

## Training Seminar

Time schedule: from 13.00 h to 18.30 h

Location: Room 26

### Safe operation of pumps and compressors – Focussing the interfaces between manufacturer and user\*

Time	Topic
13.00 - 13.15	Introduction to the Programme
13.15 - 15.25	Interfaces according to explosion protection (ATEX) - Scope, Marking, Inside-Outside, Documentation ... - Responsibilities of manufacturer/user - Maintenance/Retrofit-
15.25 - 15.40	Discussion
15.40 - 16.00	Coffee break
16.00 - 17.50	Interfaces according to the challenges by functional safety (EN 13849; EN 61511/61508, ...) - Scope of relevant standards - Which standard is applicable? - Consequences and responsibilities?
18.00 - 18.15	Discussion
18.15 - 18.30	Summary and Conclusions

responsible:

Dr. Heino Bothe (PTB),  
Dr. Uwe Klausmeyer (PTB),  
Dr. Ulrich Johannsmeyer (PTB)  
Dr. Rainer Grätz (BAM),  
Dr. Heribert Oberhem (Bayer Crop Science),  
Konrad Brehm (Bayer Industries Services),  
Friedrich Klütsch (VDMA)

Supported by



\*Possible subject to modifications

## Training Seminar

Time schedule: from 13.00 h to 18.30 h

Location: Room 27

### Where does research and development of pumps and compressors go?\*

Time	Topic
13.00 - 13.15	Introduction to the Programme
13.15 - 14.15	Condition monitoring for pumps and compressors
14.20 - 15.15	Rotodynamic pump design
15.15 - 15.30	Discussion
15.30 - 15.50	Coffee break
15.50 - 16.50	Pump and Compressor Systems - Cause and effects of pressure pulsation - Network philosophy and energy efficiency of pump and compressor systems
16.50 - 17.15	Options by using ionic liquids in pumps and compressors
17.15 - 17.45	Options and borderlines of simulation
17.50 - 18.30	Summary, discussion and conclusion

responsible:

Prof. Paul-Uwe Thamsen (TU Berlin),  
Prof. Eberhard Schlücker (Universität Erlangen-Nürnberg),  
Prof. Günter Kosyna (TU Braunschweig),  
Prof. Peter Pelz (TU Darmstadt),  
Prof. Andreas Brümmer (Universität Dortmund),  
Prof. Rudolf Schilling (TU München)  
Harald Frank (VDMA)

\*Possible subject to modifications

## Training Seminar

Time schedule: from 13.00 h to 18.30 h

Location: Room 28

### **Pulsations - Fundamentals, Effects and Control Learn from the compression industry's leading experts**

Again EFRC offers a compressor training session focussing on Pulsations in compressor plants. Young engineers from operators, engineering companies and suppliers will be given an in-depth overview about pulsations from fundamentals to trouble shooting for safe and long lasting operation of the compressor unit

<b>Time</b>	<b>Topic</b>
13.00 - 13.15	Introduction to the Programme
13.15 - 14.00	Fundamentals
14.00 - 14.45	Effects on compressor performance
14.45 - 15.30	Effects on compressor reliability
15.30 - 16.00	Coffee Break
16.00 - 16.45	Effects on compressor valve performance
16.45 - 17.30	Pulsation control
17.30 - 18.15	Trouble shooting
18.15 - 18.30	Summary and Conclusions

responsible:

Dr. Peters (TNO Science and Industry)  
Harry Lankenau (Neuman & Esser Deutschland)  
Andreas Allenspach (Burckhardt Compression)  
Dr. Gunther Machu (Hoerbiger Ventilwerke)  
Peter Duineveld (Thomassen Compression Systems)  
Lau Koop (Thomassen Compression Systems)  
Eike Drewes (PROGNOST Systems)