



Not left in a "vacuum"

Modular measurement data acquisition gives quality assurance to high precision vacuum pumps

Development is never at a standstill even in vacuum technology – the newest trends are moving towards dry compressing fore pumps. Production of these pumps requires cutting edge technology and the best quality assurance procedures. Having the right measuring equipment is the only way to reliably establish quality standards.

"Where are your products being used?", was the question I put to Mathias Ecke when I met him in Cologne. "They are used in everyday products such as TVs, light bulbs, air-conditioning units or the braking systems on cars. They are also used in high technology processes like CD or DVD manufacture or medical instruments", replied Mathias Ecke, laboratory head at Oerlikon Leybold Vacuum. The company provide vacuum solutions for a wide range of modern production and analysis processes as well as in research. A core competence here is the development of systems for vacuum generation (as in the dry compressing fore vacuum pumps of the ScrewLine series) and processing gas extraction. Leybold place high levels of quality and precision not only on their own products but also on the technical equipment they use in vacuum production and development.

For this reason Mathias Ecke has been using measurement data acquisition and evaluation software from the German company Delphin Technology AG. Frank Ringsdorf, Sales Manager at Delphin said, "We have been associated with Leybold for four or five years now. Initial contact was made at a trade fair where the first TopMessage devices were ordered. There has been a continuous growth in orders since then". Leybold now use more than 20 of Delphin's TopMessage modular units.

One software package covers all requirements

Our tour of the production site in Cologne began at the final inspection department for vacuum pumps. All systems are precision tested here following their assembly. The TopMessage devices are used to acquire and record data provided by the pumps. Delphin's ProfiSignal software is used to set control parameters enabling automated test procedures to be performed. Up to the end of 2005 the older MHouse software was being used. But Mathias Ecke and his team quickly switched to the new ProfiSignal product because it contained major benefits.

ProfiSignal offers a complete solution for all requirements in measurement data acquisition, analysis and visualization. Professional measurement data analysis is combined with modern operational and monitoring functions. Mathias Ecke explained the situation at the test bench, "We can see here how we can use ProfiSignal to select a start-time for test profiling to begin. This has been set for the night-time so that by the morning we will have a pump ready to be inspected at operational temperature".

Intuitive configuration

All the functions provided by the measurement data acquisition software are utilized in this application. The TopMessage hardware performs the important control tasks – the devices function autarchic without the need for any PC support. Operation, visualization and parameter settings are performed with ProfiSignal running on a PC. Frank Ringsdorf added, "And it's really easy to set up. Our software enables developers to generate systems for tasks which previously could only be met by setting up complex control systems". The software is structured according to projects, applications and analysis diagrams. A structure diagram can be generated with just a few mouse clicks for the vacuum pump test procedures. The application is built up step by step according to set rules – this provides the user with a quick overview of complex projects. Mathias Ecke enthused on how ProfiSignal has simplified their test procedures, "Each task within a test procedure can be represented by a block. These act as containers for program code. Clicking the container allows access to the code for intuitive programming". The parameter diagrams have proved to be just as helpful. These enable a simple method of entering pump test parameters. Generating parameter

Delphin Technology AG

Sülzetalstrasse 23 • 51491 Overath / Germany • Phone: 0049 (0) 2207 9645-0 • Fax: 0049 (0) 02207 9645-35
info@delphin.de • www.delphin.com



diagrams is just as simple as generating process diagrams – Leybold have now even created their own objects for use along ProfiSignal’s side existing objects. Mathias Ecke concluded, “Using Delphin products has enabled us to considerably shorten lead times from initial planning through to the start-up of our testing procedures”.

Setting up testing systems today is a dynamic procedure whereby projects and data structures have increasingly merged making it possible for the user to manage his time more productively. Time consuming tasks such as correcting program bugs or syntax errors have become a thing of the past thanks to ProfiSignal’s intuitive operation and the simple configuration of the measurement data acquisition devices. Frank Ringsdorf went on to explain, “We’ve produced a tutorial CD so that anyone, even those without any IT knowledge, can use the system. Everything is explained step by step – from parameter diagrams to structure charts and reporting functions”.

To observe what’s running

Leybold vacuum pumps are equipped with a *Guard* which provides constant monitoring of the entire system. This gives the user early warning of any possible pump malfunctioning. The *Guard* has a serial interface which is connected to the TopMessage device at the test bench. The TopMessage device records and reports on all important data. The output is archived for internal use by Leybold. Mathias Ecke said, “These reports allow us to document the condition of the equipment at the date of supply which is useful for future customer queries”.

Delphin product range also covers also Condition Monitoring. ProfiSignal CMS aids the operators of plant and machinery. ProfiSignal CMS increase machine uptime and therefore decreases running costs. ProfiSignal CMS is also simple to install, configure and operate. Frank Ringsdorf explained, “The user gets a tool which helps him to warn of imminent malfunctions and to detect long-term changes taking place and thereby enabling maintenance procedures based on the actual condition of the machine. As a supplier of systems for modern measurement data acquisition we are here to support our customers”.

From the simple to the complex

We have now arrived at the development department where Mathias Ecke and his team have set up a large test bench which is also equipped with Delphin products. Mathias Ecke explained, “We put our vacuum systems to the test as early as the development stage. Complex testing procedures deliver important data, e.g. electrical values, vacuum performance, volume flow rates etc. which enable us to determine the limit values of our products”. These trials then establish the parameters that will be used at the final inspection.

Leybold in Cologne are extremely satisfied with their new measurement data acquisition system. Mathias Ecke said, “ProfiSignal can be easily set up and running without any real need for specific training. This is contrast to the majority of other, very complex products available on the market. But Delphin’s soft and hardware is still capable of meeting both our simple and complex measuring requirements”. At the end of our tour Mathias Ecke concluded, “We will be using Delphin products in our future test stations”. It was clear to me that although Leybold is in the business of vacuums, their use of measurement technology has not been left in a “vacuum”.