



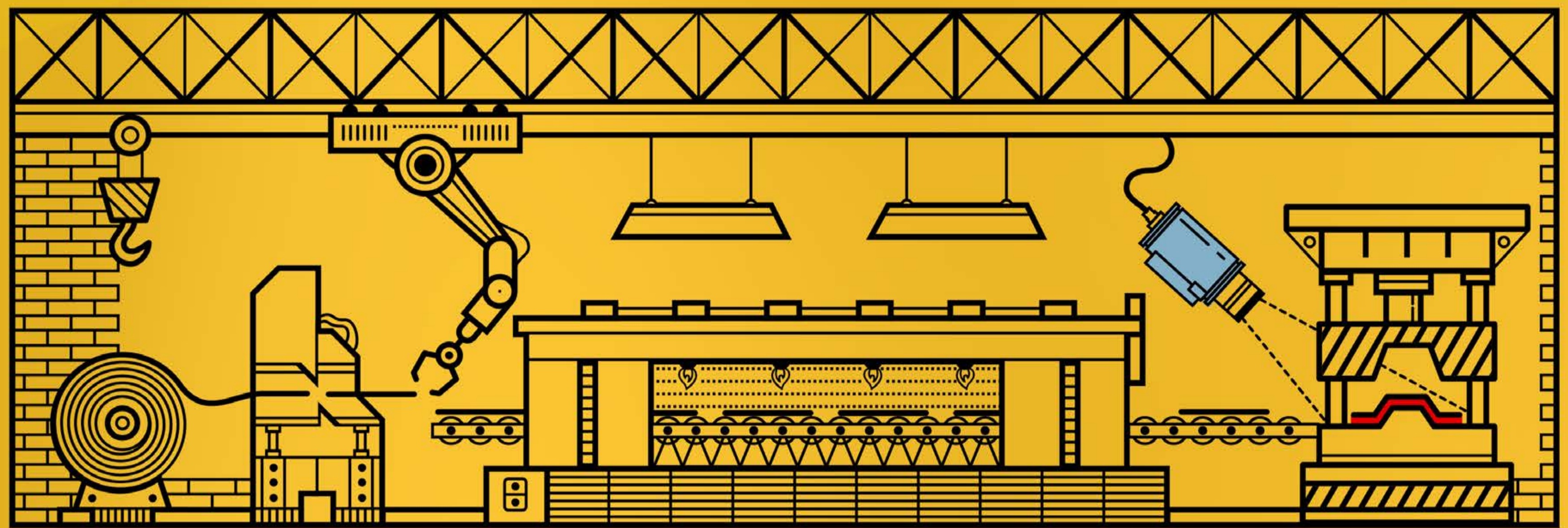
TEMPERATURE CONTROL DURING HOT FORMING PROCESSES



Obtaining accurate temperature profiles through the use of our short wavelength thermal imager MCS640

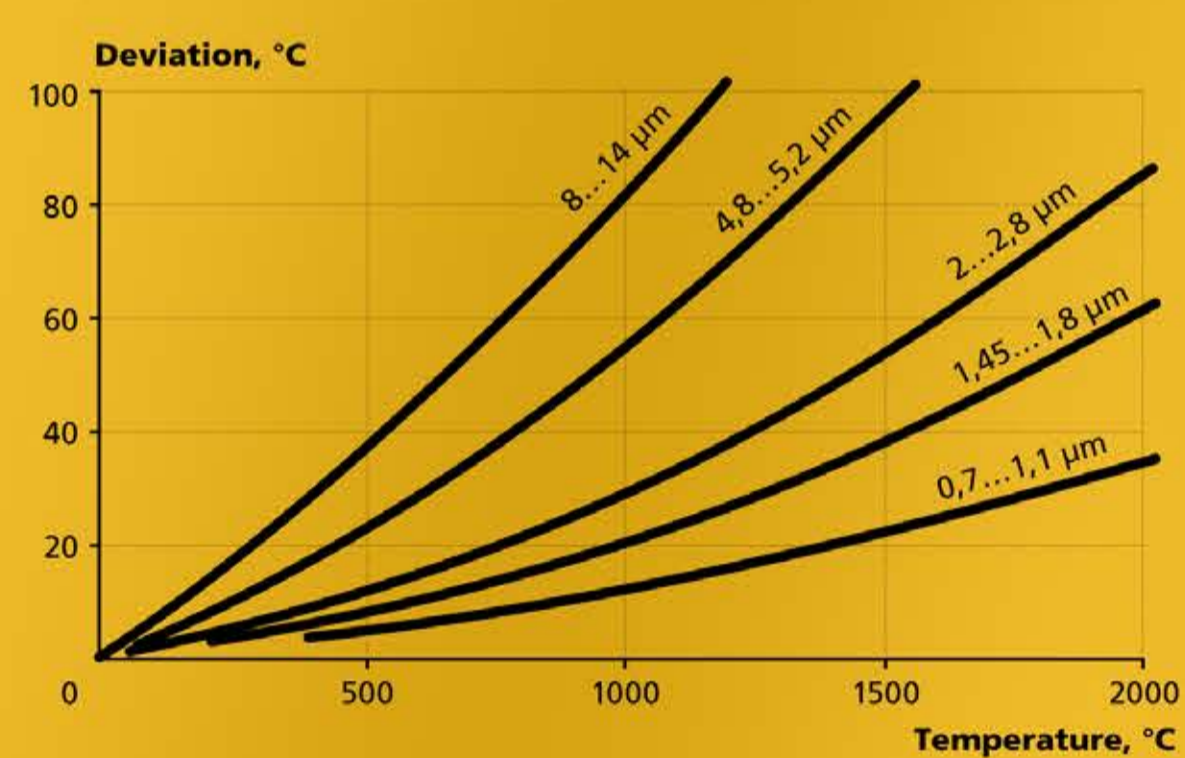
The continuously increasing quality demands on materials – especially on steel – require adherence to stringent temperature limits in hot forming processes. In these applications (e.g. press forging, bending, press hardening), correct heat treatment and forming temperatures are instrumental for meeting the specified quality requirements and achieving optimum characteristics of work pieces.

In addition to precise temperature measurements, closed-loop process control and documentation of measured data is often required. It is important to control the workpiece temperature on several points of the surface during hot press forming processes.



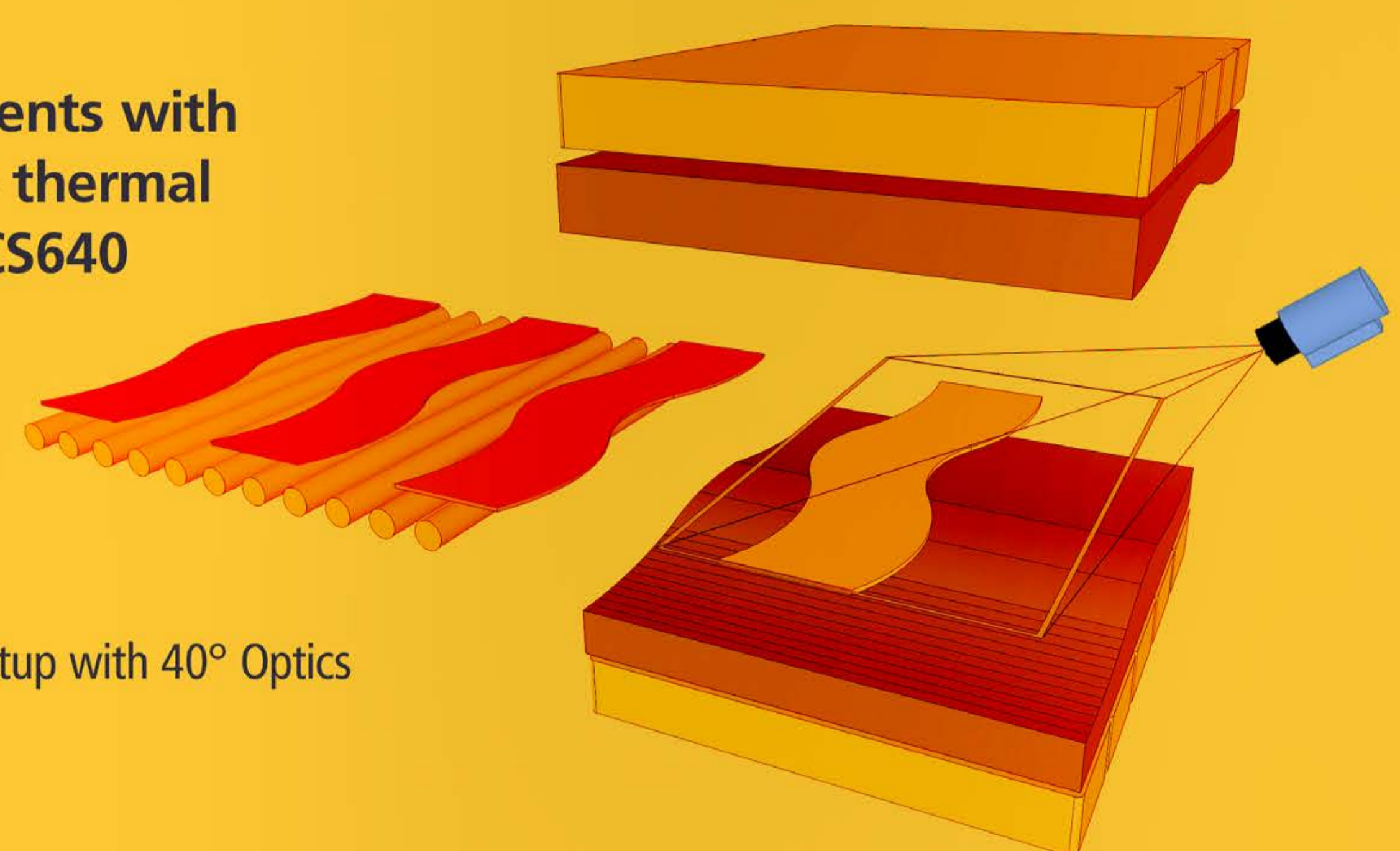
Metals should always be measured at the shortest wavelength possible

Measurement errors of imagers at different spectral regions, in case the emissivity setting is wrong by 10%



To minimize systematic measuring errors, which may be caused by external influences (e.g. surface variations, reflections), temperatures on metal surfaces should always be measured at the shortest possible wavelength.

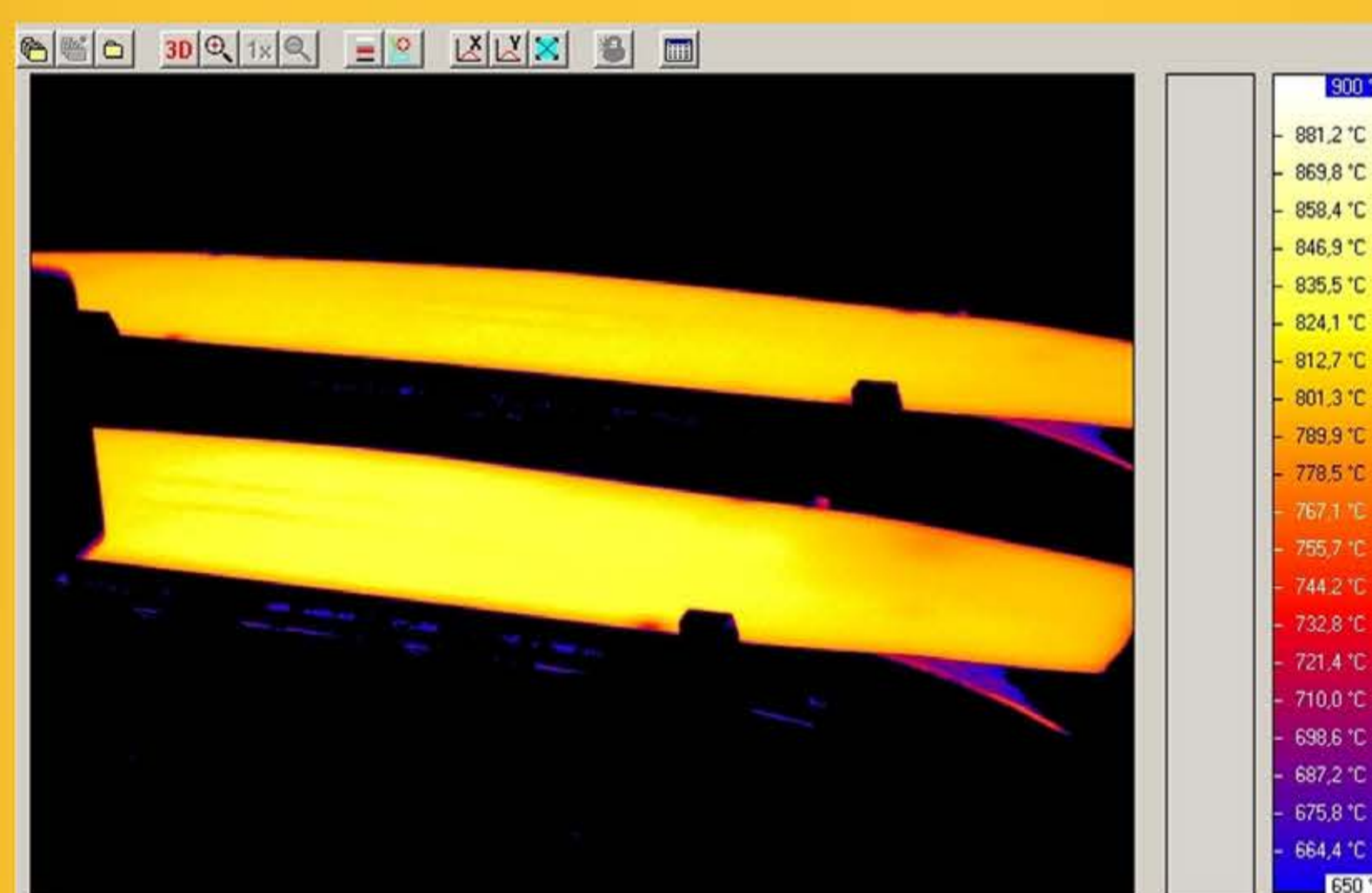
Measurements with shortwave thermal imager MCS640



MCS640 HD setup with 40° Optics

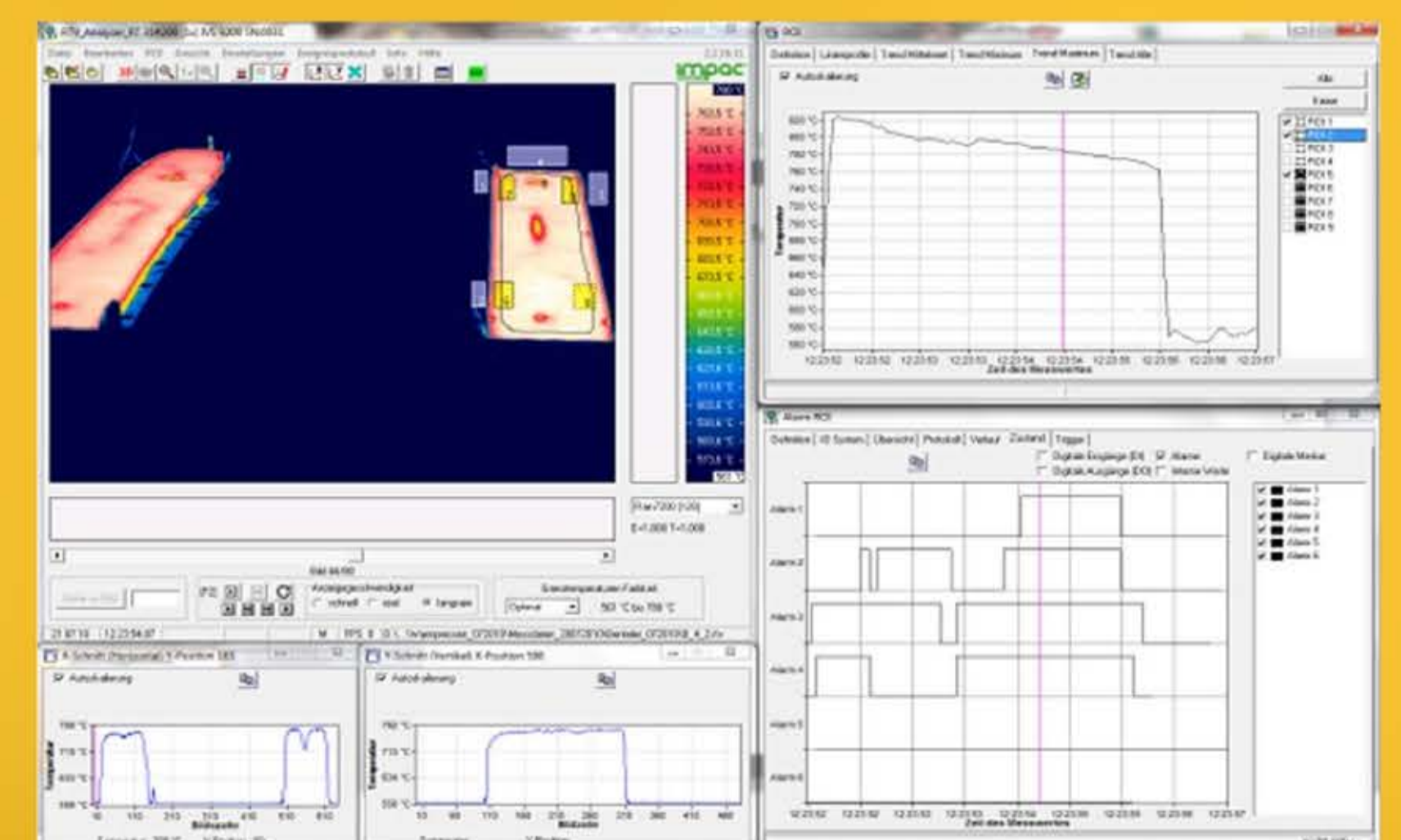
ADVANTAGES OF USING THE MCS640 THERMAL IMAGER:

- 01 Highly accurate and very fast temperature measurement in real time.
- 02 Continuous process and temperature monitoring of the workpiece in the hot press just before pressing.
- 03 Control the workpiece on pre-defined, user configurable Regions of Interest (ROIs) on different points of the workpiece.
- 04 View various readings such as min., max., and average temperature values of a selected region.
- 05 Transmit the measurement signals by any kind of Field Bus system like Profibus, Modbus or Ethernet TCP/IP.



Possible ROI positions based on customer requirements

User defined Regions Of Interest (ROI) can be saved into a program, in relation to work piece and geometry. For tooling changes, programs can be accessed automatically.



Online Control Software

- Online visualization of readings
- Control of ROI on measuring position
- Adaptation to fieldbus systems
- Difference image representation
- Online analysis of measurement data
- Web Interface for Multi-PC display
- Unlimited number of ROIs

Controlling the hot forming process via a thermal imager (Mikron MCS640) allows consistent monitoring of the workpiece on every section. This optimizes the measurement and assures to fulfill CQI-9 norm.

