SCHWING Technologies GmbH

Oderstraße 7
47506 Neukirchen-Vluyn
Germany
www.schwing-technologies.com

Tel.: +49 (0) 2845 930-146
redaktion@schwing-tech.com

SCHWING Technologies makes the system fit for Industry 4.0

ITMA ASIA (Hall 2 booth C22)

SCHWING Technologies

SCHWING Technologies has been operating since 1969 and is the worldwide technological leader for high-temperature systems for thermal cleaning, thermo-chemical finishing and heat treatment of metal parts and tools. The owner-managed company constructs, manufactures and operates its systems at its headquarters in Neukirchen-Vluyn in Germany's Lower Rhine region. Built upon the achievements of German engineering, the medium-sized business is globally the best-known specialist in the removal of plastics. Among its around 2,500 international clients are companies from the plastics and fiber industries, as well as from the chemicals and automobile sectors. With its 80-strong personnel, the company is equipped with the tools and systems for any cleaning need and delivers the best economy, ecology and quality. SCHWING is also a reliable service partner for contract cleaning by cleaning more than 250,000 tools and parts each year to the highest environmental and qualitative standards. In the words of Ewald and Thomas Schwing, the two managing directors at SCHWING Technologies GmbH, "So far, there has not been a single component that we have not been able to free from polymers and inorganic contaminants."



Virgilio Perez Guembe, Head of Sales at SCHWING Technologies
Photo credit: SCHWING Technologies

The next generation of the VACUCLEAN thermal vacuum pyrolysis system

Industry 4.0 and digitization are the current topics of the development team at SCHWING Technologies. Engineers and designers at the thermal cleaning company have been working on the modernization and digitization of the VACUCLEAN system for about a year now. The developers have added several new components to the thermal vacuum pyrolysis system for cleaning polymer-contaminated tools and machine parts such as filter bundles, leaf discs, spin packs, spinnerets or melt-blown and spunbond dies with lengths of up to six meters. The new components include a new touch panel with network connection as well as a revised fault monitoring concept, internal data connection for data mining, digital system documentation in the SCHWING cloud, as well as fully electronic flow measurement for catalyst supply air and a process signal light. SCHWING will be equipping all new systems according to this design principle from now on. The company modernizes older systems for customers at company headquarters in Neukirchen-Vluyn on request.



Thermal vacuum pyrolysis system VACUCLEAN, SCHWING Technologies
Photo credit: SCHWING Technologies

Digitization and network connection

Customers now benefit from the larger and more intuitive C70 touch panels with network connectivity. These control elements are also represented one-to-one on PC interfaces, allowing operators to conveniently control them from their end devices without restriction. An OPC UA interface ensures the reliable display and archiving of the entire machine data as well as integration into integrated fault monitoring concepts. They support the system's predictive maintenance. "We put a lot of emphasis on predictive maintenance," says Virgilio Perez Guembe, Head of Sales at SCHWING Technologies, pointing out that all system-relevant information is registered and recorded in the process. The self-developed Windows app "SCHWING DataAnalyser" evaluates this data and checks the system, explains Perez Guembe. Last but not least, the company provides its customers with the complete electronically generated system documentation in the SCHWING cloud, ensuring easy and shared data usage. Another new design detail is the fully electronic flow meter for catalyst supply air. It records data and automatically transfers the values to the control unit, where the flow rates will be checked, and possible fault messages will be generated. A multi-colored signal light also informs operators about operating statuses as well as providing a good overview of the system status

from a distance of several meters. SCHWING offers its customers the option of an automated system opening on the device. The benefit for the operators: the automated cleaning process can be carried out unattended, not only saving manpower, but also accelerating further production processes and ensuring the system's sustainable operation.

The system's cleaning process

Depending on system size, cleaning material and type of polymer, the VACUCLEAN system removes organic build-up within 8 - 30 hours without any mechanical or thermal impact on tools. The system cleans fully automatically in an electrically heated vacuum cleaning chamber whose temperature is measured directly on the items being cleaned. The process initially heats up slowly and gently, with the aim of melting off and draining most of the adhering polymers. The remaining polymer decomposes at around 450 degrees Celsius. Oxidation subsequently removes any residual carbon. Sophisticated sensor technology controls this fully automated cleaning process. Possible inorganic residues are easily removed by a brief secondary treatment.

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