

## Comprex modules for industrial use



**Figure 1:** Conventional Comprex unit for flushing the pipe network

The Comprex pulse flushing process was initially used primarily for cleaning municipal pipe networks. The Comprex units developed by Hammann GmbH are used for this purpose (**Fig. 1**). These essentially contain compressors, compressed air treatment, pressure vessels and control technology. The hygienically perfect compressed air produced is introduced into the pipe section to be cleaned in a pulsed manner using a patented process. Air and water blocks cause high shear forces at the interfaces and thus mobilize deposits [1].

In the last ten years, the process has been increasingly used in other areas. Hammann GmbH mainly cleans drinking water installations [2] in large buildings such as residential complexes, retirement homes, schools and hospitals. The technology has been adapted to the small nominal diameters of drinking water installations [3].

In the industrial sector, new tasks are constantly arising with changing boundary conditions. Limited space, for example in the cleaning of cooling systems in

Production plants require a compact device that is easy to transport and position. Hammann GmbH has developed compact Comprex modules for this application. The current development stage is shown in **Fig. 2**. These modules have various connection options for compressed air or inert gases in hazardous areas, depending on availability at the production facilities. In addition, connections and control devices are available for operating



**Figure 2:** Compact Comprex module for industrial use

water, municipal water or demineralized water. Just like the conventional

"large" Comprex unit, the Comprex module relies on patented technology and constantly evolving software (**Fig. 3**).

The Comprex modules are designed for pipes up to a nominal diameter of DN 80. The device allows automated flow direction changes to increase the cleaning performance. The completed WÄRMER research project investigated the possibilities of Comprex cleaning for heat exchangers and confirmed the improved cleaning effect when the flow direction is changed [4].

Examples of the use of the Comprex module are the cleaning of

- " Cooling systems in Production companies
- " Temperature control units
- " Heat exchangers in the installed state

### **Example 1: Cooling system with machining centers and units**

In a metalworking company, some areas of a cooling system could only be reached with the Comprex module and could thus be cleaned in sections. The cooling system consisted of

Supply and return lines of approx. 200 m in length, connection lines to machining centers with 18 machines, two free coolers and two cooling machines. Due to the low water requirement of the Complex cleaning system, it was possible to collect and dispose of rinsing water with removed deposits (Fig. 4) in containers (IBCs).

**Example 2: Temperature control units for injection molding machines**

Compact temperature control units, in which deposits form during operation, are used to adjust the mold temperature of injection moulding machines in plastics processing. With the Complex module, the circuits in The temperature control units can be cleaned quickly and easily to restore the heating capacity.



**Figure 4:** Deposits discharged from the cooling system (example 1)



**Figure 3:** Control of the Complex module with customized software

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**Example 3: Heat exchanger**

Various types of heat exchangers are in operation in industrial plants. In the automotive industry, for example, plate heat exchangers can be found in processing machines or spiral heat exchangers in control cabinets. These are often difficult or impossible to remove and have to be cleaned on site.

**Conclusion**

With the help of the compact Complex modules, Complex cleaning is also possible in confined, hard-to-reach areas in industrial operations. These devices are adapted to industrial requirements. They are

can be used universally and enable the economical cleaning of pipes, heat exchangers and appliances on site.

**Literature**

- [1] <http://complex.de/complex>
- [2] <http://complex.de/drinking-water-installation>
- [3] N. Klein: "Besser mit Impuls spülen - Fachgerechtes Reinigen von Trinkwasser-Installationen", IKZ Haustechnik, special issue Drinking water hygiene 2017, p. 60 - 62.
- [4] <http://complex.de/waermer>

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