



Fluidized Bed Systems for thermal and thermochemical Processes up to 1050 °C



THE EXPERTS FOR
HEAT TREATMENT

TOP EFFICIENCY

Operation of SCHWING fluidized bed heat treatment lines relies on patented SCHWING fluidized bed technology, by which fine-grained aluminum oxide is fluidized with air or other process gas within a processing chamber. The resulting fluidized bed is an excellent thermal conductor and because of its mass has a very high thermal capacity.

PRODUCTIVITY AND PRECISION

The typical application of heat treatment in a fluidized bed is the energy-efficient hardening of tools, where the key benefits are minimal or no distortion and the rapid heating of parts and components. The exceptionally high thermal capacity and precise process control of SCHWING fluidized bed systems offer special benefits for many industries:

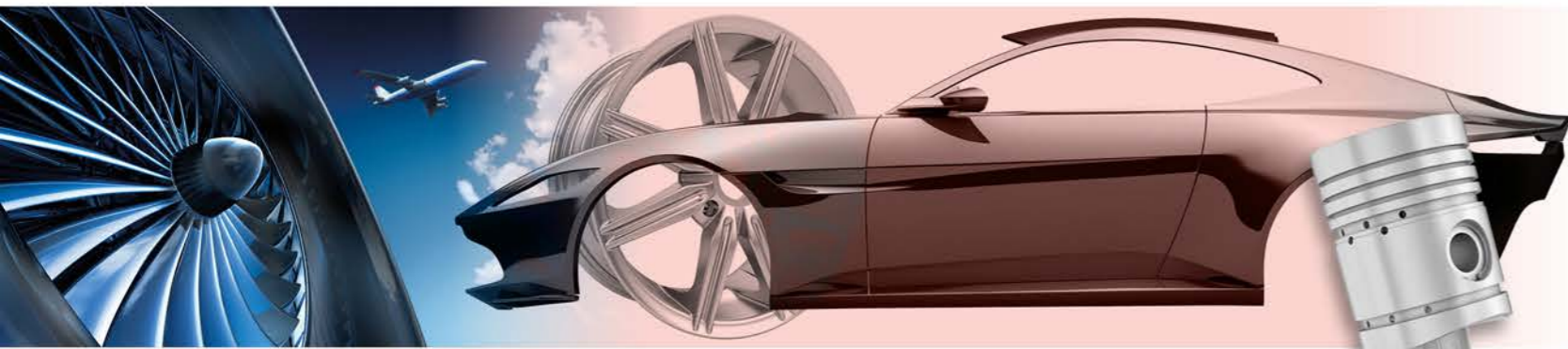


ECONOMICAL IN USE

SCHWING fluidized bed systems offer standard chamber sizes up to a diameter of 900 mm (35.4 inch) and up to a depth of 1500 mm (59.0 inch). This makes them particularly suitable for small and medium sized parts. Special versions allow heat treatment of components up to a length of 2500 mm (98.4 inch).



SCHWING fluidized bed systems heat up automatically to between 500 °C and 1050 °C with constant homogeneity of +/- 3 °C throughout the



SCHWING heat treatment systems are heated indirectly via electric heaters or gas burners. Cutting-edge control technologies make possible a range of highly flexible applications from room temperature up to 1050°C.

The design allows one to easily dip metal tools or components in the fluidized bed. With accurate control of the atmosphere and temperature, parts can be efficiently and uniformly treated in short time. Common applications include:

- tempering
- hardening, annealing
- pre-heating
- nitrifying
- nitrocarburizing
- quenching
- aging

Changeovers and switches between treatment procedures and atmospheres are made easy, allowing safe transition within two to three minutes. The excellent accuracy and uniformity of temperature in heat treatment systems by SCHWING ensures effortless processing of incoming batches and consistent part quality.

AUTOMOTIVE & AVIATION

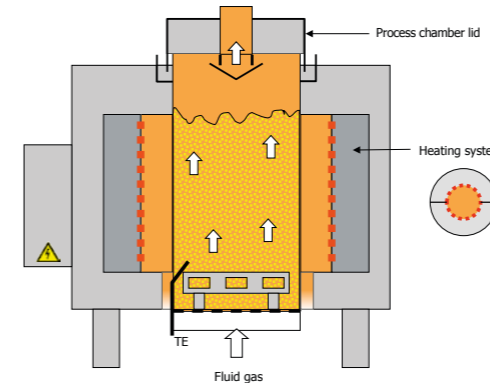
With SCHWING heat treatment systems, bodywork parts and sheet metal can be heated for subsequent forming procedures in the shortest possible times. The systems are also suitable for partial annealing.

Additionally, the fluidized bed offers other special benefits in heat treatment of metal parts and castings, such as aluminum engine blocks or other materials manufactured by die casting. In the casting industry, one SCHWING fluidized bed can simultaneously remove the sand core from the part while performing the heat treatment.

The SCHWING heat treatment technology is particularly gentle and produces processed parts that are free of defects, which helps accommodate the production pressures faced by automotive manufacturers and their suppliers. SCHWING's fluidized bed is substantially faster and much more energy efficient than most competing technologies.

MEDICAL TECHNOLOGY

Medical technology represents a high-precision industry governed by the highest quality standards. For example, a stent made of stainless steel requires equipment with precise thermal calibration. With heat treatment procedures by SCHWING, stable shaping and hardening that is gentle on the material is achieved reliably and easily.



The fluidized bed retort, as well as all the needed measuring and control equipment, fit into a compact housing. The bottom of retort contains the patented SCHWING gas diffuser plate, through which compressed air or other gas is conveyed very evenly through the bed oxide, imparting liquid-like properties.

The retort is heated indirectly by either a burner or by modular electric resistance heaters. Credit to cutting-edge control technology, temperatures and times are reliably and easily controllable. In contrast to a standard salt bath, SCHWING fluidized bed systems can be readily switched off as needed, offering the ability to further minimize energy costs.

FLEXIBILITY FOR ALL APPLICATIONS

SCHWING engineers, fabricates, and operates particularly efficient heat treatment systems that are economically viable even with small or partial loads. Equipped with special air cooling, the fluidized bed systems additionally can be used as cooling or quench baths.

For heat treatment of steel, stainless steels, and non-ferrous metals, equipment must ensure a high level of temperature homogeneity throughout the entire operating volume. For standard heat treatment applications,



fluidized volume. This makes the environmentally friendly fluidized bed systems by SCHWING ideally suitable for reliable and economical heat treatment of steel, stainless steels, and non-ferrous metals.

INFORMATION & CONTACTS

For more information, go to www.heat-treatment.com, or ask our experts with contacts given on the next page.

BENEFITS

- Optimum heat transfer
- Excellent distribution of heat
- Best temperature accuracy
- Short heat-up times
- High flexibility
- Economical use of energy
- Safe operation
- Environmentally friendly

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ABOUT SCHWING

SCHWING is a global leader in designing, manufacturing and operating high temperature systems for heat treatment purposes, for thermochemical refinement of surfaces and for thermal cleaning of metal tools, parts and components.

SCHWING has more than 40 years of experience in the construction and operation of heat treatment systems that are based on the fluidized bed technology. The ad-

vantages of this procedure include its excellent heat transfer properties, temperature homogeneity, the ability to quickly switch between atmospheres, and in particular the very short heat-up times.

Also with SCHWING fluidized bed systems, partial heat treatment with temperatures up to 1050°C is easily implementable, as is a fast heat-up for subsequent hot forming. The systems also are usable as cooling baths for a temperature-controlled cooling that is gentle on the processed parts.



SCHWING
TECHNOLOGIES

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