

## Education & training

# Learning how to make more effective decisions

**C**hoosing, designing and operating the optimal pump system are vital skills which can bring huge savings for a company. The Pump Engineer training programme was created by Pumpenfachingenieur GmbH to help engineers gain the theoretical knowledge and operational experience which will give them those skills.

Known as the pumping programme, the Pump Engineer training programme is a flexible, bespoke distance-learning study course which consists of 50 training days, amounting to a total of around 400 hours, split into several sections. The main modules provide the theoretical

and practical basics and are followed by branch-related modules which consolidate that knowledge and can be chosen according to the needs and interest of each participant. The modules provide plant and process-related skills important for particular industrial sectors.

### High quality teaching

The lecturers and trainers are leading Austrian, German and Swiss pump experts with many years of experience in plant development and/or pump operation. Thanks to cooperation with R&D divisions of big industrial companies as well as professors (scientists) from the Institute for Hydraulic Fluid Machinery at the Graz University of Technology, the Institute for Fluid System Dynamics of Technische Universität Berlin and the Chair of Process Technology and Machinery of the Erlangen University, lecturers on the programme are permanently at the cutting edge of technology.

Students start with the basic modules, providing theoretical knowledge on the interaction between pump and system and presenting different layouts and types of pumps. Practical knowledge in the fields of control, operation and maintenance is followed by modules on drive control and system regulation, pump operation, life cycle cost and the application-oriented selection of appropriate pumps. This is essential for reliability as well as for energy consulting and energy saving.



*Managing Director, Professor Helmut Jaberg with students. Installation of a canned motor pump, provided as practical training at Graz University of Technology.*

Finally, two branch-related modules have to be chosen according to needs, interest and the professional environment of each participant. These modules provide plant and process-related skills for particular industries as well as consolidation of basic knowledge.

Students usually take around 14 months to complete the programme and can study most of the module contents themselves with flexible time management and supported by an internet platform. Additionally, two attendance periods provide consolidation and practical application of the theoretical knowledge acquired. In the international course each attendance period lasts two weeks. They take place at Graz in Austria, Erlangen and Berlin in Germany and at the sites of pump manufacturers and operators.

At the end of the programme, graduates are awarded a Pump Engineer or Pump Technician certificate. The training for technicians focuses on energy saving and so participants receive the award Certified Energy Consultant for Pumps and Pump Systems.



*Installation of a multi-stage pump on the pump assembly module at Graz University of Technology.*

### Student experience

One student who received that award is Isabel Izquierdo Gómez, a graduate of the 2013 course and now lead technical engineer for centrifugal pumps at GE Oil & Gas, Italy. She believes that the main benefits for her have been learning more about the conditions she works with on a daily basis.

"I graduated with a degree in mechanical engineering 10 years ago," explains Isabel. "My day-to-day work consists of dealing with pumps as rotating equipment linked to a broad range of processes, such as in refineries, water, power and slurry. Despite my experience, it was very useful to learn in more depth how pumps behave and how the system



Isabel Gómez with Professor Paul-Uwe Thamsen at the graduation ceremony at Technische Universität, Berlin.

reacts as a function of the expertise and management carried out at the plant."

She says that the course gives participants a good general grounding in many areas and a better understanding of what a system looks like and which is the best pump type to deliver the head and flow required by the system. The course is not limited to centrifugal pumps but also includes reciprocating and rotary displacement pump types. "They teach you how to think from an end user's point of view, what the risks are when you're handling dangerous liquids, what mechanical seal type you might need for an specific process, what kind of problems are linked to the flow rate and head and how to solve them."



Nina Rufer, HR consultant at Sulzer Pumpen, Germany.

### Widening professional network

Isabel also enjoyed the opportunity to meet people from different companies and widen her professional network. There was the chance to meet them in their working environment and visit the laboratory in TU Graz and TU Berlin where they work on a daily basis to solve pump issues. "People are really enthusiastic and very skilled at solving difficult problems connected to the pump process."

The quality of the training programme for Isabel came through being in contact with a team that shared its practical experience and in-depth knowledge and expertise in areas such as material, hydraulic, vibrations, mechanical seals, pumps and systems. This is where it had the edge over university studies where tutors are not regularly handling practical issues in the way that workers in the pump industry do.

Isabel suggests that the training programme is good for those already have a technical background on pumps and pump systems but want to extend their knowledge or move to another company within the industry. She would not exclude young people that have never worked in the pump industry, because this programme may help them to find a relevant job in the world of pumps. The programme demands a lot of dedication and hard work from students in order to meet the course

deadlines and study for exams alongside their work.

She feels that as a result of the instruction on the course, she has become more flexible and confident when it comes to dealing with pump problems. She now sees more opportunities to make different, sometimes more effective, decisions in her job as a lead technical engineer for centrifugal pumps. This is especially relevant in terms of energy and its increasing importance in a number of areas in the industry, such as the acquisition and maintenance of pumps.

### Employee satisfaction

Companies also appreciate the importance of further staff training and professional development. Nina Rufer, Human Resources consultant at Sulzer Pumpen (Germany) GmbH says that the Pump Engineer training programme enhances employee satisfaction and so fosters loyalty to the company. "The pump.ing study programme offers training elements that particular departments and the company as a whole aren't able to offer. It gives our employees an insight into different fields of application, providing them with an overview of the entire industry and allowing them to see the operators' point of view.

Nina Rufer believes that the programme not only allows the company's employees to acquire in-depth knowledge, but also to access recent research results. In addition, the training enables them to meet manufacturers and operators on an equal footing and allows for much more target-oriented discussions on technical topics.

Sulzer is very happy with the quality of the training programme. "The lecturers are all luminaries in their field, with sound theoretical knowledge as well as many years of practical experience," says Nina Rufer. "The training offers a good balance between practical know-how and theoretical knowledge and participants appreciate the application examples presented and they get the opportunity to investigate setups, systems and pumps in live mode."

She believes that the additional expertise acquired by Sulzer's employees provides the company with all kinds of



Vinicius Ferracini Piconi, Pump Engineer graduate, 2015.

benefits. "All course participants get an in-depth insight into all processes and requirements of pump applications, and therefore their decision-making improves and they meet the requirements of our customers in a more effective way. Our staff members see this study programme as genuine enrichment to their career, so it contributes to and increases employees' satisfaction."

### Career advancement

Vinicius Ferracini Piconi would certainly agree with that. A sales manager at Thebe Bombas Hidráulicas S.A. in Brazil, Vinicius graduated from the pumping course in 2015 and has benefited both in terms of career advancement and employee satisfaction. Following his graduation, he was given a promotion which gives him more responsibility. Professional training increases an engineer's value in the market, opening up more possibilities for attractive job opportunities.

Vinicius decided to undertake the course because he wanted to improve his knowledge in centrifugal pumps on a global level. "I'm an engineer from an South American nation, so I was seeking knowledge and skills from an industrial country where pump technology has experienced many applications, and where industry standards exist as well as ecological requirements

for pumping hazardous medias, measurements and instrumentation, procedures. So, this study programme fitted my needs perfectly."

Like Isabel, Vinicius was impressed with the programme quality and the fact that lecturers have so much experience in their specific sectors. He found the training challenging, with high expectations from the lecturers, long and detailed self-study and tough exams every two weeks. He also found the practical experience useful, particularly because it was tailored to build on his previous experience.

"Before the programme started I had worked for eight years in the field of centrifugal pumps as an application engineer and in the after-sales services where I gained experience with some practical applications of pumps and facilities. I was really surprised, because I got a valuable insight into specific fields of application in Germany, for example, a refinery with around 3000 pumps, 600 of them being monitored online with an evaluation of vibrations, noise, flow, head and temperature. I have noticed that some colleagues, like me, have learnt how to assemble and disassemble pumps and even gained knowledge in pipe installations, fittings and instrumentation."

The target group for the Pump Engineer programme is not just engineering

graduates, but also technicians, foremen and sales staff or anyone who is dealing with pumps and procedural plants in their professional life. General requirements for the course are either substantial practical experience in the operation, construction and sale of pumps or an engineering training, either university or vocational.

For both Isabel and Vinicius, the benefits of the Pump Engineer course are clear. Both were already experienced within the industry but found the training programme gave them increased confidence to make different and perhaps more effective decisions because of the more in-depth knowledge they had gained on the training programme. For those working in the pump industry it can be a gateway to improved job satisfaction and career progression. For those employing them, it's about more than just furthering their employees' knowledge; it's all about genuine enrichment of their careers and so an increase in employee satisfaction. ●

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