

## Reorganization with specialist partner

With the innovative ultrasonic technology supplied by Weber Ultrasonics, Friedrich Grohe AG & Co. KG's Lahr facility is leading the way in brass production

Since the start of 2003 the production facility of *Friedrich Grohe* in Lahr has been producing its high-grade sanitary fittings using the latest ultrasonic technology with *SONIC-digital* generators and *SONOSUB-twin* encapsulated transducers by *Weber Ultrasonics*. The project, which was intended as a pilot project and model for the other facilities worldwide, is already showing first signs of success. The multi-stage ultrasonic cleaning process has allowed the cleaning result to be significantly improved, both in terms of throughput and quality.

### **SONIC-digital / SONOSUB-twin – the innovation**

From a design point of view, the use of the new ultrasonic technology represents a milestone in progress. Three tanks have been equipped with ultrasonic equipment, and the ultrasonic effect is used on both sides of each tank. Specially alloyed encapsulated transducers in a two-circuit electrical design with special membrane material are used. The high ultrasonic output per tank guarantees

a high level of process reliability while simultaneously offering greater redundancy, as two generators control each transducer. The ultrasonic field remains stable and homogeneous through the consistent and optimal arrangement of the encapsulated transducers. All the transducers are identical and specially designed to offer simplified and cheaper spare parts storage.

The changeover from magnetostriction plate transducers to piezoelectric encapsulated transducers offers *Friedrich Grohe* a wide variety of advantages, including improved ease of maintenance, greater efficiency and a smaller space requirement. The special two-circuit design and the control by two generators guarantee a high degree of service reliability and safety. This means that even if one generator fails, there are no dead zones in the tank. The interfaces of the generators allow all information to be passed on to the process control system. This permits continuous control, monitoring and documentation of all the individual process steps of the ultrasonic unit. Quality assurance therefore remains in the foreground and is maintained throughout the entire process. *SONIC-digital* can also be supplied with an RS 232/485 interface as an option.

### **Guaranteed long-term stability of all parameters**

The digital power control and monitoring of *SONIC-digital* guarantees the durability and stability of all



The SONIC-digital generator series in the 19-inch version of the air conditioned control cabinet



Fittings after surface treatment



One of the electroplating lines at the Lahr site of *Friedrich Grohe*

parameters and thereby offers optimum results in the long term. The generators are accommodated in fully air conditioned control cabinets produced in line with the system specifications of the customer. This ensures they can work under optimal working conditions in a clean and air-conditioned environment. There is no soiling, and contaminated ambient air cannot penetrate or damage the electronic components. The results speak for themselves.

### **Time to change**

At the end of 2001, *Friedrich Grohe*, Europe's largest manufacturer of sanitary fittings, decided to fully reorganize its surface processing and surface finishing facilities (grinding, polishing and electroplating brass). The old unit with magnetostriction ultrasonic equipment was considered out-of-date and no longer seemed capable of meeting today's technical requirements. The cleaning power of 3.5 W/l in just one station was not satisfactory. There was also an increasing number of problems with the carry-over of non-system materials into the subsequent active tanks, for example polishing paste in blind holes or threads.

*Friedrich Grohe* was looking for the best in the field to offer support in designing and implementing their new system, and chose *Atotech* and *Weber Ultrasonics* as their partners, companies with which they had already had positive experiences.

### **Only the best will do**

*Atotech*, one of the worldwide leaders in electroplating services and equipment has been a

supplier of *Friedrich Grohe* for many years. And there is also a successful link between *Atotech* and *Weber Ultrasonics*. *Weber Ultrasonics* has been consulting and supplying ultrasonic equipment to *Atotech* since 1998 in all its branches worldwide to assist the development of new procedures in the field of ultrasonic technology.

*Weber Ultrasonics GmbH* is a manufacturer of high-grade ultrasonic cleaning devices, ultrasonic welding generators and converters with a worldwide reputation. With its vast know-how, well designed products and high precision manufacturing, the company is making an important contribution to pushing ultrasonic technology forwards. *Ultrasonics* enjoys an excellent domestic and international reputation, both in the industry and with its customers. Alongside *SONIC-digital*, well-known product brands include the *SONOPOWER*<sup>®</sup> ultrasonic generator series, the *SONOPUSH* push-pull ultrasonic transducers and the *SONOSUB*<sup>®</sup> ultrasonic encapsulated transducers. The company also offers high-frequency ultrasonic systems, ultrasonic welding systems and other special applications.

*Weber Ultrasonics* has been providing *Friedrich Grohe* with service and support for its ultrasonic units for around five years, and continues to keep the company informed of new developments and technical changes in ultrasonic technology. An example of this is the ultrasonic workshop that took place last summer and was attended by the chief electroplating engineers from all German branches of *Friedrich Grohe*.



Specially alloyed and wired encapsulated transducer in operation in the electroplating unit

### Success that pays

The three companies were in constant contact during the planning and preparation phase, and discussions were continuously held on site at *Friedrich Grohe* and *Atotech*. *Weber Ultrasonics* supported both companies during this set-up phase, providing more than just competent consulting.

During the start-up of the new unit, the technical director (*Markus Weber*) from *Weber Ultrasonics* was, of course, on site.

The brass electroplating operation at *Friedrich Grohe* currently runs with an average output of 1,600 square meters per day. Due to the excellent cleaning of the sanitary fittings and the minimized carry-over of non-system materials, an air-driven nickel electrolyte can be employed in a three-shift operation despite the fact that the parts are permanent mold castings. And environmentally friendliness, a particular concern of *Friedrich Grohe*, is also maintained by the use of the innovative ultrasonic technology.

The completely new generator and transducer concept guarantees optimal ultrasonic effectiveness. The advantages include reduced use of ecologically harmful chemicals, implementation of higher quality and increased productivity and reduced costs.



Rinsing tank with ultrasonic cleaning on both sides for optimal performance

### State-of-the-art technology

Every generator module has its own extra-low voltage power supply. When several modules are operating in unison and one module fails, the function of the other modules is still ensured. All modules are of a plug-in and stand-alone type. The varying-voltage switched mode power supply ensures that a reliable internal extra-low voltage is maintained, while the digital ultrasonic frequency generator guarantees the absolute precision of the



The new SONIC-digital generator series – also available with removable operating element (on the right)

results. All relevant parameters can be controlled using the *RISC* micro-controller, meaning that excellent long-term stability is guaranteed.

The new control switching of the power amplifier is integrated into *SONIC-digital*. This itself is another guarantee for its absolute reliability.

### **An overview of the advantages offered by *SONIC-digital***

The *SONIC-digital* generator series unites the entire experience and technical know-how of *Weber Ultrasonics* in a single innovative concept. Digital frequency generation, the ability to separate generator and operating element and the completely new intelligent cooling system make this series of digital generators something of a milestone in the world of ultrasonic technology. The complex protective systems of the *SONIC-digital* generators ensure a high level of operational safety while simultaneously protecting the connected ultrasonic systems. The digital monitoring of the parameters guarantees the highest precision and long-term stability of the

ultrasonic frequencies. The *SONIC-digital* generator series also offers further application advantages, such as the ability to change modules without removing the transducer plug connector, plug and socket compatibility with systems of other manufacturers and a simple operator interface with ergonomic menu control. These features ensure that output, frequency and other important parameters can all be read off easily, while the plug-in, easily interchangeable subassemblies also improve usability.

In the extremely stringent selection of suitable partners for this restructuring process, both *Atotech* and *Weber Ultrasonics* made a most competent impression on *Friedrich Grohe AG & Co. KG*. This impression has now been confirmed. A result with which all three companies can be happy, and precisely the kind of success story that we need today.

-hk/dir-

#### **Contact:**

Weber Ultrasonics GmbH, Im Hinteracker 6, D-76307 Karlsbad Ittersbach; Internet: <http://www.weber-ultrasonic.de>