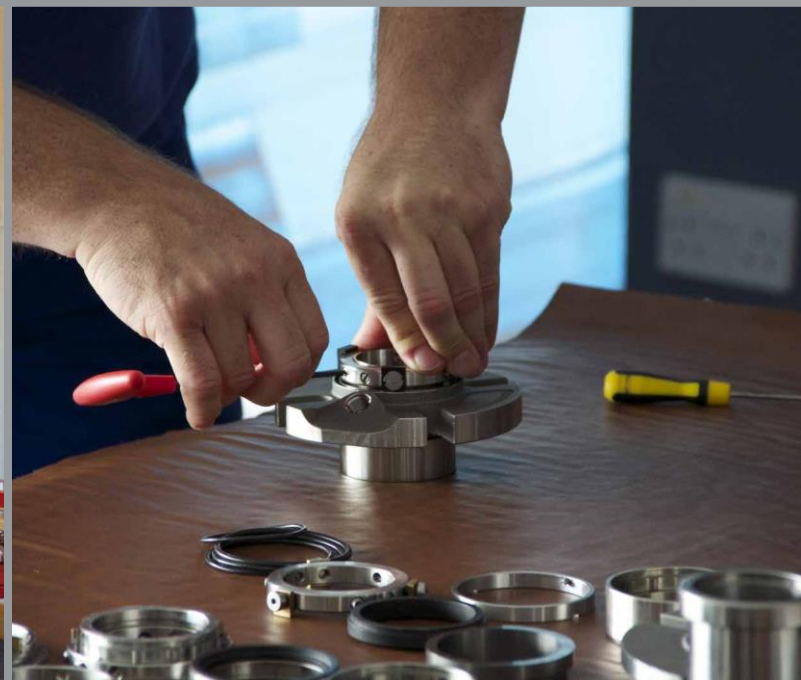




EXPERIENCE THE EXCEPTIONAL



2019 | 2020





# AESSEAL MIDDLE EAST FZE

## Dubai, UAE

Enrol Today!

### ABOUT THE PRESENTER : HARRY ROSEN

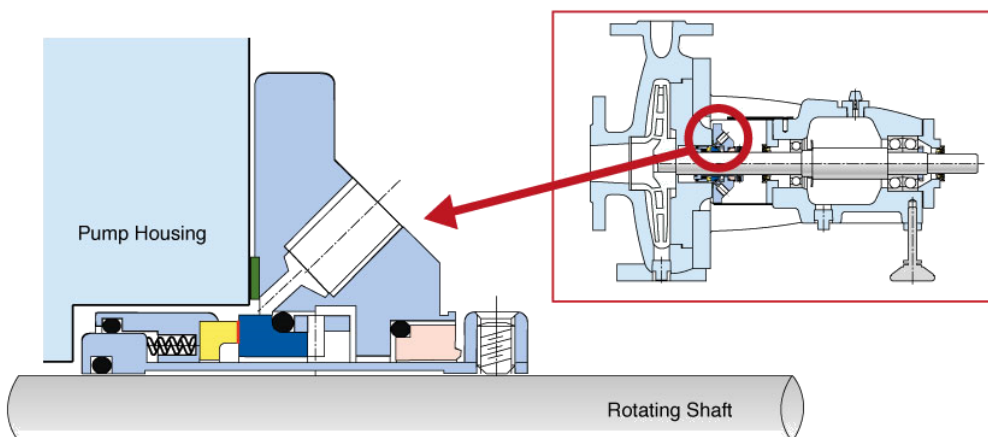


Harry Rosen has over 30 years of experience in the pumping industry, and his company TAS Online is an international market leader in engineering software and consulting services for both end users and manufacturers of pumps

Harry is one of only two International Pump Experts contracted by the United Nations Industrial Development Organisation (UNIDO) to deliver their expert pump training programmes. He is also the lead facilitator in the 'Train the Trainer' programme, whereby groups of pump experts are selected and developed as pump trainers themselves.

In addition to training for UNIDO, Harry presents a workshop on improving the efficiency and reliability of pumping systems, and a four-day course on pump operation and maintenance. Drawing on his wealth of experience, his courses address both the theoretical and practical aspects of pumping systems. The courses have been supported by Eskom (local power utility) and the National Energy Efficiency Agency as a valuable tool to help industry achieve their targeted 15% savings in electricity.

Harry has presented this course at petrochemical, industrial and mineral process plants as well as water boards throughout Africa, Indonesia, Thailand, Philippines, Malaysia, UAE, Qatar, Russia and Colombia





**Course: A**

# **PUMP OPERATION & MAINTENANCE FOR THE PROCESS INDUSTRY**

**Duration : 3 Days**

## **DISCOVER THE KEY ELEMENTS NECESSARY TO AVOID**

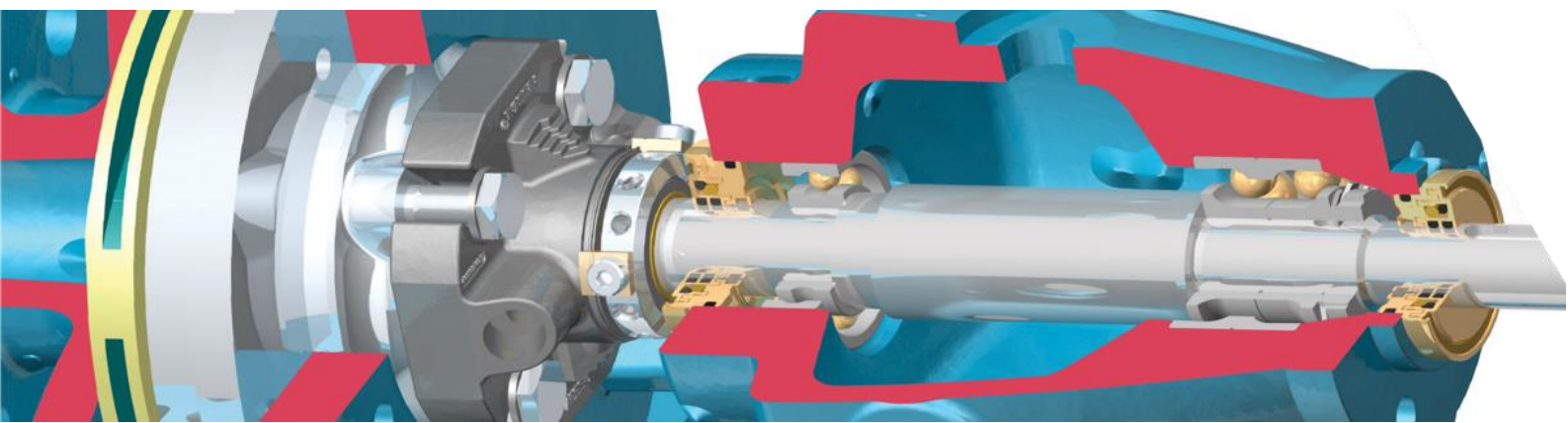
- Unnecessary capital costs
- Large long-term energy losses
- Reduced pump reliability
- Elevated maintenance costs
- Reduced operation time
- Poor hydraulic performance

## **WHO CAN BENEFIT FROM THIS TRAINING COURSE?**

Pump Operators, Artisans, Technicians, Instrumentation Technicians  
Mechanical Foremen, Maintenance Engineers, Reliability Engineers, Mechanical Engineers  
Operations Managers, Technical Managers, Process Engineers

## **SPECIFIC INDUSTRY CLIENTS**

AngloGold Ashanti, BHP Billiton, Exxaro (Mining industry)  
Sasol , BP, Shell, Chevron, Petronas (Refineries)  
Toyota, Mercedes, VW, Proton (car manufacturers)  
Rand water, Lepelle, Midvaal, Umgeni water , Transco, Manila Water (bulk water supply companies)  
TWP, GEC Alston, Murray and Roberts, Aurecon (consulting engineers)  
SAPPI, MONDI (paper mills)  
ILLOVO, BISCOM, Lopez Sugar (sugar mills)  
ESKOM, Lesedi Nuclear Services, BUI (power utility)  
SAB Miller, San Miguel (Breweries)  
BISW, Arcelor Mittal, Steel Asia, Engtex, CADP (Iron and Steel)





## COURSE OUTLINE

Availability of the trainers and package prices are subject to confirmation.

### 1. Basic Pump Principles

- How Pumps Work
- Head vs. Pressure
- Absolute and Gauge Pressures
- Work & Efficiency
- Flow & Head, Efficiency, Power

### 2. Pump Classification

- PD, Centrifugal types
- Impellers, Liquids
- ANSI / API
- Specific Speed

### 3. Pump Curves

- Head, Eff. & Power
- NPSHr
- Family Curves
- The Affinity Laws
- Speed & Diameter
- Practical Application

### 4. System Curves

- Total Dynamic Head
- Elevation, Pressure & Losses
- Static head, friction head curve
- Pumps in Series & Parallel

### 5. NPSH and Cavitation

- NPSH required
- NPSH available
- Vapor Pressure
- Types of Cavitation
- Effects & Prevention

### 6. Bearings

- Types & Services
- Lubrication
- Maintenance & Seals

### 7. Pump Packing

- Components
- Packing Procedures
- Failure & Leakage

### 8. Mechanical Seals

- Components
- Single & Double
- Support Systems

### 9. Pump- Motor Alignment

- Types of Misalignment
- Alignment Techniques

### 10. Pump Operation / Pump Reliability

- Definitions
- Operating away from BEP
- Energy savings, Increased MTBF
- Bearing and Seal Life
- Shaft deflection
- Maintenance Operation & Design

### 11. Troubleshooting

- Why duties change
- Identifying problem applications
- Where do your pumps operate
- Instrumentation (reading from gauges)
- Fault finding and Failure Analysis
- Interpreting the Evidence

## CLIENT TESTIMONIALS

### Process Engineer, Petrochemical plant

- "The instructor has vast experience in pump operation and troubleshooting. His practical experience and the pictures he showed helped to explain the course content. "

### Senior Manager, Steel plant

- "The course was extremely valuable, and applicable to my environment. It will assist me as Senior manager, I am in a much better position to challenge my team."

### Area Manager, Petrochemical Plant

- "Extremely knowledgeable about subject- A Pump expert. Shared a lot of useful tips, processes and case studies relevant to our industry."

### Mechanical Technician, Power station

- "The Instructor is very knowledgeable not only from a theoretical point but as well from a practical point of view. He could answer all questions and explained them in an easy to understand manner."



**Course: B**

# **PUMP SYSTEM ASSESSMENT AND RELIABILITY WORKSHOP**

**Duration : 4 Days**

## **AIM OF THE COURSE**

Pumps are at the heart of industry and consume 15% of the world's electricity output, rising to 30% if we include their effect on the overall system. Due to neglect and inefficiencies, much of this electricity is wasted – turned into heat, vibration and noise rather than producing throughput. Well managed and maintained pumps can drastically reduce overall process energy consumption, but instead they continue to be overlooked, leading to continuous breakdowns and compromising overall system reliability.

2KG Training have designed a course to help engineers and technicians better understand how optimising existing pumping systems will lead to reduced life cycle costs, major reductions in energy usage and improved reliability :

- Improve pump efficiency levels by 10-20%
- Optimise the entire pumping system and achieve overall efficiency savings of 30%-50%
- Increase pump MTBF and improve overall system reliability

## **WHAT YOU WILL GET OUT OF THE COURSE**

- A brief overview of centrifugal pump operation and the benefits of improved efficiency and reliability
- Pump and system interaction and the total cost of ownership
- Understanding NPSH and the effects of cavitation
- Scope and opportunities for pump system optimisation
- Improving the performance of existing pumping systems
- Operating more reliable and efficient pumping systems

## **WHO CAN BENEFIT FROM THIS WORKSHOP**

Plant Engineers, Consulting Engineers, Maintenance Managers, Instrumentation Technicians, Pump Operators, Mechanical Foremen and Process Engineers.



## OVERVIEW OF COURSE

### Plant Walk Through

- Identifying and discussing diagrams of the process with all of the delegates
- Walk-through of the plants where our expert will cover up to 3 separate systems
- Look for visible signs of energy wastage, such as throttling, control valves, overflows, recirculation etc.
- On site level one assessment of pumping systems

### Theory and Practical based Training

- Interactive classroom based workshop on improving the efficiency and reliability of your pumping systems.
- A combination of pumping systems theory and case studies / examples identified from your plant.
- In most cases, significant reliability improvement and energy savings opportunities are identified during the walk through – these are used as the basis for the workshop
- Your plant personnel are trained on optimizing their own pumping system.
- 

### List of Projects

- On the final day of the training, a list of potential projects are agreed on
- System description including reliability improvement and estimate of the energy savings.
- List both short term 'Quick fix' solutions as well as recommendations for longer term projects

*Our expert's unique combination of practical examples, opportunities drawn from your own pump systems and extensive pumping experience will result in reduced failures and unlock energy savings opportunities in your plant, providing a great return on investment for your training dollars*

Steel Mill, Western Cape		Steel Mill – Manila	
<b>Opportunity</b>	6 pumps operating in parallel in a cooling water system, all partially throttled	<b>Opportunity</b>	Pumping in parallel with one undersized pump, pump found to be dead heading
<b>Solution</b>	Reduce throttling, only need to run 5 pumps	<b>Solution</b>	Turn pump off, no reduction in flow rate
<b>Savings</b>	2.11 GW.hrs (258 kW)	<b>Immediate Savings</b>	0.65 GW.hrs (75 kW)
<b>R 1.2 m /year savings, no cost involved</b>		<b>Savings</b>	0.65 GW.hrs (75 kW)

Bulk Water Utility, Abu Dhabi	
<b>Opportunity</b>	Pumping at higher head to satisfy two different end user requirements (10 Bar). Control valve used to insure pump operates at BEP
<b>Solution 1</b>	Divert 40% of flow rate to second pipeline, pump at 6 bar Increased friction due to higher flow less than pressure drop on existing control valve Specific energy reduced from 339 – 139 kW.hrs/ML
<b>Savings no cost</b>	8.45 GW.hr savings (970 kW)
<b>Solution 2</b>	Divert flow, replace pump and remove control valve (pump at 4 Bar) Specific energy reduced to 76 kW.hrs/ML
<b>Long term Savings</b>	15.4 GW.hr (1774 kW)

Petrochemical Plant Cooling Water System		Bulk water supply from river	
<b>Opportunity</b>	By pass flow used to regulate cooling to plant, maintain fixed number of pumps operating	<b>Opportunity</b>	PD pump used as booster pump, in line with centrifugal, pressure relief pipe set too low
<b>Solution</b>	Shut down one pump when cooling load dropped, change control methodology	<b>Solution</b>	Increase height of relief pipe by 2m
<b>Savings</b>	1.85 GH.hrs (230 kW)	<b>Savings</b>	2 pumps running, 70 kW



**AESSEAL Middle East - Location Map**

Gate 7 & 8  
Gate 4  
Al Ain-Hatta Exit  
From Dubai  
Exit 13 From Abu Dhabi  
Exit 20  
D53  
1st Al Khail Rd.  
Labab Road  
DIP R/A  
DIP

Jafza  
Jebel Ali Free Zone  
Sh. Zayed Road  
Down Town  
Sh. Mohd. Bin Zayed Road  
Al Maktoum Int'l Airport  
Dubai Airports

**AESSEAL Middle East FZE**  
Showroom Office B5SR08,  
JAFZA South, Dubai  
Tel: 04 8806868  
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If you have any questions or want to know more information please contact us.

Tel: 04 880 6868 Email: [sales@aesseeal.ae](mailto:sales@aesseeal.ae)

**AESSEAL MIDDLE EAST FZE**

Showroom B5SR08, Jebel Ali Free Zone South 3, Jebel Ali - Dubai.