

# Total Solutions

for Soldering Processes and  
Automated Production Lines

SEHO PowerReflow-2

Reflow Soldering System SEHO POWERREFLOW-2

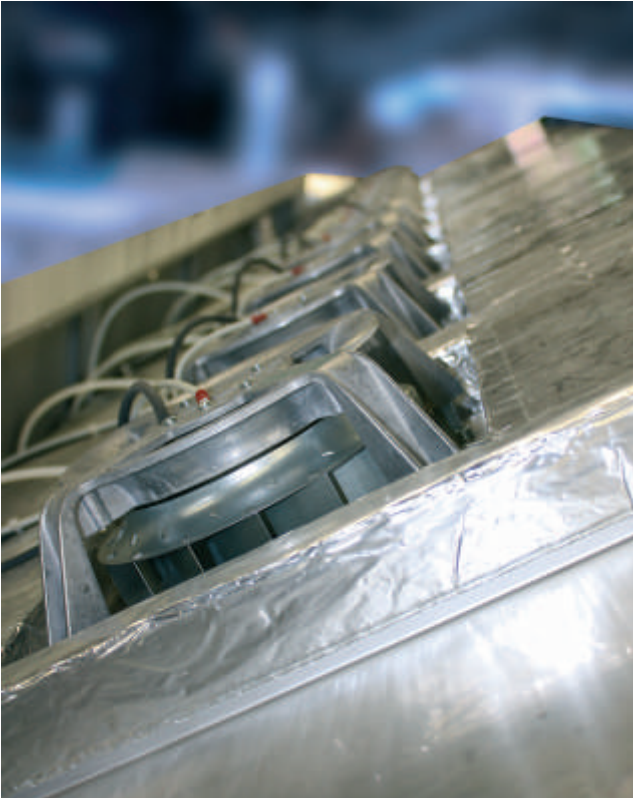


Reflow | Selective | Wave | Handling Solutions | AOI | Know How & Training

## More Power for Your Reflow Production

# POWER REFLOW-2

- Perfect soldering results for mid-size production volumes.
- Powerful heat transfer due to optimized process gas leading principle.
- High flexibility in temperature profiling and high thermal stability.
- Low set temperatures ensure component-sensitive processes.
- Filterless process gas cleaning system guarantees low maintenance requirements.
- Proven conveyor system ensures safe and reliable process.
- Low operation costs.
- Simple to operate.
- To be used in ambient as well as in nitrogen atmosphere.



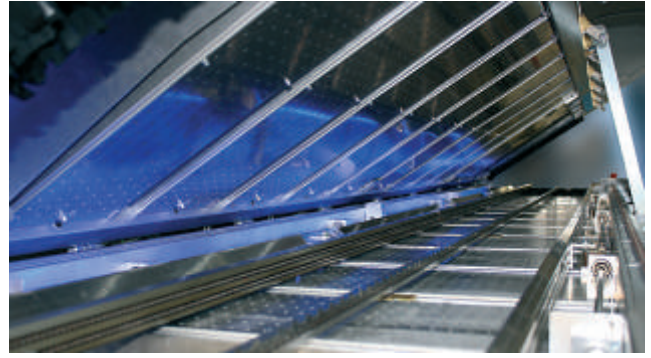
### SEHO PowerReflow-2: Powerful and with a Convincing Price-Performance-Ratio

SEHO PowerReflow-2 was developed for medium to large production series. The system excels by its highly efficient energy transfer and its modern design.

With comparatively low investment costs and low operating expenses, SEHO PowerReflow-2 offers ideal value for money, thus ensuring high profitability in your surface mount production.

SEHO PowerReflow-2 is characterized by flexible application for single- and double-sided reflow processes, in high-temperature processes and for curing adhesives.

The systems can be operated for soldering in a normal or nitrogen atmosphere, depending on the materials that are to be processed and the process window that is available for the given products.



*flexible temperature management*

### The Process Zone: Perfect Heat Transfer for the Best Possible Results

SEHO PowerReflow-2 features nine heating zones over a total length of 2735 mm and a controlled active cooling area to guarantee exceptionally flexible temperature management.

This enables specific adaption of the temperature profile to individual board assemblies for a flexible, yet very precise reaction to all material- and process-related conditions. Perfect soldering results are therefore always guaranteed. Each heating zone is fitted with a heating module in the upper and lower areas of the machine to achieve very uniform temperatures within the zones in conjunction with the utmost process stability.

The heating module technology of SEHO PowerReflow-2 guarantees an optimal interaction between process gas volume and process gas velocity. Generated by axial fans, the process gas is directed into the process area using heat conduction channels and optimized openings into the heating zone. This results in perfect, effective heat transfer with ideal temperature distribution within each heating zone, thereby guaranteeing extremely low temperature differences at the board assemblies.

This gas conducting principle simultaneously separates the individual heating zones thermally from each other. The short gas conducting routes prevent the build-up of an undesirable laminar flow within the individual zones or, even worse, beyond the individual heating zone limits. Moreover, this principle excludes the possibility of component displacement.

Very different board assemblies and components are uniformly and gently heated as a result of this optimized gas conducting system, while efficient heat transfer makes it possible to set low nominal temperatures to ensure component-sensitive processes.

The temperature-controlled cooling area of PowerReflow-2 features an active, closed cooling module.

This module is equipped with an integrated heat exchanger which is supplied with cooling water that either may be provided by an internal water chiller, or that can be provided by a direct on site water connection.



*efficient cooling area*

### **Soldering in Nitrogen Atmosphere: Ideal Process Conditions**

Ultimately, the use of nitrogen during the reflow soldering process depends on given products. Basically, however, it is beneficial to solder under a nitrogen atmosphere as this significantly reduces the oxidation rate.

Oxidation depends on many factors that often arise even before the actual soldering process, such as handling of boards and components prior to processing, solder paste printing or handling of the solder paste before it is poured into the printing machine. Generally, the oxidation rate always depends on the prevailing temperature: the higher the temperature, the higher the oxidation rate. Another important aspect, especially with lead-free soldering processes.

The use of nitrogen is therefore quite recommendable. As the PowerReflow-2 features low consumption values, operating expenses will be reduced to a minimum. Moreover, of course, you simply may disable the nitrogen option when editing a soldering program for board assemblies that are considered to be noncritical.

### **Process Gas Cleaning: A Clean Job**

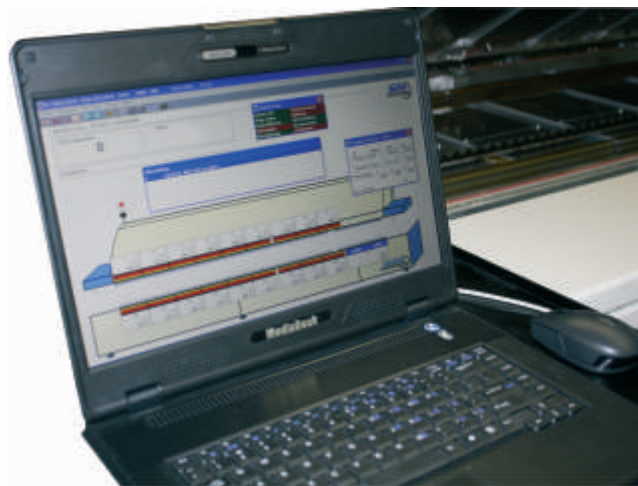
Efficient process gas cleaning has to be a primary consideration in the development of a modern reflow soldering system.

The PowerReflow-2 features a process gas cleaning system that enables long maintenance intervals thus reducing the overall costs in your production remarkably.

All of the heated zones are directly connected to the system for cleaning the process gas. Moreover, the process gas is conducted within the hot area up to the cleaning point, in order to guarantee that the condensation is controlled. The cleaning system itself is the first cold point that the process gas meets: a double-walled, cooled condensing cyclone.

The cleaned process gas afterwards is conducted to the last preheat zone. This principle ensures high differences in the set temperatures between the last preheat zone and the first peak zone.

The entire system operates without any filters that can be clogged up unnoticed in the course of time so that they cease to function effectively. In addition, the cyclone allows maintenance 'on-the-fly' that guarantees a remarkably high machine availability.



*simple and comfortable operation*

### **The Transport System: Safely through the Machine to Ensure a Safe Process**

Depending on your requirements, the PowerReflow-2 may be equipped with a belt conveyor system, a chain conveyor with centre support, or with a combination of both.

As for the pin-chain conveyor system, stable guides and compensation of temperature-induced expansion result in a very high degree of parallelism. If required, this type of conveying system may be supplemented with a centre support to avoid bending when processing thermally sensitive board assemblies.

For both, the chain conveyor system as well as the centre support, the width adjustment flexibly can be programmed with the software.

Conveyor systems from SEHO particularly feature highest parallelism and reliability. Simultaneously, they are exceptionally low in mass. This ensures 'thermal invisibility' that excludes any influence on the heat management in the process area.



SEHO PowerReflow-2: High Efficiency for Medium Production Volumes

## The Software: Safe and Simple to Operate

The software of the SEHO PowerReflow-2 is easy to use and provided with a comprehensive management data tool for documentation and analyzing purposes. All process-related functions are continuously monitored and controlled.

In order to make your daily work easier, the control unit of the PowerReflow-2 additionally is provided with a remote control that allows long-distance diagnostics. Thus, our software and process engineers can quickly assist you optimizing new soldering processes and if necessary may directly cut in on the soldering program of your reflow system.

Access security at the different system levels is assured by individually programmable password protection. And, of course, using interfaces such as SMEMA, the PowerReflow-2 may easily be integrated into a fully automated production line.



## Technical Data and Machine Options

### Heating Zones

process gas	N <sub>2</sub> or air
number of preheat zones top / bottom [pcs]	6 / 6
number of peak zones top / bottom [pcs]	3 / 3
total length of heated area [mm / inch]	2735 / 107.67
fan speed control	●
time for heating up, nominal power available at 100 % [min.]	approx. 35

### Cooling Area

cooling zone with active cooling	●
total length of cooling area [mm / inch]	900 / 35.43

### Conveyor System

belt conveyor	○
pin-chain conveyor	○
centre support for pin-chain conveyor	○
combined conveyor (belt conveyor and pin-chain conveyor)	○
max. working width [mm / inch]	508 / 20
width adjustment of conveyor system programmable	●
transport direction from left to right	●
transport direction from right to left	○
average working speed [cm/min.]	60 - 90

### Process Gas Cleaning

process gas cleaning system with active cyclone	●
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### Nitrogen Technology

prepared for nitrogen operation	○
rest oxygen measurement	○
average nitrogen consumption at 500 ppm rest O <sub>2</sub> <sup>1)</sup>	approx. 20 m <sup>3</sup> /h
recommended nitrogen quality	5.0
pressure of nitrogen supply [bar]	6 - 8

### Control Unit

micro processor control, operation via PC	●
recording of operating data according to DIN ISO 9000 ff	●
PCB pass-through control	●
clock timer and interval functions	●
interfaces for inline integration (SMEMA, Siemens etc.)	○
closed loop control of all relevant functions	●

### Machine Dimensions and Connections

length [mm / inch]	5215 / 205.31
width [mm / inch]	1450 / 57.08
height, depending on inlet height [mm / inch]	1310 - 1410 / 51.57 - 55.51
nominal power consumption [kW]	63
exhaust ports [pcs / Ø]	2 / 200 mm

Further options upon request.  
<sup>1)</sup>depending on application

● Standard    ○ Option

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