



2KG TRAINING

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Advanced Pumps CENTRIFUGAL PUMP THEORY AND APPLICATIONS

Presenter: Willem van der Westhuizen



Willem joined Eskom in 1982 as a Pupil Technician. In 1989 he became a Technologist-in Training and in 1993 he became a Senior Consultant and later a Chief Consultant (Boiler feed pumps and pumps in general).

In 1987 he had the opportunity to gain design and research experience at Sulzer Pumps head office in Switzerland. He joined Sulzer South Africa in January 2000 as a Senior Design Engineer in the pump department. His main responsibilities were to apply his knowledge and experience to pump design, investigations, tests, and research and development activities.

Willem resigned from Sulzer in October 2005 and started his own pump consulting business, OPTIMUM PUMPING SOLUTIONS CC. He lectures in mechanical subjects part-time for candidates enrolled for the GCC course at Eskom College, as well as presenting a two day Pump Course for Industry.

Willem has written 10 National and 5 International papers on various aspects of pumps. He also presented a paper entitled "Predicting Cavitation and Pump Performance Characteristics by Means of Numerical Flow Simulation and CFD Calculation" at the recent International Pump Conference held at Gallagher Estate Midrand in June 2005.

He is presently contracted by Eskom to help with pump specifications for the New Eskom Power Stations.

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 Advanced Pumps 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.

AIM OF THE COURSE

After successful completion of this course the attendees will have a better understanding of centrifugal pump fundamentals, enabling them to apply the knowledge gained in their daily work.

WHO CAN BENEFIT FROM THIS WORKSHOP

- System engineers involved in improving reliability, plant operators, and maintenance staff.
- Manufacturers and engineering consultants.
- Plant performance department candidates

COURSE OUTLINE

Introduction Diagrams

- Simple End Suction Pump
- Pump Cross Section
- Parts List
- ANSI Pump Curve Sensitivity for Pump Reliability
- API Pump Curve Practices
- High Speed & High Head Pump Curve

Centrifugal Pump Fundamentals

- How Centrifugal Pumps work
- Radial Thrust
- Axial Thrust
- Calculating Pump Total Head
- Typical Centrifugal Pump Performance Curves
- Centrifugal Pump Affinity Laws
- Calculating the power input required by the Pump
- What is NPSH required and NPSH available
- How to deal with unsatisfactory NPSH problems
- Cavitation
- What is Specific Speed – N_s or N_q
- Typical Characteristic Curve Shapes for Centrifugal Pumps
- Flow Control in Centrifugal Pumps
- Examples of Re-circulation Systems

Types of Pumps

- Condensate Extraction Pump
- Circulating Water Pump
- Boiler Feed Pump
- Boiler Feed Booster Pump
- Balance of Plants Pumps

Acceptance, Testing, Operational Manuals and Tender Specs

- Acceptance Testing
- Proper Specifications and Tender Requests
- Evaluation, Selection and Purchase
- Common Design Installation Errors & Omissions
- Common Maintenance Errors
- Common Operating Errors
- Operation & Maintenance Manuals

General

- Power Plant Pump Monitoring
- Vibration Analysis Fundamentals
- API Standard 610



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 Chauke: Tel: 011 325 0686 Fax: 011 325 0488 Email: 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:

Live Virtual Classroom

- 13 – 14 April 2026 (2 Days)
R9 900.00 (excl VAT)

Conventional Classroom

- 14- 15 September 2026 (2 Days)
R7 920.00 (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 Chauke on tel: 011 325 0686 or cell: 071 125 6188 and email: phindi@2kg.co.za or visit www.2kg.co.za