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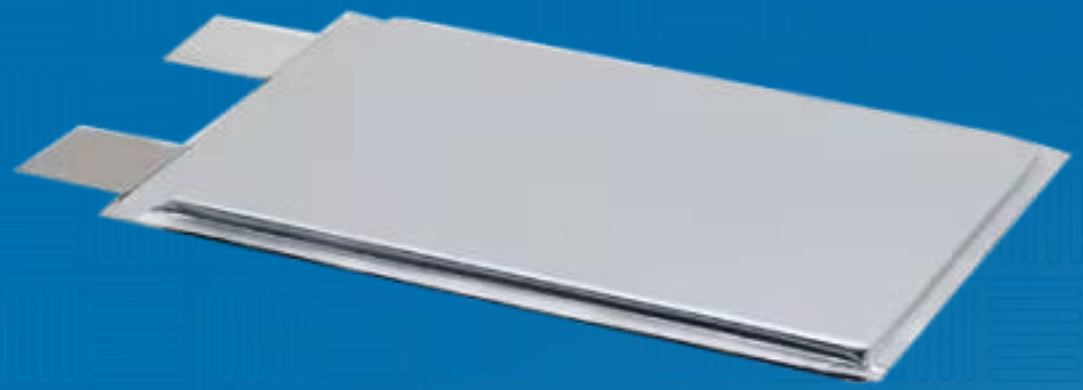
The Digital Sealing Solution

Pouch-Cell Battery Welding Application



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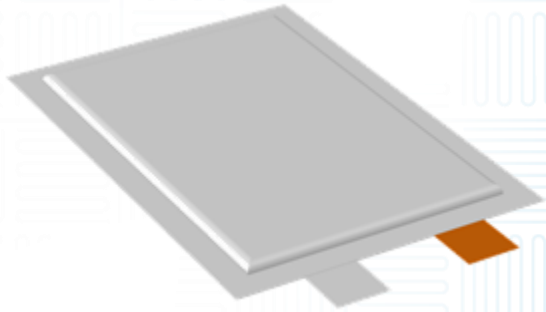
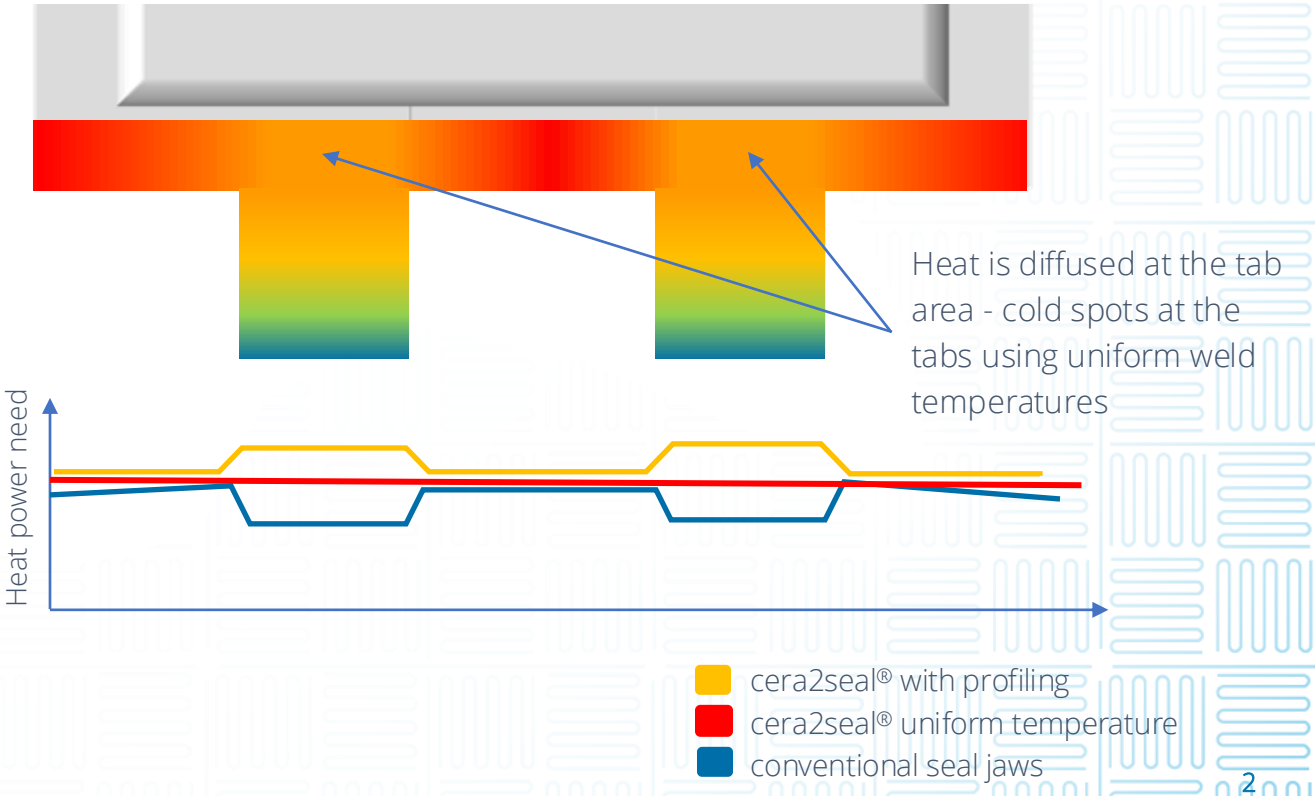
We face the Pouch-cell welding challenges

locally different heat requirements



- Area of the tabs requires more heat than 2-ply foil areas
- In the area of the tabs, a significant amount of heat is drawn from the welding area
- Layer-steps from 2-ply foil to tab is a risk for leakers

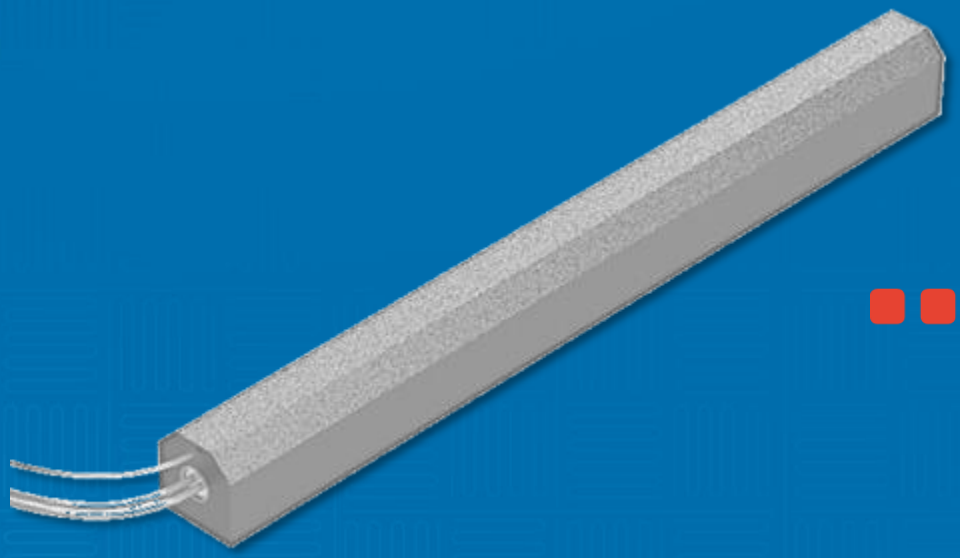
→ watttron's digital sealing can provide heat „pixelwise" to perfectly match with the requirements of the application!



Our Solution

The innovative Digital Sealing and Welding Technology

State-of-the-Art Welding Tools



- One heat circuit: 1 heat source and 1 sensor
- Distance between heat source and sealing surface
- High thermal inertia – heat storage

- Several heat circuits „pixels“ with sensors distributed over the sealing surface
- Heat source („pixel“) very close to the sealing surface
- Low thermal inertia – needs-based-heating

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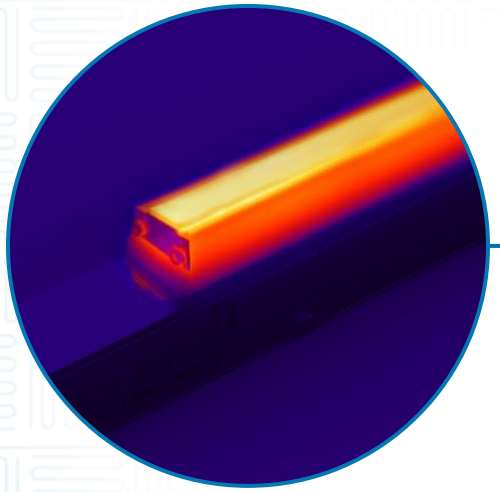
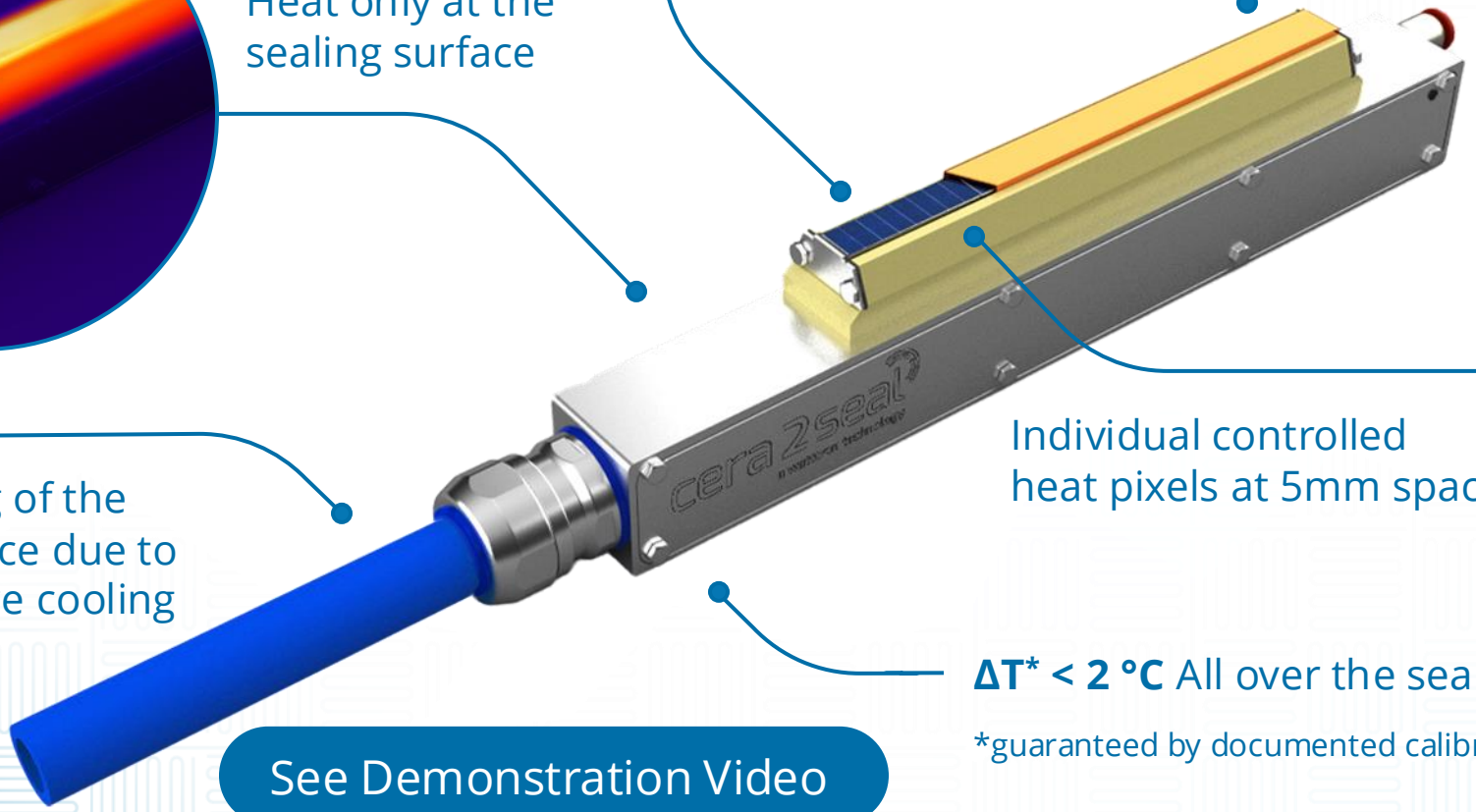
How it works

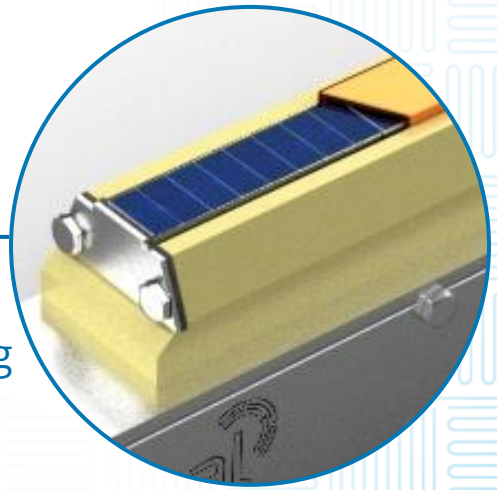


Heat only at the sealing surface

Pixel-wise heating with fully temperature control

Fully reproducible sealing results – no temperature deviation from stroke to stroke





Individual controlled heat pixels at 5mm spacing

rapid cooling of the sealing surface due to internal active cooling system

ΔT* < 2 °C All over the sealing surface

*guaranteed by documented calibration for every product!

See Demonstration Video

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General USPs

Increase of Quality & productivity

The reduction of incorrectly sealed/weded parts increases the total quantity of good parts due to locally adapted temperature and heat power supply

Inline-Quality-Control & Monitoring

Recording and analysis of power usage of each heat pixel enables identification of sea/weld anomalies that may lead to quality issues, such as:

- Electrolyte residues
- Wrong positioned tabs
- Doubled foil or wrinkles

Energy Saving*

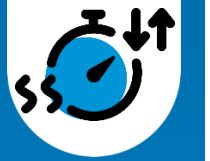
Up to -50 %

watttron technology saves up to 50% energy during continious operation and up to 90% during ramp-up. Additional energy can be saved by powering off during stopps and maintainance.

* compared to conventional permanent heated tools

Fast ramp-up and cool-down

Typ. 10 to 20 °C/s



Due to the low thermal mass and the high power densitiy watttron sealing tools can quickly heat up and cool down. The system is ready for operation within seconds and can be turned-off in production stops for energy saving or safety reasons.

Easy machine integration

The fully-integrated design and the small components makes it possible to design sealing tools for every kind of machine and application to perfectly fit into the existing space.

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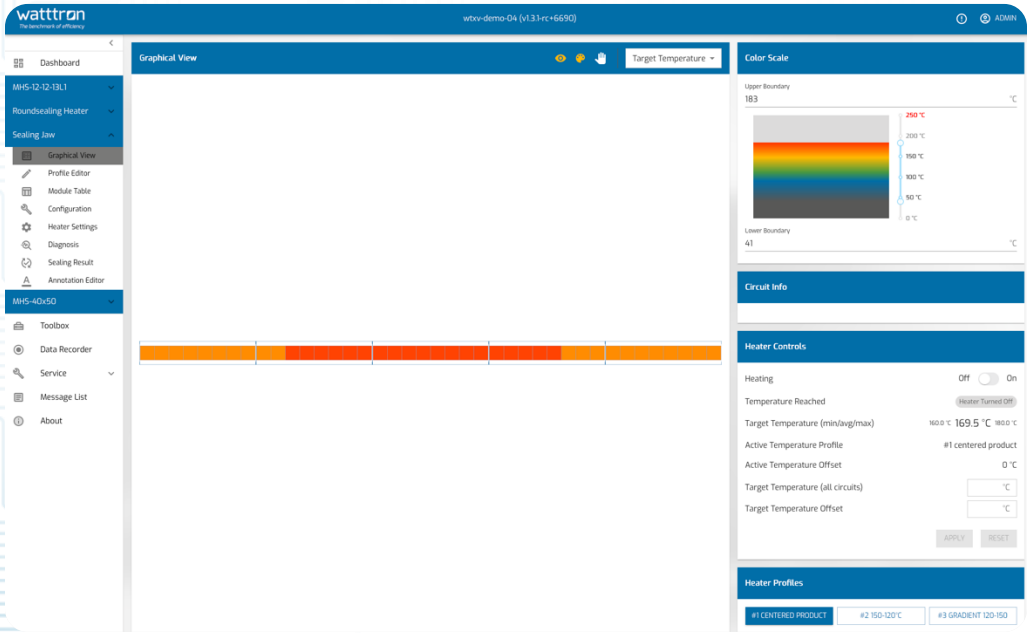
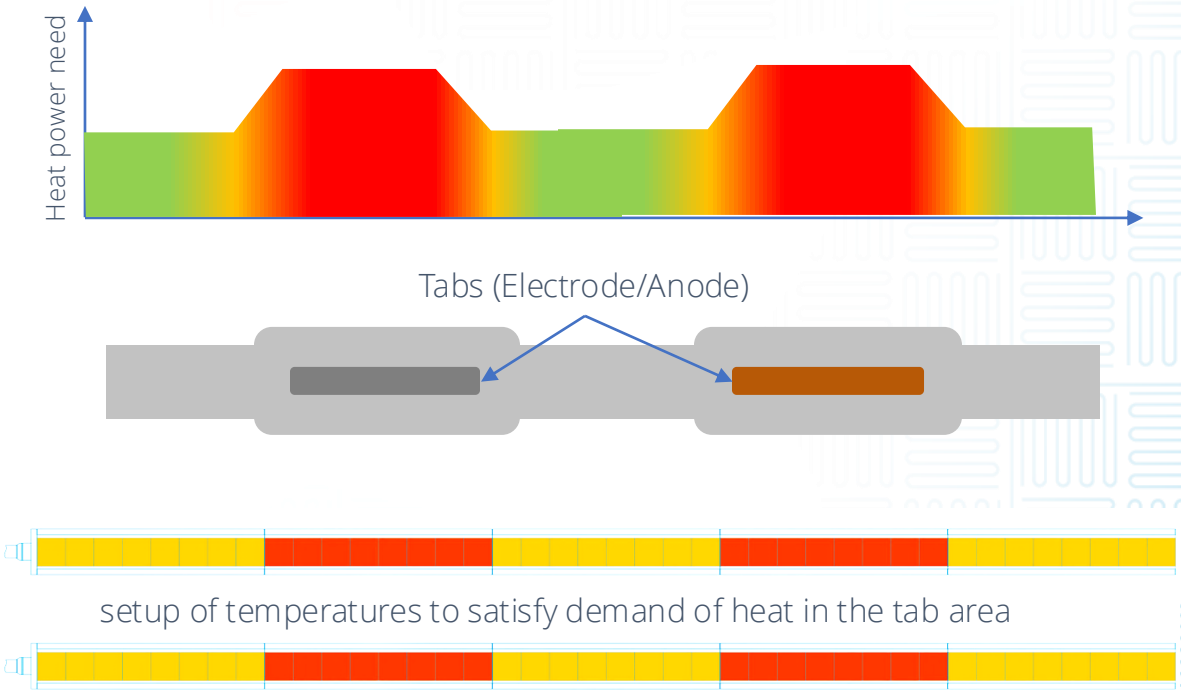
Locally adapted temperature and heat supply



- Easy set-up and fast change of application appropriate temperature profiles
- Profiles can be stored and activated via Ethernet-fieldbus-protocol



- Tab-are can be supplied with more heat/temperature to maintain good seal quality with maximum productivity and output

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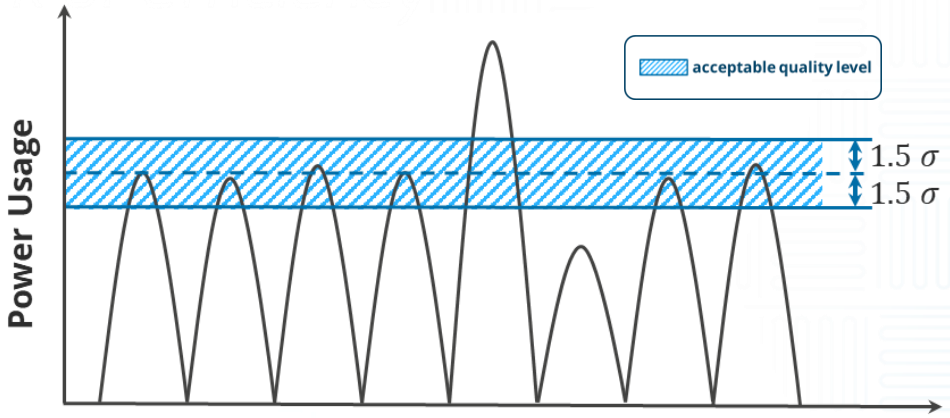
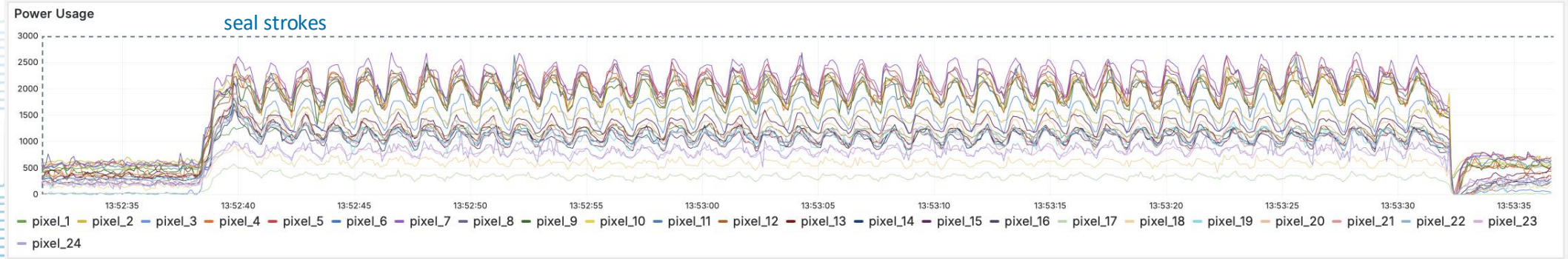
Data-Monitoring and Inline-Quality Check

- cera2seal® is able to monitor required heat („power usage“) for every individual heat pixel while sealing/welding for every stroke
- Required heat measurement during seal cycle enables to detect anomalies during sealing
- Can be used for traceability and automated inline-quality monitoring





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Data-Monitoring and Inline-Quality Check

Contact

See you soon!

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