Total Solutions

for Soldering Processes and
Automated Production Lines

SEHO SelectLine

Selective Soldering System SEHO SELECTLINE

Soldering is our Passion

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

Patented by SEHO: **Ultrasonic Cleaning of Nozzles**

Soiled solder nozzles remarkably affect the reproducibility of soldering processes.

With the ultrasonic cleaning unit from SEHO, the liquid solder is set into oscillation which thereby cleans the surface of the nozzle. Using the existing inert atmosphere, the nozzle surface is immediately re-wetted:

The solder nozzle is restored to its original state!

- effectively dissolves residues from the solder nozzle and ensures a new and complete wetting
- **maximum process reliability**
- **remarkably longer lifetime of the solder nozzles, up to several months**
- programmable cleaning cycles
- significantly reduced maintenance requirements and higher machine availability
- **gentle cleaning:**
  - no chemical substances
  - no health hazardous vapors
  - no follow-up costs for consumables
  - no mechanical tools

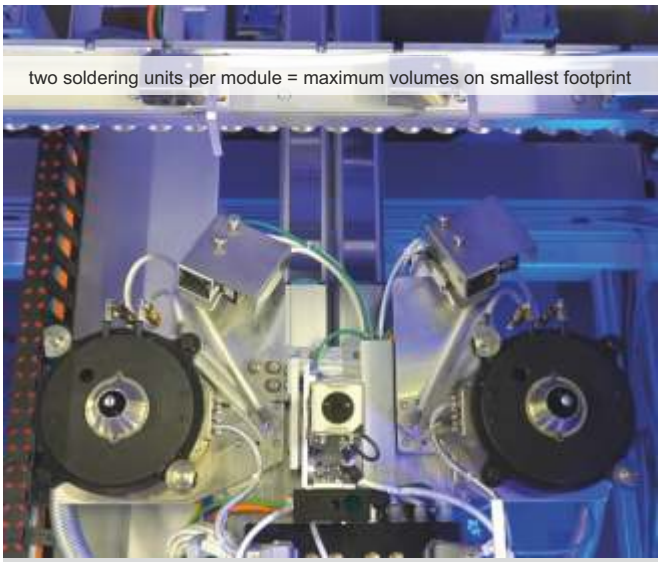
- stand-alone operation or inline use
- sequential or parallel processing of PCBs or carriers
- modular concept:
  system modules can be combined individually and can freely be configurated with fluxer, preheatings, soldering units, cooling module, selective brush system and AOI, extendable any time
- **up to 6 soldering units and more than 15 parallel workstations in one system**

- convection, quartz, pulsar and infrared emitters in the preheat area
- Twin-Select:
  dual solder pot system with separate z axes
- **SYNCHRO mode guarantees maximum production volumes**
- **automatic ultrasonic cleaning** of wetted solder nozzles ensures highest machine availability
- automatic selective brush station
- SEHO AOI easy to be integrated
- 100 % process control

Innovative Technology for Your Production

SELECTLINE

- **Highest flexibility: The modular machine concept and numerous configuration possibilities allow adaption to nearly all production requirements.**
- **Outstanding soldering quality: Electro-magnetic soldering units for miniwave processes and multiwave soldering processes.**
- **Highest production volumes: Patented SYNCHRO concept.**
- **Maximum machine availability: Patented ultrasonic cleaning unit for solder nozzles.**
- **100 % process reliability: Process control from A like AOI to Z like Z height.**
- **Dynamic precision: Exact positioning of the work stations with highly precise axis systems.**
- **Efficient programming: Offline Teach Program.**
- **Fast change-over and maintenance: Extremely good accessibility.**
- **Ready for Industry 4.0: Machine communication software mcServer.**



two soldering units per module = maximum volumes on smallest footprint

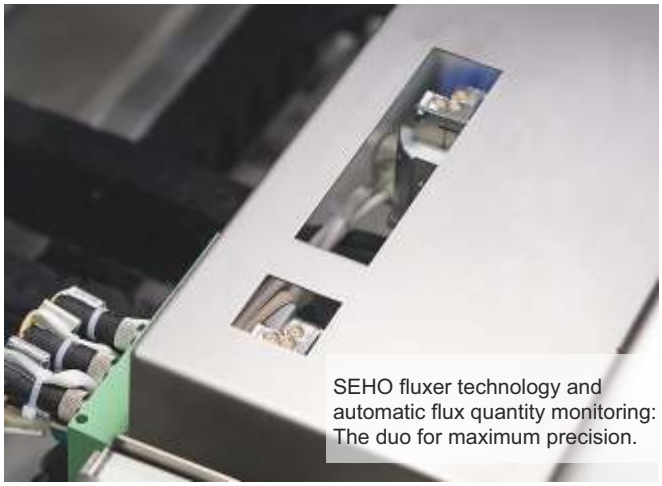
The PLUS of Flexibility and Precision

Time plays a key role in modern electronic production.

With the SelectLine platform, SEHO developed a selective soldering system that features a revolutionary design. The SelectLine convinces with highest precision and solder joint quality as well as a high degree of flexibility: No change-over is required to dynamically process a variety of assemblies with short cycle times.

The SelectLine machine concept is consistently modular thus ensuring clear cost benefits. Several modules with different dimensions can individually be configurated with fluxer, preheatings, soldering units, cooling modules, selective brush system and AOI and, depending on your requirements, they may be combined to a complete manufacturing line. Even if the basic configuration should be designed for stand-alone operation it may be expanded with additional modules at any time to be used inline.

Absolutely unique is the 100 % process control that is provided by all selective soldering systems from SEHO.



SEHO fluxer technology and automatic flux quantity monitoring: The duo for maximum precision.

Fluxing Process with Maximum Precision

Selective soldering systems from SEHO are equipped with a micro drop jet fluxer that particularly focusses on two points: Maximum precision and minimum flux consumption.

Several nozzle heads that ensure a defined flux application in smallest areas can be installed on the high precision xy axis system.
Thus, throughput can be increased remarkably when processing symmetric panels. As an alternative, two different flux types can be used simultaneously, controlled via the software. Each of the nozzle heads may carry several drop jet nozzles. This allows to flux multi-row connectors with only one passage.

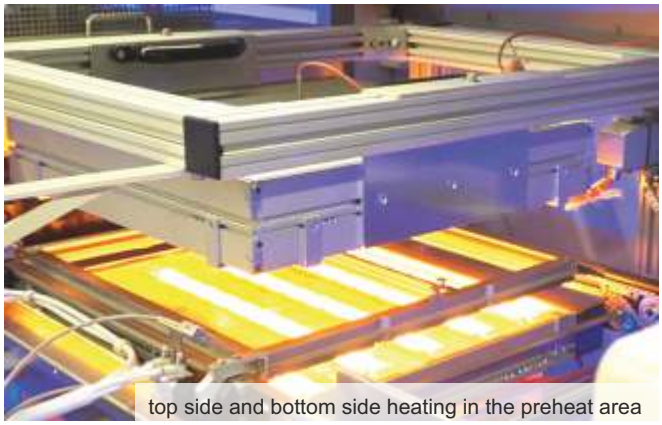
Flexible Preheat Process

The preheat area of the SelectLine can be configured individually in length and type. In particular it scores high because of its energy efficiency.

Individually programmable and controllable quartz heaters or pulsar heating elements ensure an effective heat transfer to the PCB bottom side and guarantee very homogeneous heating even in case of different thermal mass. A touchless pyrometer can be installed to precisely control the preheat temperature profile and to allow gradient-controlled heating of the assemblies.
If needed, a top side heating can be installed additionally. Controlled via the software, both preheating systems are perfectly matched to guarantee reproducible temperature profiles.

In case of processing high mass assemblies, a convection module ensures perfect and effective heat transfer with homogeneous temperature distribution within the preheat zone.

To constantly keep assemblies on the same temperature level during long soldering cycles, a top side heating may also be integrated in the soldering area.



top side and bottom side heating in the preheat area

Soldering to its Perfection

The soldering area - heart of SelectLine - scores highly thanks to its outstanding flexibility and precision.

The electro-magnetic soldering units with innovative solder nozzles for miniwave and multiwave soldering processes ensure an efficient energy transfer and thus they guarantee perfect soldering results.

With the dual solder pot concept Twin-Select the process management is pushed to highest flexibility. Each soldering module can be equipped with two electro-magnetic soldering units that are installed on separate z axes and which can be programmed fully independently. This allows to permanently provide two different solder alloys, change-over times are completely eliminated. Alternatively, the Twin-Select concept can reduce cycle times substantially if the soldering units are used with the same alloy, and with solder nozzles having different diameters.

Maximum throughput requirements are met with the Sychro concept - patented by SEHO. The **Synchro concept** is an intelligent software feature that coordinates the soldering process for PCBs in such a way that the total throughput is nearly doubled without the need for significant investment. **Cycle times can be reduced by nearly 50 % in synchro operation mode.**

An automatic ultrasonic cleaning of the solder nozzles definitely represents another highlight in the soldering area. What previously had to be made manually and with aggressive chemicals, now is automatically and environmentally friendly performed through the machine: The solder nozzles get a gentle cleaning and they are completely new wetted.
Besides a remarkably longer lifetime of the solder nozzles up to several months, this unique feature provides additional benefits: Highest reliability of the process and significant time savings for you.

multiwave soldering processes ensure shortest cycle times

ultrasonic cleaning of solder nozzles: maximum lifetime

Programming: Easier than Ever Before

Visual intelligent programming. With the graphic offline teach program from SEHO, creation of soldering programs is particularly easy and can be made at any PC while the machine is producing boards.

Basic data can be taken from any digital image file, gerber data or DXF data. A comfortable wizzard takes the operator through the programming procedure, default process parameters can be used with a simple mouse click, or easily be adapted to the specific application.
After teaching of all solder points, the software automatically computes the fastest way to minimize handling respectively processing time. The expected cycle time will be displayed directly to the operator.

SEHO cross sensor: automatic wave height control, setup control and tool measurement

100 % Process Control

The ability to reduce production costs while maintaining a consistent high quality is essential for electronic productions. The goal is a zero-fault production, this also from the aspect that rework processes are expensive and time-consuming, and often show poor reproducibility. A controlled and reliable selective soldering process represents the first and most important step towards a zero-fault production.

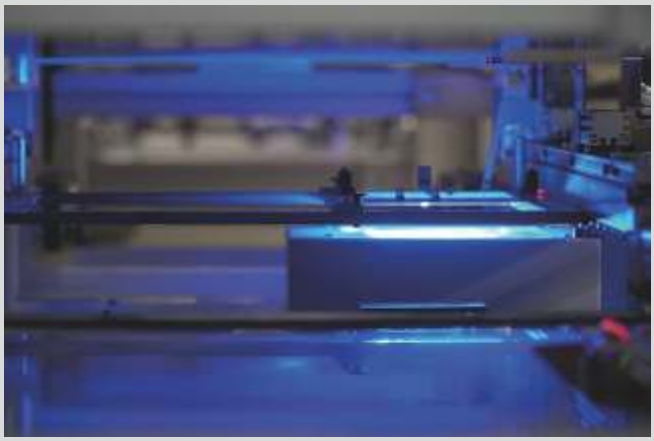
Selective soldering systems from SEHO support you with this - they provide a comprehensive hardware and software package to control the process sequence 100 %.

- automatic position correction using fiducial recognition and automatic z height correction
- monitoring of the fluxer function
- automatic flux quantity monitoring system
- pyrometer control of preheat temperatures and gradient-controlled preheat process
- monitoring of all heating circuits
- wave height monitoring
- automatic wave height control
- automatic setup control and tool measurement
- solder level control and automatic solder wire supply
- monitoring of nitrogen quality and nitrogen quantity
- process visualization and many more

A **selective brush station** for automatic cleaning of particular board areas from solder residues and solder balls can be implemented after the soldering process.

selective brush system

A zero-fault production turns into reality with the integration of an **AOI system**. Here, inspection of the solder joints is made immediately after the soldering process. Assemblies that have been detected with a fault, can be removed from the inline production automatically.
Besides clear cost benefits particularly in terms of floor space requirements and board handling, evaluation of trend and series defect information enables early process optimization to reduce the error rate notably.



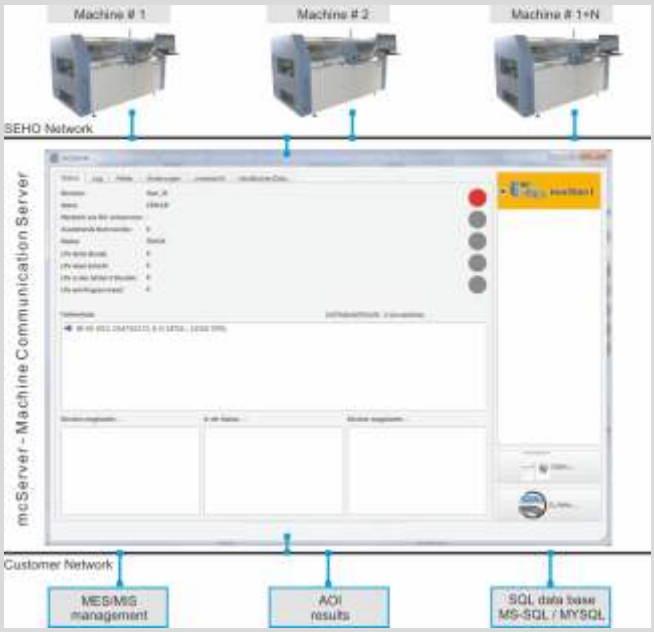
AOI - automated optical inspection

Transparent Processes: Ready for Industry 4.0 with SEHO mcServer

Selective soldering processes can be traced completely with the machine communication software mcServer.

This software feature allows comprehensive monitoring of the soldering process. mcServer collects, analyzes and archives all information about the machine and the process parameters. With its specific serial number, the entire process for a single printed circuit board can be traced, for example.

Using appropriate interfaces, the machine can be integrated into nearly each specific MES/ERP system for superordinate control of the process.



SELECTLINE

Mix and Combine: The SelectLine Modules

Fluxer Module	Preheat Module	Basic Module 1	Basic Module 2	Basic Module 3
				

Configuration Options for the Process Stations

F	quartz	F	PH	S	S	PH	PH	S	S	S	S
	pulsar	PH	BU	S	B	BU	BU	S	B	S	B
	convection			S	AOI	C	C	S	AOI	S	AOI
	infrared (top side)					F		B		B	AOI

F=Fluxer I PH=Preheat I S=Soldering Station I B=Brushing Station I AOI I C=Cooling Station I BU=Buffer

Technical Data and Options

processing of boards (standard)	sequential, parallel or SYNCHRO
dimensions of board / carriers (standard)	500 x 500 mm [19.68"x19.68"], optionally higher
modular extendable	yes
Fluxer Area	
micro drop jet fluxer	●
flux type	alcohol based or water based
several nozzle heads possible	○
automatic level control	●
flux quantity monitoring	○
Preheat Area	
quartz heating or pulsar heating - bottom side	○
infrared heating - top side	○
convection	○
pyrometer control	○
Soldering Area	
electro-magnetic soldering unit	yes
miniwave process and multiwave process	yes
Twin-Select (two soldering units per module)	○
Synchro mode	○
ultrasonic cleaning for wetted solder nozzles	○
nitrogen operation	●
infrared top side heating in the soldering area	○
wave height control and nozzle measurement	○
Integrated Additional Processes	
automatic selective brush station	○
automated optical inspection (AOI)	○
cooling process	○
Control Unit and Software	
automation PC	●
online teach camera	○
offline teach program	○
mcServer - machine communication software	○
Utility Supplies	
nitrogen pressure / nitrogen quality	6-8 bar / 5.0 recommended
nitrogen consumption per soldering unit	approx. 1.5 - 2.0 m³/h
compressed air	6-8 bar
exhaust stack / volume (depends on equipment)	1 pce. / 500 m²/h
available voltages	230/400 V - 50 Hz - 3 phase + N + PE 3 x 208 V - 60 Hz - 4 phase
Dimensions	
SelectLine-C Basic Module 1 + 2	l x w = 2525 x 1831 mm [99.4" x 72.1"]
SelectLine-C Basic Module 3	l x w = 1600 x 1831 mm [63.0" x 72.1"]
Fluxer Module or Preheat Module	l x w = 1312 x 1722 mm [51.7" x 67.8"]

Further options on request. ● Standard ○ Option

Headoffice Germany

SEHO Systems GmbH
Frankenstrasse 7 - 11
97892 Kreuzwertheim
Germany
Phone +49 (0) 93 42-889-0
Fax +49 (0) 93 42-889-200
E-Mail info@seho.de
Website www.seho.de

Americas

SEHO North America, Inc.
1445 Jamike Avenue, Suite # 1
Erlanger, KY 41018
USA
Phone +1-859-371-7346
Fax +1-859-282-6718
E-Mail sehona@sehona.com
Website www.sehona.com

Korea

SEHO Systems Korea Ltd.
125-5, Saneop-ro 156beon-gil,
Gwonseon-gu, Suwon-si,
Gyeonggi-do, Korea 441-360
Phone +82 (0) 10 6877 0872
E-Mail office@sehokr.com
Website www.sehokr.com

China

SEHO Systems China Ltd.
Room 112, Building B
745 Zhuanxing East Road,
Minhang District, Shanghai 201108
China
Phone +86 21 6419 5080
E-Mail info@sehosystems.cn
Website www.sehosystems.cn

Soldering is our Passion