2KG TRAINING

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# PUMPING SYSTEM ASSESSMENT GUIDE
## Improving Pump Efficiency and Reliability

### ABOUT THE PRESENTER: HARRY ROSEN

Harry Rosen has recently been appointed as an International Pump Expert for the United Nations Industrial Development Organisation (UNIDO) delivering expert pump training programmes in South Africa, Indonesia, Thailand and Philippines. He has also recently been involved in the 'Train the Trainer' programme, whereby a group of pump experts have been selected to be developed as pump trainers themselves.

Harry has over 30 years of experience in the pumping industry, and his company TAS Online is an international market leader in engineering software and consulting services for both users and manufacturers of pumps

Through the development and roll out of its TAS PumpMonitor software, his company's products and expertise are well known and accepted by major pump users such as Anglo American, Gold Fields and Harmony Gold. Harry has carried out system assessments at bulk water plants, industrial facilities, mining process plants, and underground mining operations.

For the last 5 years, Harry has been personally presenting a 2 day workshop on improving the efficiency and reliability of pumping systems, drawing on his wealth of experience. The workshop has been supported by Eskom and the National Energy Efficiency Agency as a valuable tool to help industry achieve their targeted 15% savings in electricity

Harry studied at Wits University and qualified with a Bsc Mech Eng in 1987, receiving his Pr Eng in 1992. He is past chairman of the SA Institution of Mechanical Engineering, Central Branch and was instrumental in setting up the first International Pump User Conference (IPUC) which was held in Johannesburg in 2005. Every 2 years since then IPUC has brought together the world's experts in energy efficient pumping systems, regularly attracting over 180 delegates and 20 world class speakers.

**Number of days:** 3 **CPD** Points: 3

## 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 Pump Efficiency and Reliability 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.

## Who Can Benefit From This Course

Engineering consultants, engineering procurement construction engineers, pump system designers, pump system specialist, assessment engineers, process engineers, system engineers, reliability engineers, maintenance managers, and energy efficiency engineers.

## Delegates Will Learn The Following:

- Benefits of assessing pumping systems
- Pump system power consumption and energy efficiency
- Interaction between pump behavior and system behavior

- Understand how the system is controlled and how to vary the operating point
- Understand the process for pump selection, specification, and acceptance
- Explain the function of different pump system components, such as drivers, bearings, seals, piping, valves, and instrumentation
- Identify common operating issues in pump systems and how to resolve them
- Describe the different preventive and predictive maintenance practices
- Understand piping and instrumentation diagrams, isometrics, process flow diagrams, and engineering drawings
- Identify optimization opportunities in existing systems and new designs
- Describe the steps in creation of an action plan for a pump system optimization program
- Importance of preparing a financial proposal using LCC analysis, NPV and ROI
- Implement optimization solutions

| TOPICS | |
|---|---|
| **Basic Principles** | - Hydraulic principles<br>- Flow, Head and pressure<br>- Power consumption and pump efficiency<br>- Pump types and applications<br>- Pump performance characteristics |
| **Pumping Systems and Pump Control** | - Static and friction head, System Curves<br>- Systems with variable demand<br>- Control valve throttling and bypass flow<br>- Trimming impellers<br>- Variable speed drives<br>- Pumps in parallel<br>- Pumps in series and multistage pumps<br>- Pump selection considerations |
| **Mechanical Components and Driver** | - Bearings<br>- Pump Packing<br>- Mechanical Seals<br>- Pump- Motor Alignment<br>- Electric motors |
| **Life Cycle Costing and Pump Reliability** | - Overview of LCC<br>- Pump efficiency and reliability<br>- Bearings and seal life<br>- Cost of operating off BEP<br>- Why pump duties change |
| **Pumping System Assessments** | - Guide to performing a pump system assessment<br>- Optimization opportunities in existing systems and new designs<br>- Importance of understanding piping and instrumentation diagrams, isometrics, process flow diagrams, and engineering drawings<br>- Field data collection / Instrumentation<br>- On site testing to find actual pump duty point<br>- Highlight problem areas and make improvements<br>- Failure analysis - interpreting the evidence<br>- Develop financial proposal using LCC analysis, NPV and ROI<br>- How to implement optimization recommendations |
| **Maintaining Pumping Systems** | - Condition monitoring<br>- Preventive and predictive maintenance practices<br>- Start-up and stop procedures<br>- Pump Performance Monitoring<br>- Measurement and verification (M&V)<br>- Case Studies |

## In House Course Option - Extra day

- If the course is done in house at a customer's premises, an extra day can be arranged to conduct a plant walk through
- The trainer together with the delegates will go into the plant and look at their existing pumping systems, to show how to put the above theory into practice
- Equivalent to performing a level one assessment of a pumping system in the plant


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# Registration Form

**Number of days:** 3 **CPD Points:** 3

## 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
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 3 working days before the date of the event, the full fee will be payable and no refunds or credit notes will be given.
- If a registered delegate does not cancel and fails to attend the Workshop, this will be treated as a cancellation and no refund or credit note will be issued.

## 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**

☐ 17-19 October 2022 (3 Days)
**R8 400.00 (excl VAT)**

**Conventional Classroom**

☐ Currently unavailable, a date to be advised (3 Days)
**R10 500.00 (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 or visit www.2kg.co.za