







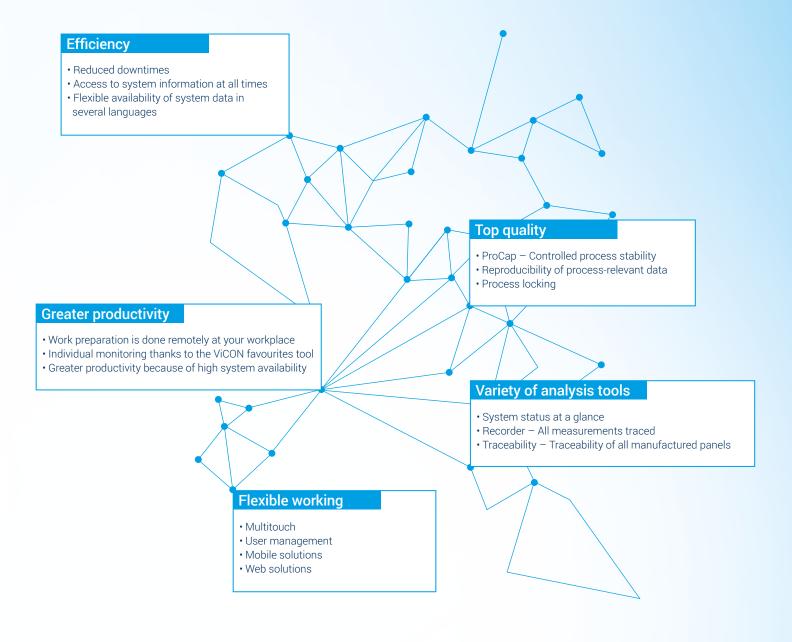
# Keep the line running

## Smarter software for more efficiency

Digitalisation, networking and big data are megatrends in the electronics industry that are shaped by the combination of electronic manufacture and IT. They offer new opportunities within electronics production. Greater transparency, optimised processes and reduced down-time means optimal, efficient control of electronics manufacture.

The challenges of the future are growing all the time with increasing data volumes from modern industrial systems, and with them, the challenges for the system software used: huge data volumes have to be managed and archived for the long term. At the same time, demands on performance are increasing. Analysis tools ensure optimum system availability and forward-looking manufacturing. Globalisation demands superordinate systems that can be used worldwide. The need for mobile access to system information is also growing. All these demands — in times of higher (energy) costs — make it necessary to increase energy efficiency and productivity. ViCON VisionX offers you effective support here.





## **Rehm Software**

## Overview of innovative software solutions

Rehm Thermal Systems is known for innovative engineering and technology leadership in manufacturing equipment for the electronics and photovoltaics industry. Rehm is now able to expand this pioneering role even further with a clear and innovative portfolio of software solutions.

The new system software ViCON already combines triedand-tested Rehm software tools, such as clear product management and process locking with new possibilities in mobile applications in the form of the ViCON app and ViCON Connect - in an attractive design and with intuitive touch operation.



## VICON VISIONX Basic software | A solid foundation



#### Upgrades for ViCON VisionX



#### MES connection

Superordinate production control

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All products exactly at a glance

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Always the right profile

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## VICON Analytics | Monitoring at the highest level





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## KIC RPI - Reflow Process Index

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## Remote maintenance - Remote Administration Tool (RAT)

Qualified software support with no loss of time

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## VICON Connect | Remote Manager

Tool for monitoring all of your Rehm machinery



## $ViCON\ App\ \mid \ \text{Always be mobile}$

Be mobile and yet not lose sight of production



## A good basis counts

Rehm offers clear software for the VisionX series with ViCON, which can be operated intuitively through its touch interface. All messages, commands and parameters are visible at a glance in the main screen with machine view. With numerous features, for example, a favourites bar that can be freely added, the structured grouping of parameters or the individual process monitoring and documentation, ViCON offers you optimal support for your manufacturing processes.

This basic software is the heart of all extensions linked to ViCON in the area of innovative software tools. Regardless of whether it's ViCON Analytics for monitoring processes, ViCON Connect for decentralised access to several systems, or the mobile ViCON App to display status — they all rely on the basic software and take advantage of its extensive content.

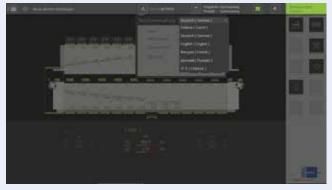




# ViCON VisionX system software – More than just touch operation

The basic software ViCON VisionX for Rehm reflow soldering systems offers you numerous possibilities to control, monitor and analyse your production process alongside intuitive system operation via a touch interface.

Alongside the use of touch operating elements and gestures, the new organisation of menu options, the core feature of ViCON's development lies in the option of being able to access the software from a variety of devices. The objective is to configure the system's current operating status clearly, so that the operator can react quickly and intuitively to status and alarm messages. Access rights, views and favourites are therefore tailored to each user. Only the relevant information is displayed and a cluttered software interface is a thing of the past.



Operating status and switching languages "on the fly"



Alarm messages with a display of the action buttons and the favourites bar

## System's operating status at a glance

Thanks to colour coding the operator can easily identify and assign the status of the display from a greater distance.

### Multilingual - "On the fly"

ViCON software is consistently designed to accommodate multiple languages. The simplicity with which you can switch to the preferred language simplifies worldwide remote access to our systems and operating in an international environment.

### Alarm messages

Alarm messages can be viewed, interpreted and edited immediately and clearly in the top section of the screen. The sequence is based on relevance.

### Favourites bar

Every user can store selected values individually. These then appear on the main screen and at a definite point on each page.





Userfriendly machine overview

# **Basic** Software



Main menu adapted to the user level



User management

### Data archiving

It allows historic data to be managed reliably, as well as all relevant machine information to be logged conveniently and solidly.

#### Logging

A continuous flow of information increases the productivity of machines and reduces the downtimes.

#### Multitouch

ViCON relies on a modern and innovative operating concept with multitouch gestures; the system operation is therefore even more intuitive and simpler.

#### User management

With user management offered by the ViCON software you can define various users and allow or block individual functions.







# **Big Data**

## We bring light into the dark!

Recording, pooling and analysing data

Today's machines and process controls are no longer island solutions. Data collected in machines and processes is managed and analysed centrally with the aim of continuously improving the operation of the machine or process implementation.

Extracting such information simply and easily from its production process to analyse it quickly and efficiently can now be carried out effectively with the new ViCON software.

The central hub for collecting and analysing information is the operating data acquisition. This is all process-relevant machine data made available by the reflow soldering system. This includes both transport speed, temperatures, fan speeds, energy consumption, nitrogen consumption, as well as setting parameters, production information and status displays.

With the increased proportion of sensor technology in modern production systems, ever greater importance is placed on the effective collection and analysis of the rising volume of data. With the ViCON VisionX you have at your disposal system software that is already able to cater to the requirements of future analysis tools.

MES systems are already in use to completely plan and monitor the production process at company level, and not only in terms of Industry 4.0. Production control at this point is virtually crucial today to be able to meet the requirements in terms of quality and product liability. The variety of MES systems on the market requires individual adjustment of the data transfer from the Rehm reflow soldering system to the customer's superordinate MES system. Rehm uses its own ROI interface (Rehm Open Interface) that prepares customer-specific operating data acquisition information and transfers this pooled to the MES system.

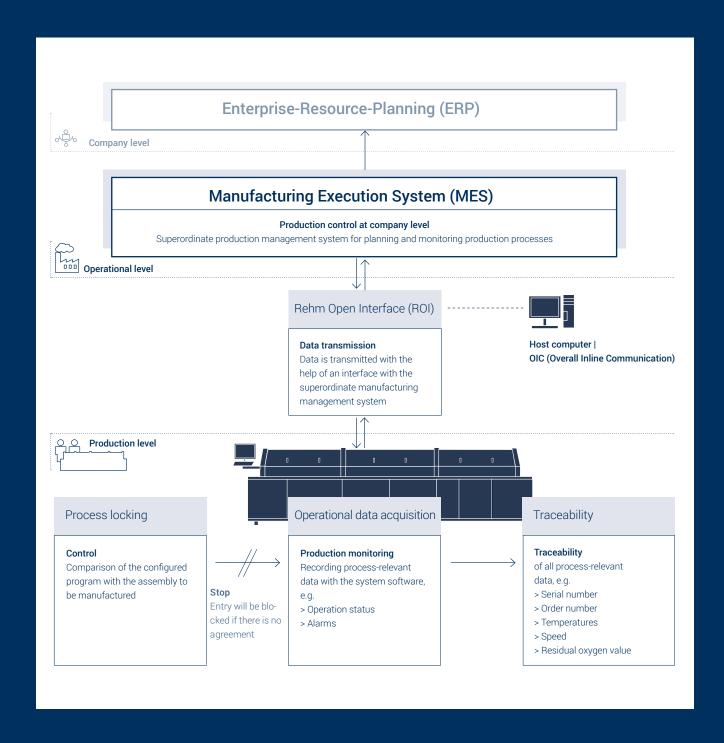


## MES connection in production

Process control at company level

Manufacturing companies are ever more reliant upon process-oriented operating manufacturing execution systems (MES). Within the software architecture, these MES systems feature below the ERP systems and above the production level. The ERP system has a view of the entire company and allows logistics to be optimised across all locations. The MES system, on the other hand, focuses on a company's individual production lines.

The MES system continuously collects all arising operational data along the material flow of these production lines and makes these available to the superordinate ERP system. It is then possible to ensure the seamless traceability of products, components or batches in this way. Optimisation potential and process improvements can only be identified and exhausted with the help of this operational data.



## Managing products and creating profiles

## Flexible and efficient for optimum assembly manufacture

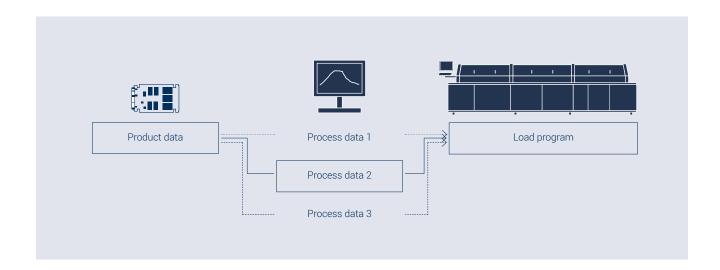


## **Production management**

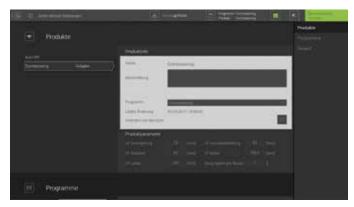
All products exactly at a glance

Product management supports the user when generating and managing product and oven parameters for an assembly to be manufactured. Once created, the data is stored and is again available for every production order of the same assembly. This ensures that the product is always manufactured with the right, pre-defined settings.

The product-dependent data, such as length and width, are stored separately from the process-relevant data, the profile (temperatures, speed and nitrogen). In this way it is possible to assign the same profile to similar products. This saves the time-consuming creation of profiles and setting of oven parameters for each new product.



- > Recording of all relevant production data
- > Management of product and oven parameters
- > One profile is possible for several products
- > Separation of product and process data



Production management





## **Profile Creator**

The optimal profile made easy!

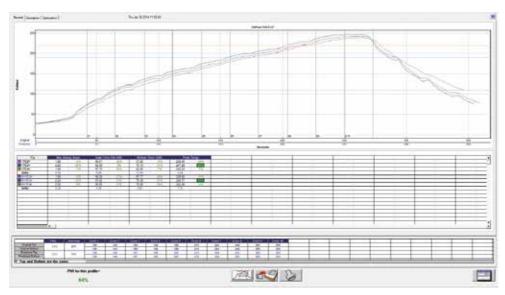
The profile creator is simulation software that calculates the optimal profile for manufacturing an assembly. By entering a few parameters, which even an operator with intermediate knowledge is able to carry out, the profile creator proposes a suitable profile.

In a few seconds, you can scroll through the menu and select the required data from the database (e.g. oven/ soldering paste type). It generates and displays the oven's recommended initial settings using the additional parameters entered (board size and weight). The basis for this profile is the database consisting of different profiles, especially tailored to Rehm reflow soldering systems.

The suggested profile can then be tailored individually to the assembly to be manufactured. Manually generating profiles with numerous measurements and trial runs, on the other hand, can be dispensed with. This allows you to reduce your downtimes and to increase the yield and productivity of your production.

#### **HIGHLIGHTS**

- > Simple, quick and easy to operate
- > Profiling without harming units
- Short set-up times for new products and product changes
- > Delivers reliable, professional profiles
- Saves time and money



Profiling with Profile Creator

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## **Greater security and transparency in your production**Safely show and track processes

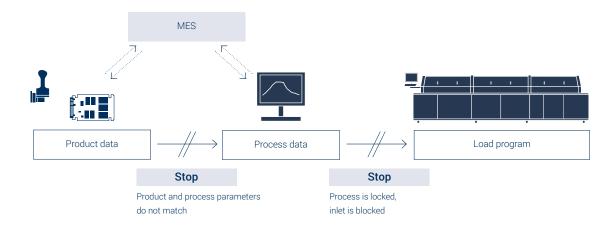


## **Process locking**

The focus is on process security

Process locking is an important module to ensure that the assembly to be manufactured currently is in line with the set program. This investigation is carried out continuously throughout the manufacturing process and is positioned upstream of the reflow soldering equipment. There are different reports, which do have the one basic feature in common: if it is found that the assembly to be manufactured next does not meet the program loaded on the soldering equipment, the message (dialog window) will be issued, and the assembly will be stopped. The process is therefore locked. An investigation is necessary for a variety of reasons, and the right designs are available for every application. Normally, the serial number of the product is issued with a stationary barcode scanner and so is compared with the loaded program. One further option is process locking using a connected MES system.

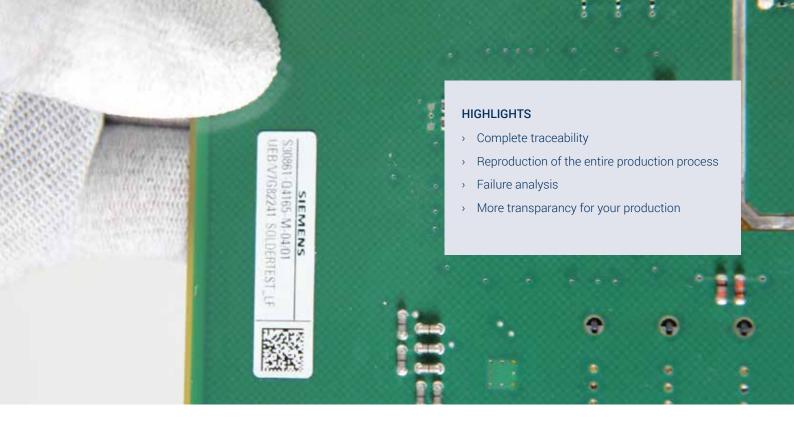
The MES sends the data for the new product to all systems within the SMT production line and reflow soldering equipment blocks the infeed until all connected systems have been successfully switched off or switched over. Process locking therefore gives you the peace of mind of always being able to guarantee that product and program are correctly assigned. Production waste is therefore significantly reduced and the efficiency of your manufacturing line increased.





Barcode recognition

- Continuously check the current manufacturing process
- Process locking using a barcode or MES connection
- > Increase efficiency





## **Traceability**

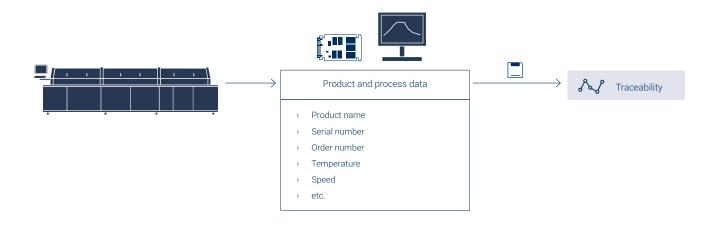
Traceability of all manufactured panels

Electronic assemblies consist of a variety of components. Even a tiny defective part on an assembly with thousands of components can result in disruptions and malfunctions. Even a complete failure of electronic systems is possible, with serious consequences in terms of product liability and finance. This is why traceability in modern electronics manufacture is very important. The seamless traceability of all fitted parts and the map of the entire production process must still be possible even years later.

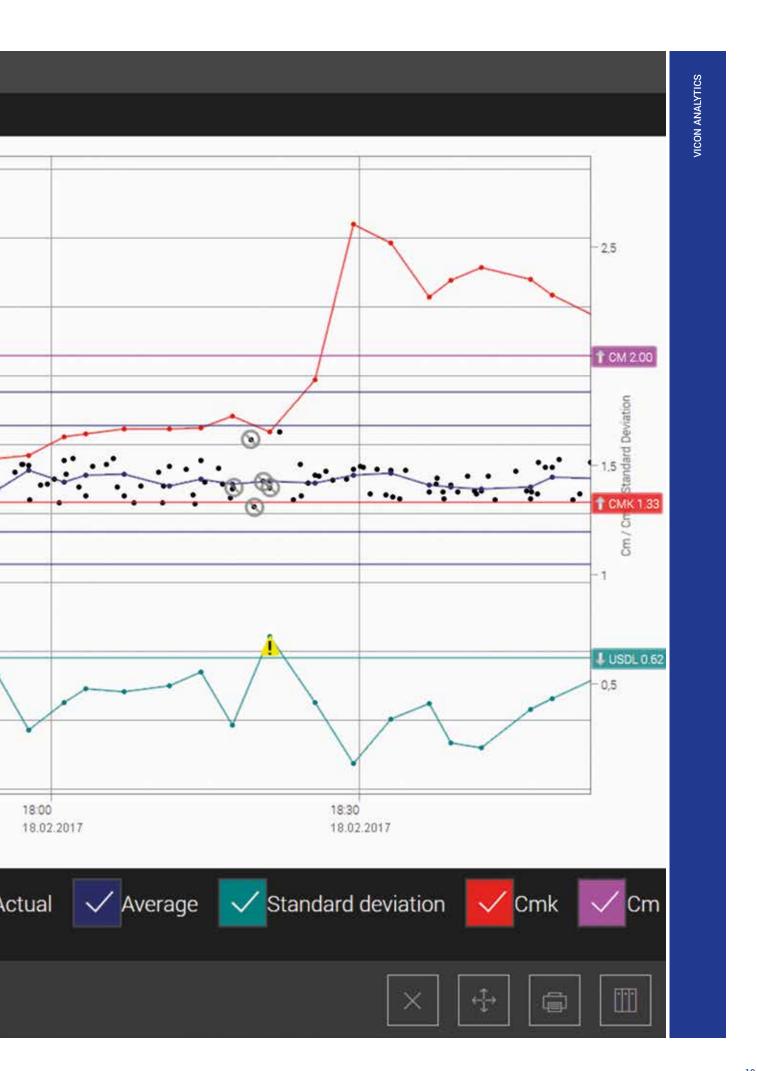
As part of such traceability all process-relevant data, such as temperatures, speed, residual oxygen etc., as well as serial number of the assembly and order number as an option, are documented and stored in the software when the assembly

is taken out of the oven. These data not only serve to track data of a production run during recalls or for insured events, but also offer the option of analysing and further optimising processes. Errors in the production process are more easily identified and localised and are available for an effective analysis to optimise process runs and for quality assurance.

The transparency created in this way within the production chain safely maps processes that can be tracked at any time.



## Zone 1 - Mon 1 ViCON Analytics Monitoring at the highest level Rising production performance and optimum process quality are increasingly in demand and therefore require maximum system efficiency. It is important to identify any process deviations and defects early here, without downtimes resulting because of additional maintenance visits. Rehm therefore offers several analysis tools that collect, process the corresponding data and analyse it with the help of intelligent processes. The analysis tools of the ViCON product group allow even the most complex and variable processes to be transparently managed and to keep them under control. Many years of experience in reflow soldering and the continuous further development of the software components have created a system that is able to reliably control and monitor the system. This is not a closed system but is, in fact, made up of monitoring tools and various modules that each complete a specific task. The abundance of data that the modules capture and monitor in the system is enormous. The central ViCON software summarises the data and analyses it, for example, to keep the defined parameters of a manufacturing profile constant, to monitor the productivity of manufacturing, or to document the energy consumption. In this way, we are enabling our customers to gain direct added value from the machine and production data. 17:30 18.02.2017 Timestamp



## Productivity, efficiency, quality -

## Greater transparency in the manufacture of electronics

What goes on in the reflow soldering system? What points can be optimised further? Where are the hidden potential savings? How can the soldering process be made more efficient? Important questions that have to be answered if you want to generate real added value from the abundance of machine and process data.

The Rehm monitoring tools provide you with answers to these questions. They capture the system's data relevant to quality, costs and performance and summarise the results in clearly laid-out reports and logs. An appropriate analysis is possible as a result, and optimisation processes can be initiated on the basis of these findings.

## VICON Analytics | Monitoring at the highest level



**Recorder**Record all measurements



**ProCap – Professional Capability System**Controlled process stability



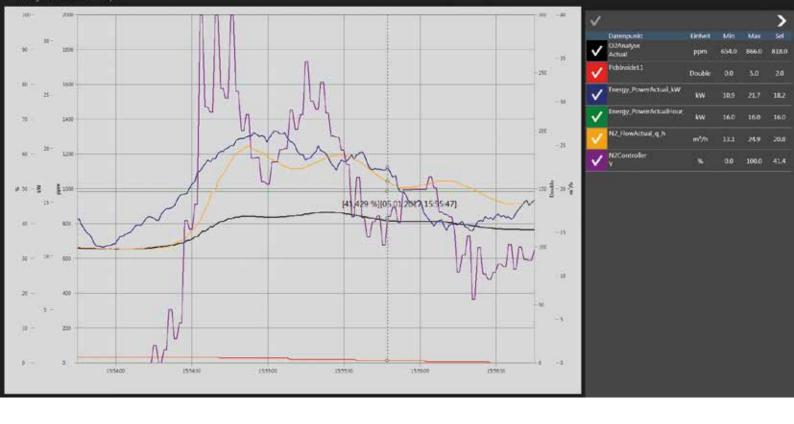
KIC RPI – Reflow Process Index Temperature profiling of KIC



Remote maintenance – Remote Administration Tool (RAT)

Qualified software support with no loss of time







## Recorder Record all results

The recorder allows you to record and observe all the data contained in the ViCON, such as temperatures, heating on/off, transport width, consumptions etc. At the same time, you can individually select up to 64 measurements per recording job and set the recording period. Once the recording program has been started, the correspondingly set data can be captured and logged. Every recording is available for further similar data acquisition operations and can be accessed again at any time.

You therefore have the option of drawing conclusions about the processes within the system with the help of the logged data at any time and rectify them as part of predictive maintenance.

The logged data may be exported at any time and is available offline at a separate workstation for the analysis. The analysis is therefore not dependent upon the time of the recording and can be optimally integrated into your production process.

- Recording of up to 64 measurements
- Individually setting the data to be logged
- > Enables predictive maintenance
- Offline analysis of the logged data for optimal process sequences





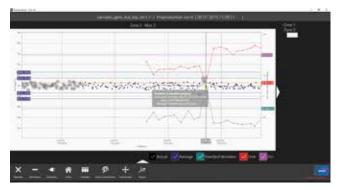


## **Professional Capability System**

Optimal quality for the soldering process

ProCap offers continuous statistical process stability control and was tailored especially for the application on the VisionX-series system from Rehm. Using sensitive sensor technology, the temperature and the heat input is measured continuously over the complete assembly throughout the soldering process, and the process parameters are saved automatically for the product at the initial start-up. Each further assembly is compared with the parameters saved about this product. To do this, the first 50 assemblies of the products are measured and compared as 'statistical process control'. Statistical variables, such as the natural variance of the process, are determined in this baseline. This gives an average value as a reference for all further measurements and enables conclusions to be drawn about the stability of the production process, the machine capability and the reproducibility of the soldering profile.

A live window lists all current production parameters over the period, displays the target values and reliable tolerances and lists warnings in the current order. As soon as a value does not correspond to the standard and deviates from the baseline, the program displays an alarm message. Process deviations and user errors are logged at the same time. Gradual changes, such as a clogging filter, can be identified reliably and promptly in this way. Equally, it is also possible to view all process-technical data of the measurements, document and subsequently export it as a PDF report for optimal traceability. ProCap can be retrofitted for systems with internal temperature supervision at any time, as no additional hardware is required for it to work.



ProCap - Statistics tool for optimal profiling

- Measurement of the process performance according to the 6-sigma-process
- > Product-specific monitoring
- > Log process deviations and user errors
- > Identify gradual changes
- > No problem to retrofit
- No external data logger required





#### KIC RPI - Reflow Process Index

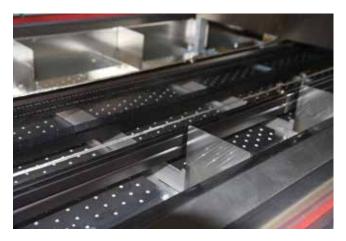
Temperature profiling of KIC

KIC RPI supplies information primarily using the key parameters of a reflow oven about how well the profile meets the required specification. This is regardless of the type of oven, PCB type, personnel and geographic position. The profile overview can be called at any time together with the production data and ensures that the system operates efficiently. The RPI has been developed in such a way that it improves production quality by ensuring that each PCB is manufactured within the specification. The result is an improved operating time, less waste, a reduction in rework and a reduction in the input required.

To be able to use KIC RPI effectively, the appropriate conditions must be created in terms of the hardware. The system must accordingly be fitted with the KIC probes, thermal sensors along the transport rails in the processing chamber. Their purpose is to monitor and record the temperatures.

The KIC temperature profiler is also required, which is used to carry out the trial run necessary for the statistical analysis, to be able to check the system's process stability.

KIC RPI is a software tool from KIC Thermal that is implemented in our ViCON operating software.





Kic-probes along the transport rail for determination of the process data

- > Process traceability for each individual PCB
- › Data management
- > Reduced production costs
- > Process quality control
- Automated, continuous profile generation possible

## Save time and money

## With remote maintenance to more system stability



## Remote maintenance - Remote Administration Tool (RAT)

Qualified software support with no loss of time

Remote maintenance, the Remote Administration Tool allows data to be exchanged worldwide between a Rehm reflow soldering system and the service team at the company's head office, as required. This guarantees quality help without any loss of time. You therefore not only save time and costs but also increase the availability of the production plant.

Rehm offers several transmission concepts in the field of remote maintenance:

## Remote maintenance via VNC – Virtual Network Computing | TeamViewer

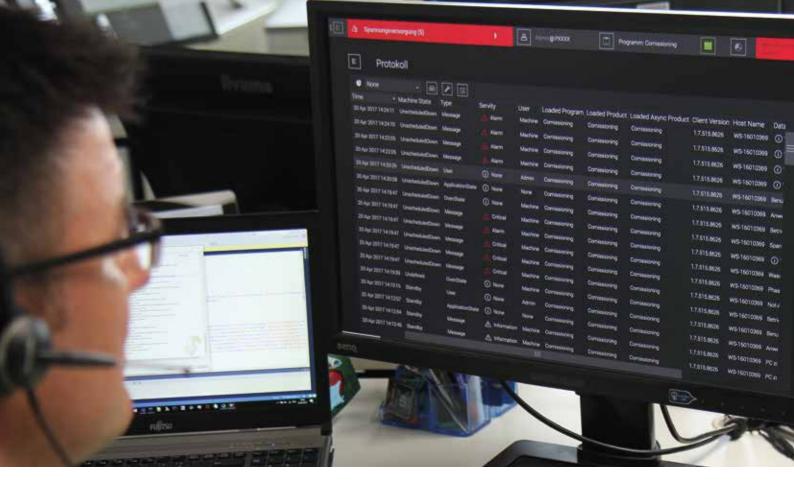
VNC remote maintenance offers the simplest option for remote maintenance. Here, the screen content of the system computer in production is displayed on a local computer that can be located anywhere. The reflow soldering system can therefore be administered over great distances. The only condition for this is help desk software, such as TeamViewer and an Internet connection via LAN, WLAN or modem.

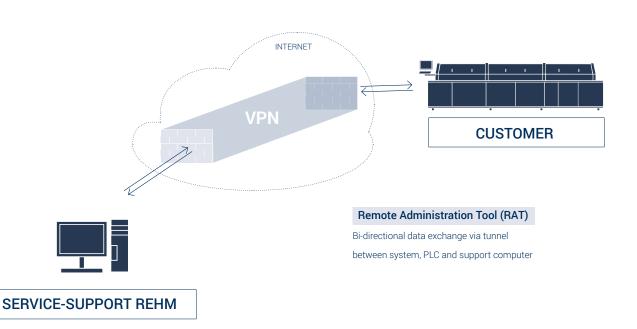
As this is only a mirror image of the system monitor, the possibilities of remote maintenance are restricted to the tools installed locally on the system. Data is exchanged simply by making an entry using the mouse or keyboard on the local computer and the screen output is displayed on the system computer. Direct access to the system's PLC is not possible here.

## Remote maintenance via VPN – Virtual Private Network | mb Connect

Remote maintenance via VPN opens up new possibilities of accessing the system that requires the right support. The bi-directional data exchange allows the system to be operated and programmed on site at the customer from the software support employee's office. In this process, it is possible to access the system with the programs available on the employee's computer, irrespective of whether this is installed on the system computer. It is therefore also possible to access the PLC directly. Errors may be rectified locally by service support and subsequently transmitted directly to the PLC, without any engineer being present on site.

The remote maintenance concept depends on a router that is switched between the system computers and the system's PLC. This must be linked to the customer's Internet connection via LAN, WLAN or modem. Data is then transmitted bi-directionally via a "secure tunnel" with the help of an encrypted system. The customer has the option, at all times, to switch off the connection mechanically. This offers the maximum possible protection in terms of data security.





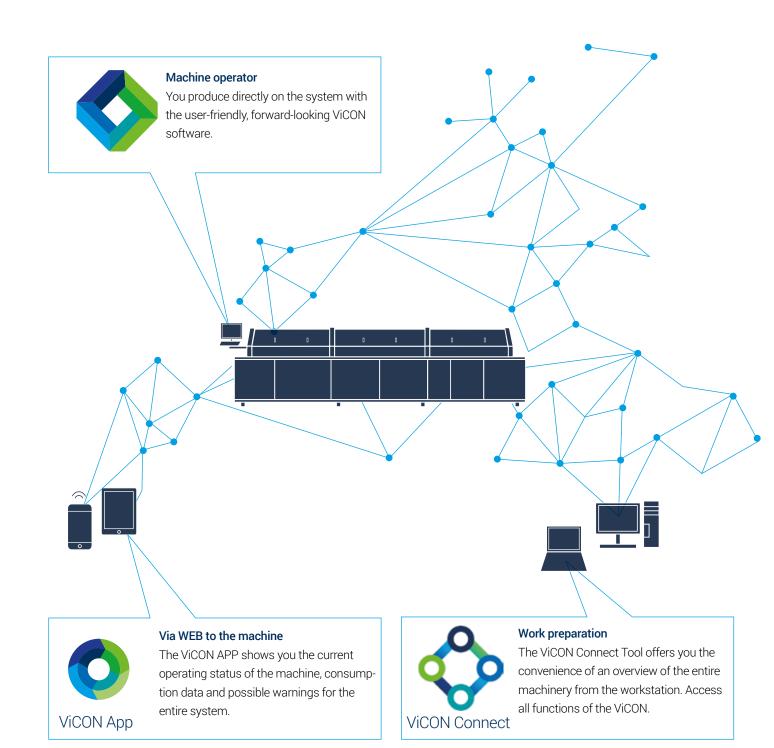
- > Simple analysis and modifications
- > Mobile deployment (WLAN, SIM card) [VPN]
- > Can be switched off by the customer [VPN]
- > Effective support from Rehm experts





# Offline, Online or at the maschine

## **Greater flexibility of system operation** with ViCON Connect and ViCON App



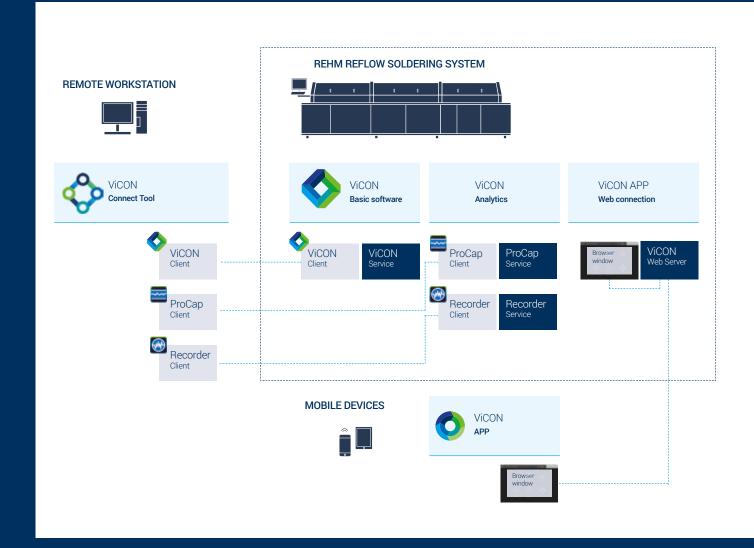
The ViCON offers you flexible access to your system on the production line. You are able to operate the system directly via the monitor on the system and using the additional tools ViCON Connect and ViCON App, also from a workstation further away and even access the systems using mobile devices.

This flexibility is based on a structured client-server architecture. The expansion tools available within the ViCON are the 'servers/services' in this regard that respectively operate the various clients — system monitor, external workstation or the mobile devices. The benefit of this client-server structure is self-evident:

#### **HIGHLIGHTS**

- Central resources: ViCON Connect accesses the system computer with the software version installed locally and starts this.
- Expandable network: it is possible to delete and add clients without any major effort
- Greater flexibility: external workstations and mobile applications may be flexibly combined and always have the same basis

## **ViCON Client-Server Structure**





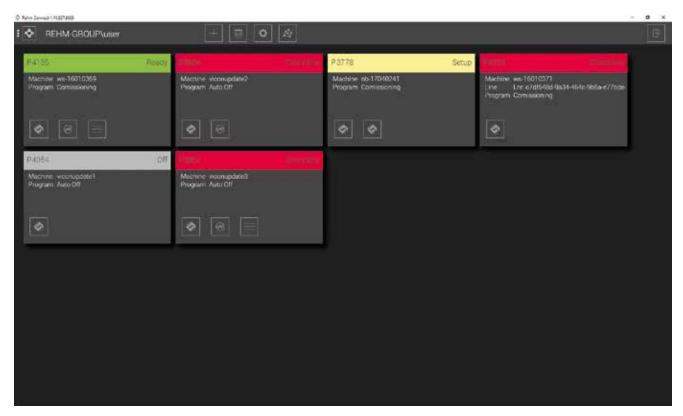
# **How to create the optimal network** of your Rehm machinery

ViCON Connect is a system especially designed by Rehm to control and monitor all Rehm systems that are located within a company network, across all sites worldwide!

ViCON Connect enables you to access your Rehm systems transparently and in a structured way. At first glance, you will see all the systems linked to ViCON Connect that can be selected directly. This direct access provides you with virtually the same operating and monitoring functions as on the system computer, only excluding the functionalities relevant to security.

Flexible working, across all divisions from just the one end device is no longer a dream of the future but already a reality. Get a display of the operating status, productivity and alarms or implement the next production order – there are many possibilities!



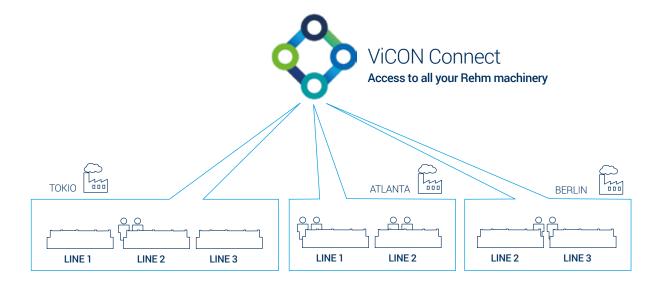


Overview of machinery from a remote workstation with all integrated ViCON analytics tools

### An efficient manufacturing environment with ViCON Connect

ViCON Connect makes managing and monitoring multiple production lines much more efficient. Interconnectivity between facilities allows you to follow production constantly, while managing and monitoring processes without long distances in production. You can even access systems at other sites using the right connection (VNC or VPN). Rapid response to alarm notifications along with troubleshooting significantly increase production efficiency.

- Monitor all machinery
- > Flexible operation
- Direct facility access
- > Prepare operation from a remote workstation
- > Effective operation for efficient production
- > Integrated analysis tools





# Maintain a web based overview

The smart solution for everyday production

The App, developed especially for ViCON, allows you mobile access to all the relevant system information. You see operating status and alarms at first glance. The responsive design ensures optimal display on a great many different devices and therefore enables a convenient overview and simple operation.

The ViCON App is not restricted to a special system but allows an overview of all Rehm systems that are installed in your production and have been connected to the App.

As soon as the necessary web connection is suitably available, a status request is possible within the company network, even worldwide!



- Mobile request of the system status
- > Alarm messages
- Notification of the Rehm service personnel directly via device
- System-specific information,e.g. machine type, serial number etc.
- Connects to a mobile superordinate line monitoring system, e.g. PULSE etc.





## Logging

Logging machine data leads to increased transparency and allows improved analysis and resolution of potential errors.

#### Consumption

The consumption data display for electricity, nitrogen etc. provides an optimum overview of resource consumption.

## Machinery overview

The operating conditions, alarm notifications and individual target and actual temperatures in various facility zones are presented at a glance.

#### Service

Contact the Rehm Service team directly via the App and have all relevant machine data and version information to hand.

#### **Statistics**

The statistics tools create graphs depicting figures such as the number of manufactured components.

#### Connect

ViCON Connect displays all network-integrated machines and allows access in just one click.





## ViCON software support We support you

The new functions of the ViCON software offer you numerous possibilities to organise your production more efficiently and to be adapted optimally to your production environment.

To provide you with the best support to this effect, we have structured our software support team accordingly and are able to place the right experts for particular areas, if required. Whether it's an MES connection, retrofit, user support – with us, you have the assurance that you are always connected to the right partner.

As incoming software enquiries are processed centrally, we also have the possibility of planning resources efficiently in order to guarantee short reaction times for you.

If software tools, such as remote maintenance and/or ViCON Connect, are installed at the customer, costly and time-consuming visits on site are reduced. We are happy to advise you!

#### CONTACT

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## On-site service We are there for you worldwide.

We place extremely high demands on the quality of our systems. We want to fulfill these demands with regard to our services offerings well. From Blaubeuren to Atlanta and Príbor, all the way to Szendehely, Dongguan and Guadalajara – we provide you with support and respond to your concerns regarding all aspects of sales and service. Anywhere, all over the world!

Do you need special consultation concerning our systems, an installation or a replacement part? For us, responsibility doesn't end when the sales deal has been closed! We maintain intensive contact with our customers and suppliers after investment in a Rehm system too. And special attention is focused on very short response times in this respect. Delivery dates, installations and service inspections are firmly scheduled at Rehm. And our service department is available to you around the clock to answer questions about your application — in order to keep your production line running smoothly.







## **Contact information:**

Service-Center.

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