\_

Postal Address (to which invoice must be sent): \_\_\_\_\_

Code: \_\_\_\_\_ VAT number: \_\_\_\_\_

Tel: ( ) \_\_\_\_\_ fax: ( ) \_\_\_\_\_

Cell: \_\_\_\_\_ Email: \_\_\_\_\_

### Contact/ Accounts information:

Title: \_\_\_\_\_ Surname: \_\_\_\_\_ Name: \_\_\_\_\_

Tel: ( ) \_\_\_\_\_ fax: ( ) \_\_\_\_\_

Cell: \_\_\_\_\_ Email: \_\_\_\_\_

Please tick the course that you would like to attend:

#### Conventional Classroom

- ☐ A date to be advised (2 Days)  
Venue to be confirmed.  
**R9 750.00 (excl VAT)**

I have read and agreed to all the conditions of registration as stipulated in this brochure.

Signature

Date

For more info and to register contact Phindi Mbedzi on tel: 011 325 0686 or cell: 071 125 6188 and email: [phindi@2kg.co.za](mailto:phindi@2kg.co.za) or visit [www.2kg.co.za](http://www.2kg.co.za)