

# PUMPS & COMPRESSORS :

## Operation, Maintenance and Troubleshooting

6 - 8 March 2018 | 24 - 26 April 2018 | 4 - 6 September 2018  
| 13 - 15 November 2018

Block M4, IBD UTM Kuala Lumpur, MALAYSIA



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

Institute of  
Bioproduct Development  
Chemical Engineering  
Pilot Plant



**Steinbeis**  
Malaysia Foundation

### COURSE OBJECTIVES

To provide participant with the fundamental, technical knowledge and some practical aspects on pumps and compressors. Participant will be exposed to the operation, testing, commissioning, maintenance and troubleshooting of pumps and compressors including its accessories and auxiliary equipments.

### COURSE CONTENT

#### DAY 1

##### Fundamental of Pump

- Function, Duties and Types
- Centrifugal, Axial and Positive Displacement Pumps
- Special Duty Pumps
- Selection, Installation and Pump Components

##### Pump Operation and Performance

- Pump Testing Procedures
- Pump Performance (Head, Flow, Efficiency)
- Envelopes and impeller selections
- Pump series and parallel connection
- Sample calculation

##### Pump Commissioning and Start-up

- Preparation for commissioning
- Start-up procedures
- Pump priming and bleeding
- Observation of pump operation and start-up

#### DAY 3

##### Compressor Operation and Maintenance

- Centrifugal and Reciprocating compressors
- Surge phenomena and anti-surge control
- Operating limits

##### Compressor Seal and Packing

- Function, types and installations
- Mechanical packing and gasket
- Mechanical seals

##### Pressure Losses in Piping Systems

- Pump and compressor piping system
- Types of pressure losses
- Application of Moody chart
- Surface roughness chart
- Application of k values for fitting
- Calculation of power and estimation of pressure losses

#### DAY 2

##### Cavitation, Air and Vapour Lock

- Cavitation phenomena and effects
- Cavitation damages
- NPSHA and NPSHR
- Vapour and air lock, their prevention
- Releasing of vapour and air lock
- Sample calculation

##### Maintenance and Troubleshooting of Pump

- Preventive maintenance
- Suction system and its effects
- Balancing and alignment
- Wear inspection and monitoring
- Bearing and lubrication
- Seal and packing
- Pump troubleshooting

##### Fundamental of Compressors

- Type, construction and duties
- Impeller arrangement
- Installation and operation
- Oil free and Oil Flooded System

##### Plant Visit

Air compressor plant room  
Chiller plant room  
Thermal oil pump and piping system  
Deionised water treatment, pumping and storage  
Boiler feed water and fuel system



### WHO SHOULD ATTEND

- Engineers, construction, maintenance and operations personnel who are and will be responsible for the selection, signing, specification, installation, testing, operation and maintenance of pumps and compressors used in fluid handling facilities.
- Experience professionals who want to review or broaden their understanding in pumps and compressors.
- Other professionals who want better understanding of the subject matters.



## COURSE TUTOR

### Assoc. Prof. YAHAYA BIN RAMLI

Yahaya bin Ramli is currently an Associate Professor at the Department of Thermo-Fluid, Faculty of Mechanical Engineering, Universiti Teknologi Malaysia (UTM). Prior to join UTM, he has several years of practical experience in various technical and management level in palm oil, electronic and petroleum industries. He holds an Advanced Diploma in Mech. Engineering from MARA Institute of Technology and MSc (Fluid Power Systems) from University of Bath, United Kingdom.

He has conducted many courses in the field of hydraulic and pneumatic system, pumps and compressors, and boiler and steam generation systems. Many participants from national and multi-national companies have attended his courses. Among those companies are SHELL, ESSO, PUB(Singapore), Khartoum Refinery Company (KRC) Sudan, PETRONAS, PROTON, GOLDEN HOPE Plantation, TEXAS INSTRUMENTATION, FLEXSYS (USA), DUNLOP, TNB, TITAN, MECI(Prai), MMHE(Pasir Gudang), MIMOS, MARA, PERLIS POWER PLANT, POWERTEK(Tanjung), TEKNIK JANAKUASA (Malakoff) and other petrochemical and palm oil companies.



### Boiler & Steam Generation : Operation, Maintenance and Troubleshooting IBD UTM Kuala Lumpur

Please tick ( ✓ ) where appropriate

[   ] 6 - 8 March 2018     [   ] 4 - 6 September 2018  
[   ] 24 - 26 April 2018     [   ] 13 - 15 November 2018

**YES! I would like to register the following participants**

Name 1 \_\_\_\_\_

Job Title \_\_\_\_\_

Name 2 \_\_\_\_\_

Job Title \_\_\_\_\_

#### **COMPANY INFORMATION**

Company \_\_\_\_\_

Address \_\_\_\_\_

Town \_\_\_\_\_

State \_\_\_\_\_

Tel \_\_\_\_\_ Fax \_\_\_\_\_

Email \_\_\_\_\_

**Authorised Signatory (\*This registration is invalid without signature from an authorised officer)**

Name \_\_\_\_\_

Job Title \_\_\_\_\_

Tel \_\_\_\_\_ Fax \_\_\_\_\_

Email \_\_\_\_\_

Signature \_\_\_\_\_

### COURSE FEE

*Fee is inclusive of lunch, refreshments and course materials. Accommodation is not included.*

Local Participant | International Participant  
RM**1749** | EURO**995**

### Method of Payment

Please kindly complete and return the reply form 3 weeks before the commencement date together with :

Local Participant

Cheque / Bank Draft which are made payable to **PHYTO BIZNET SDN. BHD.**

International Participant

Direct Transfer/Bank Draft :

IBD Bank details :  
CIMB Bank Berhad,  
Universiti Teknologi Malaysia  
81310 UTM Johor Bahru, Johor, Malaysia

Please instruct your bank to remit us the full amount, net of bank charges

Account No : **0118 - 0004178 - 05 - 7**

Swift Code **CIBBMYKL**

### Cancellation & Substitutions

A full refund will be promptly made for all written cancellations 2 weeks before the course. 50% refund will be made for written cancellations received 7 days before the course. A substitute may be made at any time.

### Note

A) The organiser has the right to make any amendments that they deem to be in the best interest of the course and to cancel the course if insufficient registrations are received a week before course commencements date.

B) CERTIFICATE OF ATTENDANCE will be awarded at the end of the course.

### *We can offer courses in-house at your company*

**Staff from more than 700 local and overseas companies have attended our life-long learning programmes**

Some of these companies are :

**PETRONAS, SHELL, BP, SAUDI ARABIA BASIC IND. CORP. (SABIC), QATAR LNG, ALMARAI (SAUDI ARABIA), IDEMITSU, EASTMAN CHEMICALS, BASF PETRONAS, KUWAIT INSTITUTE OF SCIENTIFIC RESEARCH, KHARTOUM REFINERY, LOADSTAR (Sri Lanka) etc.**

For more information, please contact  
INSTITUTE OF BIOPRODUCT DEVELOPMENT  
UNIVERSITI TEKNOLOGI MALAYSIA  
81310 UTM Johor Bahru, Johor  
tel **+607.553 6486**  
fax **+607.553 6464**  
Mrs Asrin | asrin@ibd.utm.my

IBD UTM Jalan Sultan Yahya Petra  
54100 Kuala Lumpur  
tel **+603.2615 4406**  
fax **+603.2693 7921**  
Mrs Yatie | nikyati@ibd.utm.my

**www.ibd.utm.my**

UTM Kuala Lumpur is situated about 10 minutes drive from the famous Kuala Lumpur landmark, the PETRONAS TWIN TOWER and KLCC, the prime shopping centre. It is easily accessible by road and major hotels are located nearby.

