

THERMAL SYSTEMS

The background of the top half of the page is a dark blue gradient. It features a network of light blue dots connected by thin lines, creating a mesh-like pattern. A prominent, thicker blue line with circular nodes at its peaks and valleys runs across the lower part of this network, resembling a signal waveform or a data profile.

ProMetrics

Profiling Monitoring Tool



Vision-Series
Convection Soldering



Profiling & Monitoring of the Soldering Process for Highest Quality Standards

ProMetrics has been developed for monitoring thermal profiles during the soldering of electronic assemblies. It checks whether the measurement result of the soldered assembly matches the parameters of the created temperature profile. A representation of the envelope curve graph visualises deviations of the temperature profile from the specified temperatures. ProMetrics can be used for single and double-track systems with or without a vacuum process.

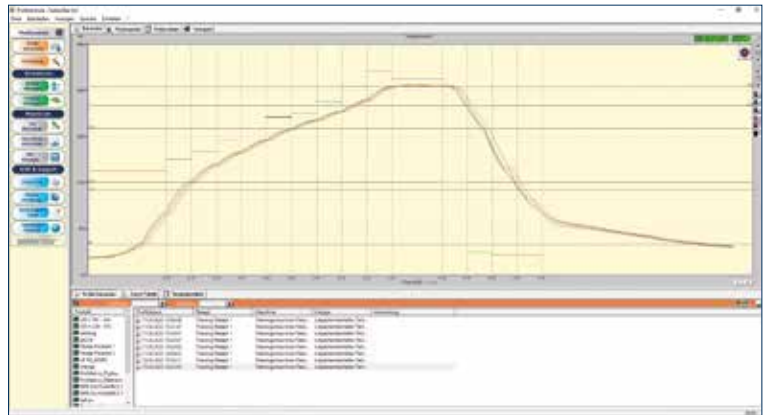
To effectively utilise ProMetrics, both software and hardware components are combined for optimal quality control of your temperature profile. To capture the data, the Solderstar software with its corresponding license dongle is required. Using a data logging device, the temperatures of a reference board or the products to be soldered are initially recorded in order to verify the temperature profile. Process stability during production is ensured with additional temperature sensors.

Temperature profiling with equipment from Solderstar

With Solderstar, we have a competent partner with years of expertise in the creation and optimization of temperature profiles for reflow soldering by our side. The Solderstar PRO Thermo-profiling systems include a compact data logger with Solderstar Smartlink connectors. The system transmits live profile data directly to the optional AutoSeeker software from Solderstar.



Measurement Data Logger - R-0925P-RF from Solderstar



AutoSeeker Profile Optimisation Software from Solderstar

HIGHLIGHTS

- › Perfect profiling and monitoring of the soldering process
- › Process traceability for highest quality requirements
- › Data acquisition for profiling via Solderstar's data logger
- › Suitable for the Vision series with and without vacuum
- › Display of envelope graph and temperature profile in ViCON
- › In ViCON integrated system, no interfaces to other systems
- › Complete data control via MES

100 %
Quality-
control

Procedure for Temperature Profiling

Using a data logging device, temperatures of a prepared assembly with temperature sensors are recorded. Additionally, a reference measurement is conducted with an identical, unprepared assembly. The temperature data captured during the reference measurement are then linked with the temperature data from the data logger. This enables a profile prediction to be generated for all subsequent assemblies that pass through the soldering system. This profile prediction is displayed as an envelope curve graph. If the profile prediction falls outside the envelope curve, an alarm notification is triggered.

Four Steps to Achieve Your Goal Easy Envelope Curve Creation

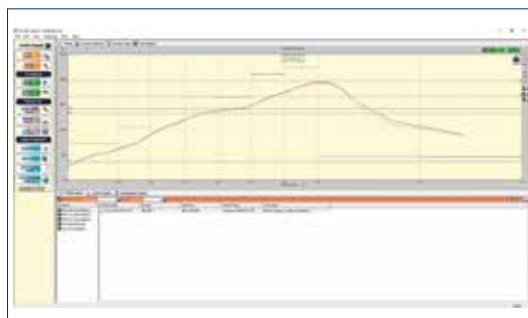
1. Temperature Data Acquisition

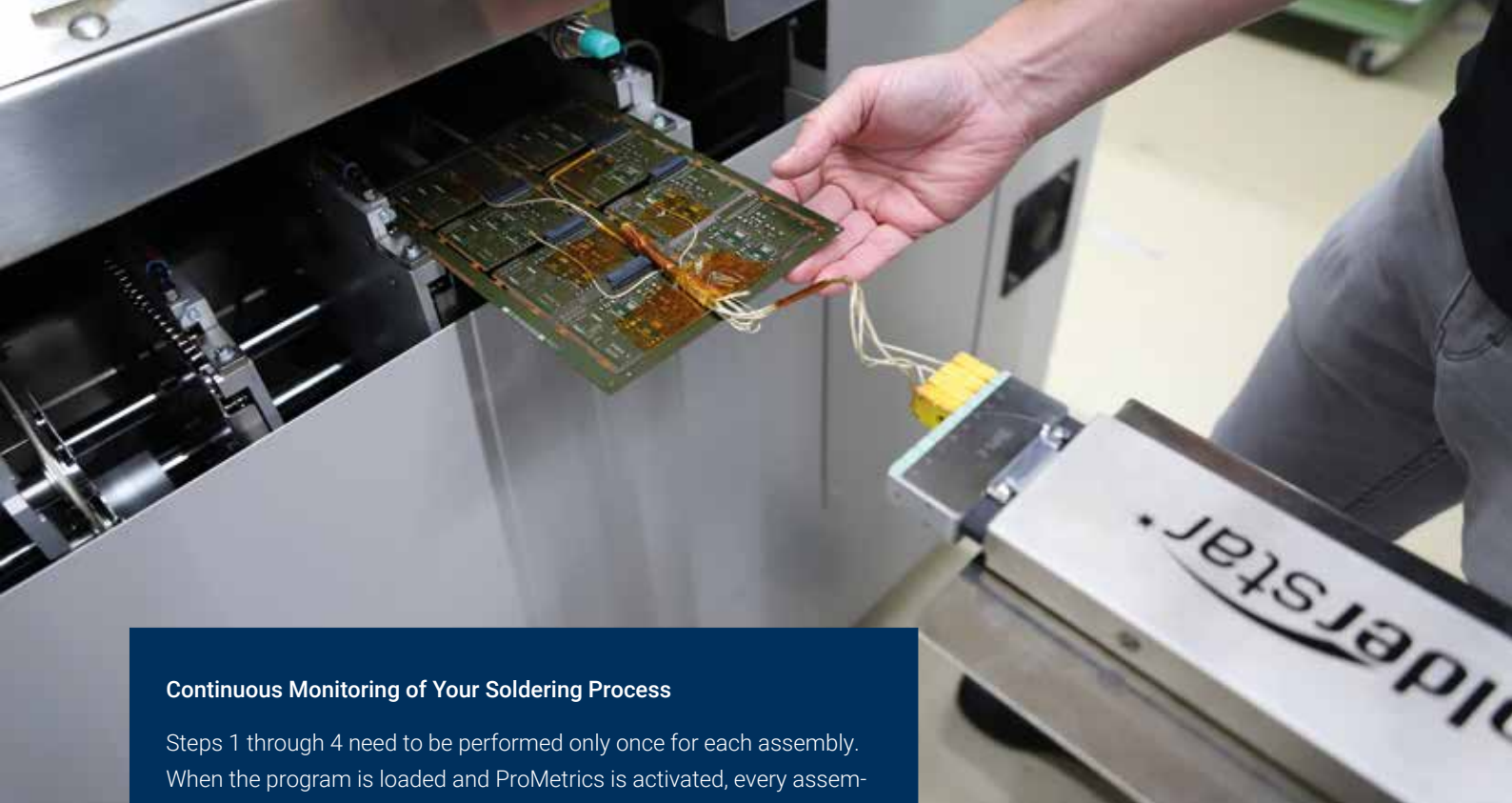
Using a data logging device, temperatures of the assembly prepared with temperature sensors are recorded.



2. Data Export

The recorded temperatures are imported into the ViCON software of the soldering system.





Continuous Monitoring of Your Soldering Process

Steps 1 through 4 need to be performed only once for each assembly. When the program is loaded and ProMetrics is activated, every assembly is subsequently monitored within an envelope curve graph.

If the profile prediction exceeds the upper or lower limit of the envelope curve, an alarm notification is triggered. The calculated PWI value is responsible for this profile prediction alarm

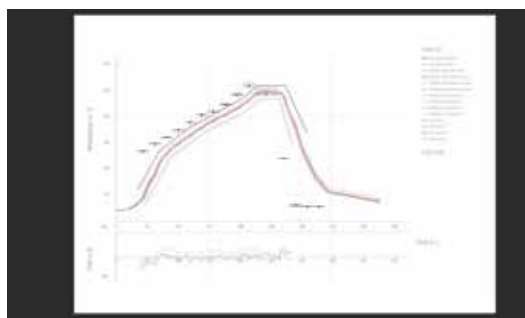
3. Reference Run

In a reference run with an original assembly, additional time and temperature data are recorded. This data is provided by a specialized multi-thermocouple.

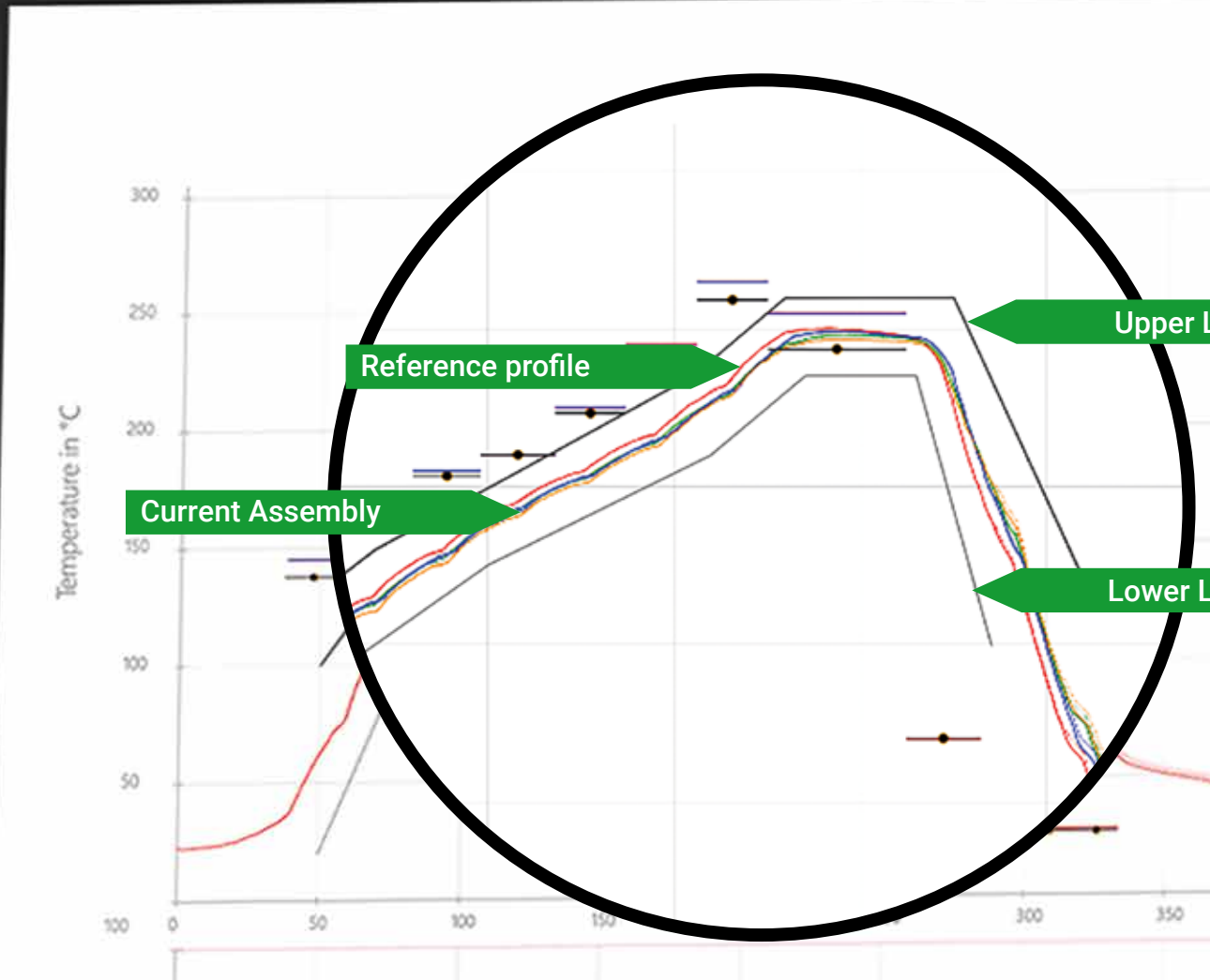


4. Profile Prediction

For every subsequent assembly that passes through the soldering system, a profile prediction is generated in the form of an envelope curve graph. The envelope curve must be defined once.



OutputTime (Local) 28.10.2021 13:13:46

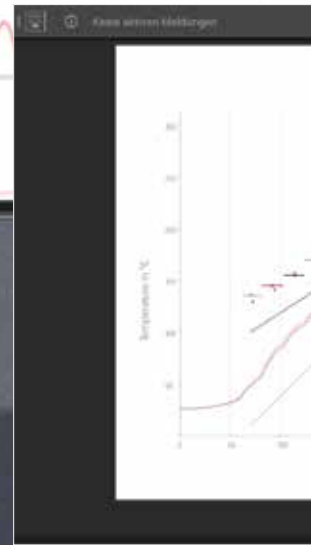


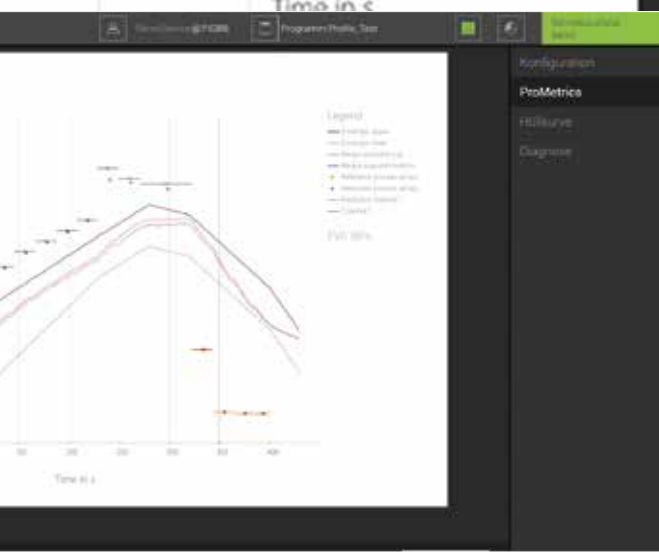
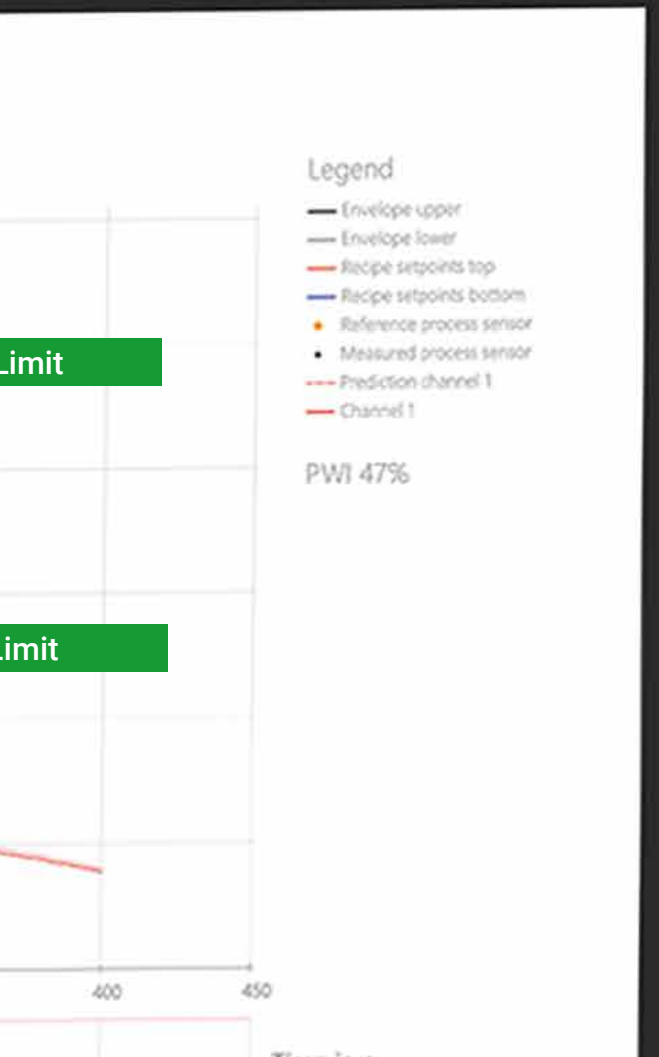
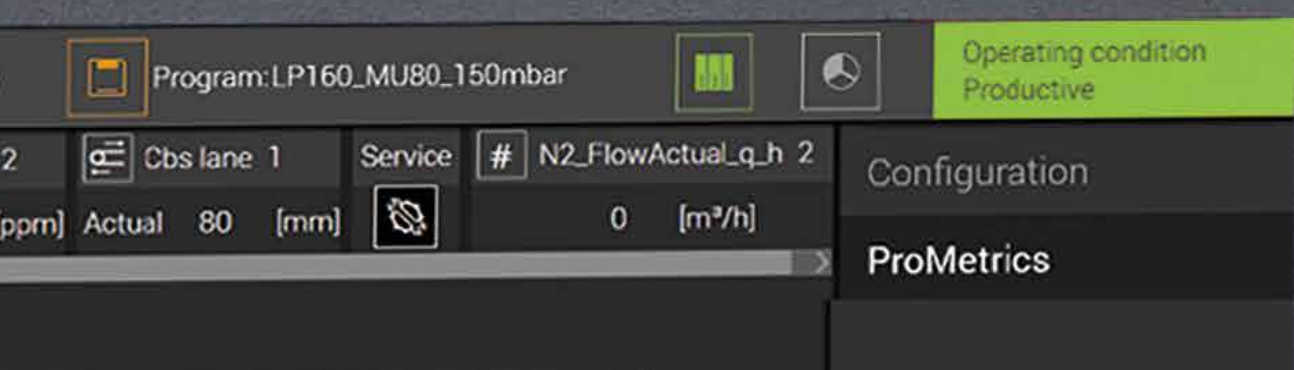
Envelope

Update

	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Punkt 8	Punkt 9	Punkt 10
Top										
X	50	80	128	215	240	275	308	0	0	0
Y	100	150	180	240	240	240	110	0	0	0
Bottom										
X	50	75	128	200	230	250	300	0	0	0
Y	20	90	150	205	225	225	90	0	0	0

Diagnostic





Legend

- Envelope upper/lower**
Displays the upper and lower limits of the envelope curve.
- Recipe setpoints top/bottom**
Represent the setpoints of the reflow system above and below, respectively. This corresponds to the zone lengths (temperature and time).
- Reference process sensor**
Reference point of the temperature monitors in the system when the reference assembly with the logger is running through the system. (The temperatures measured during the reference run).
- Measured process sensor**
Reference point of the temperature monitors in the system when the current assembly is running through the system. (The temperatures of the current assembly).
- Prediction channel 1**
Prediction of the temperature curve by measured process sensor, reference process sensor and Channel 1
- Channel 1**
Temperature curve of channel 1 from the measurement data logger. Up to 6 channels are possible.

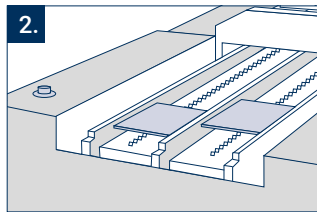
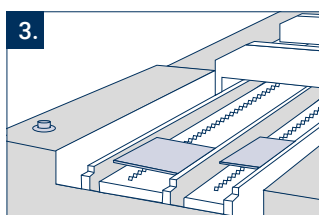
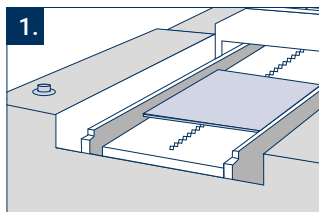


Flexible for all system variants

With ProMetrics, we offer you a tool that allows for the stable determination, for the first time, of whether the pre-set profile falls within the defined envelope curve, both in single and double-track systems, as well as in vacuum systems.

The continuous tracking of the assembly's position in the system enables a reliable assessment of the profile associated with each specific assembly. It identifies any deviations or delays in the soldering system, regardless of the type of convection reflow soldering system you are using. This means that process changes can be detected immediately. This leads to the highest possible reliability in calculating the temperature profile of an assembly.

ProMetrics for different types of machines



1. single track transport

One adjustable rail

2. double track transport

Two adjustable rails, synchronous/
asynchronous Transport speed

3. multi-track transport

Three adjustable rails, synchronous/
asynchronous Transport speed

4. vacuum system

Two adjustable tracks, synchronous width
adjustment and Transport speed

HIGHLIGHTS

- › For all Rehm reflow soldering systems with ViCON
- › Full function of the system also with vacuum systems single and double track
- › For vacuum systems in pressure and time-controlled operation

Temperature profiling

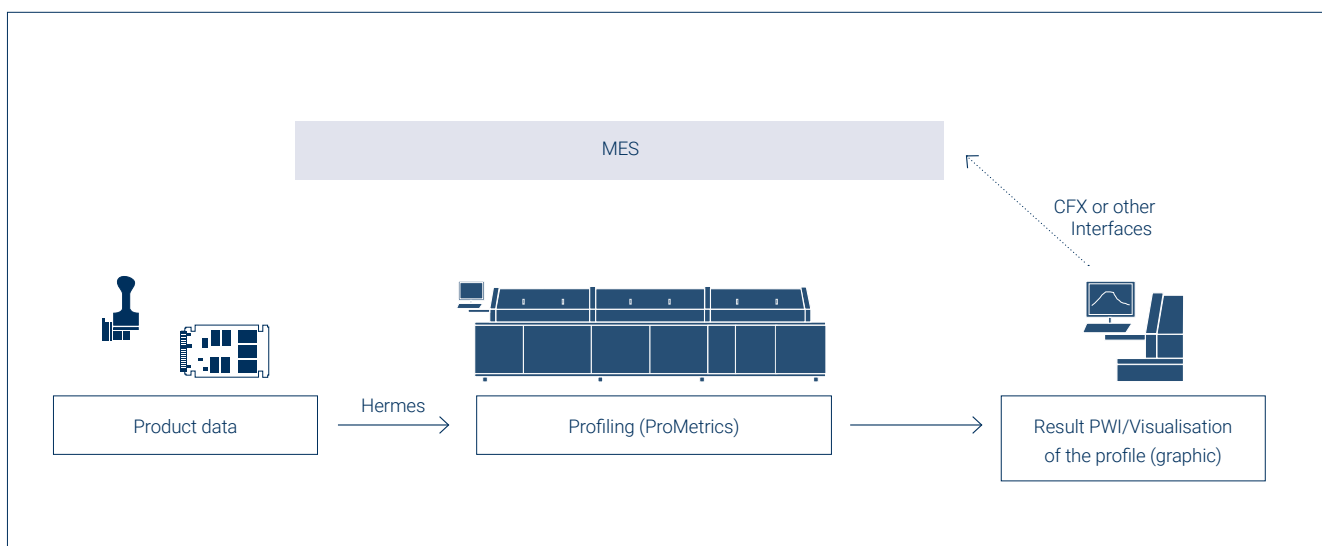
Advantages of an integrated system

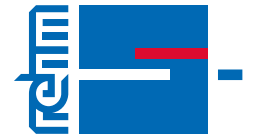
ProMetrics is a tool for profiling and monitoring the soldering process. The Solderstar software is integrated into the ViCON interface and helps with thermal profiling. The advantages of the integration is the central availability of the information in the MES: There is a clear assignment of the data and a uniform logging in the ViCON. Repeated maintenance of data is not necessary and the susceptibility to errors is reduced.

Futhermore, real-time data is generated. The software tracks the exact path of the assembly through the reflow system and notices if the situation changes and there may be a delay. Thus, process changes can be detected immediately. This leads to the highest possible reliability in the calculation of the temperature profile of an assembly.

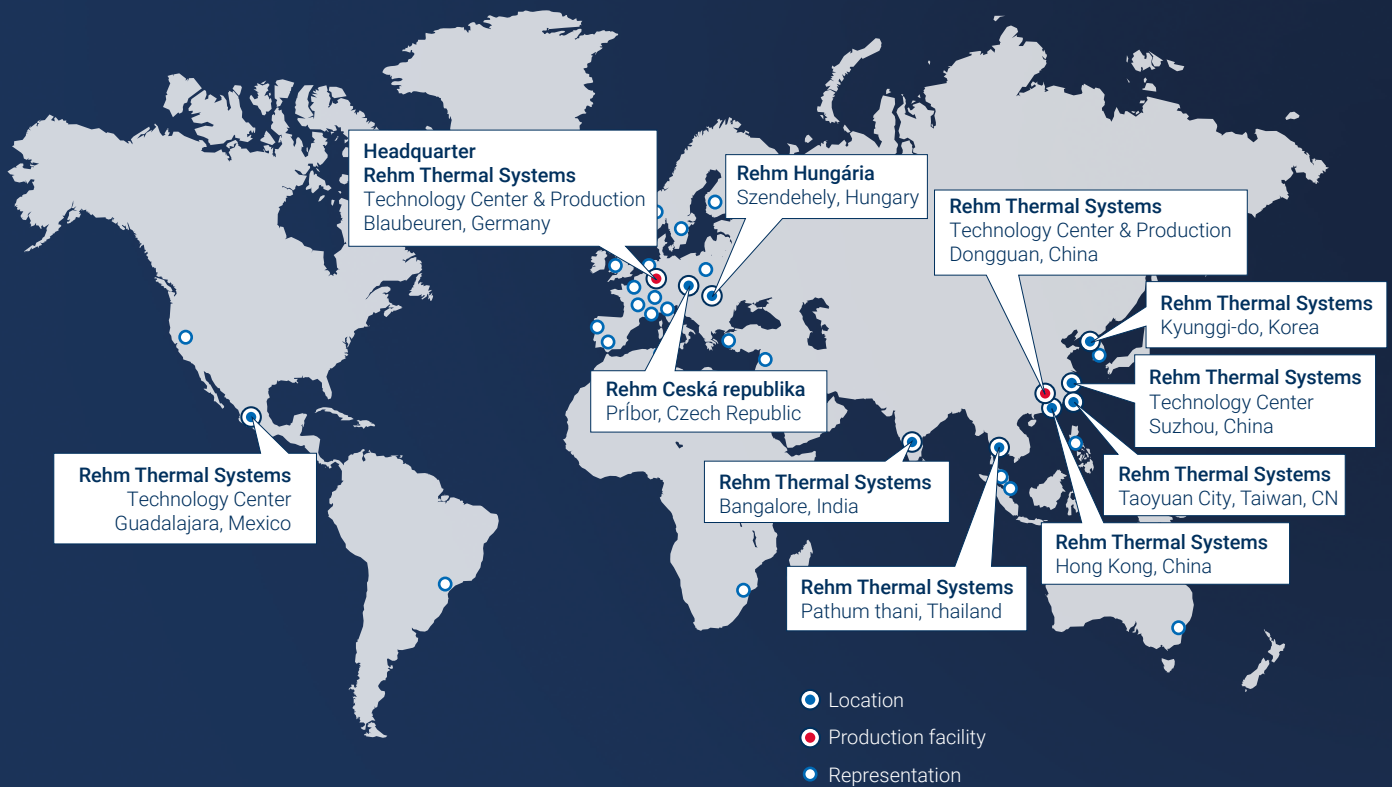
HIGHLIGHTS

- › Clear assignment of the data
- › Localisation of the assembly in the system
- › Uniform logging in the ViCON
- › Complete data control via MES
- › Alarm messages in case of deviations from the temperature profile outside the envelope curve





THERMAL SYSTEMS



Rehm Worldwide

As a leading manufacturer of innovative thermal system solutions, we have customers on every continent. With our own locations in Europe, the Americas and Asia as well as agencies in 24 countries we are in position to serve the international markets quickly and to offer outstanding on-site service – worldwide and round the clock!

November 2023. Technical changes without prior notice. Art. No. 1.253865

