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The Digital Sealing Solution

for FS Cup Application (deep-dive)

cera2seal

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We face the FS Cups challenges

for mono material processing

Start-up losses due to slow heating and/or overheated sealing tools

Only high-cost films can be processed with state-of-the-art technology

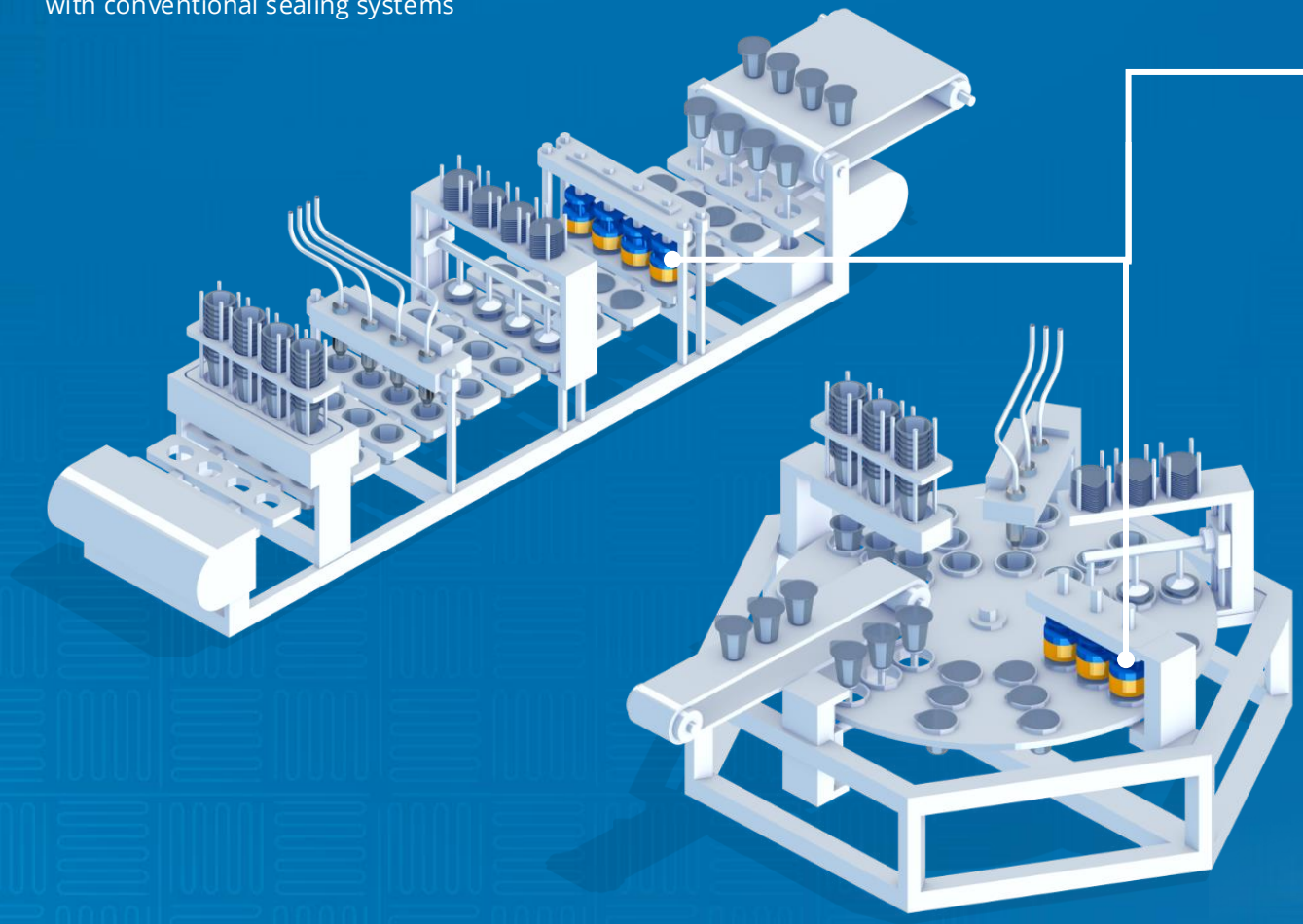
Deformed and shrunk seals and lids, due to excessive thermal treatment in the machine

Our Solution

The complete FS Cup solution

for mono material processing

with conventional sealing systems



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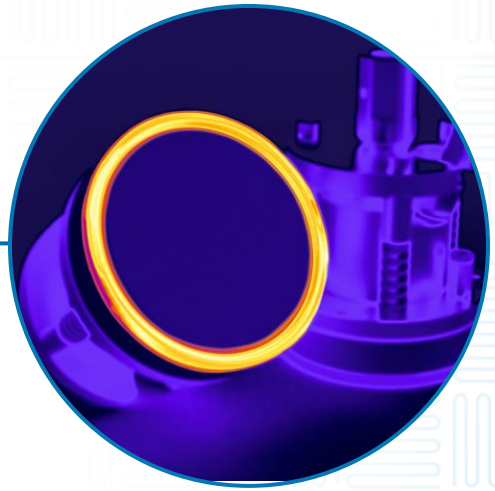
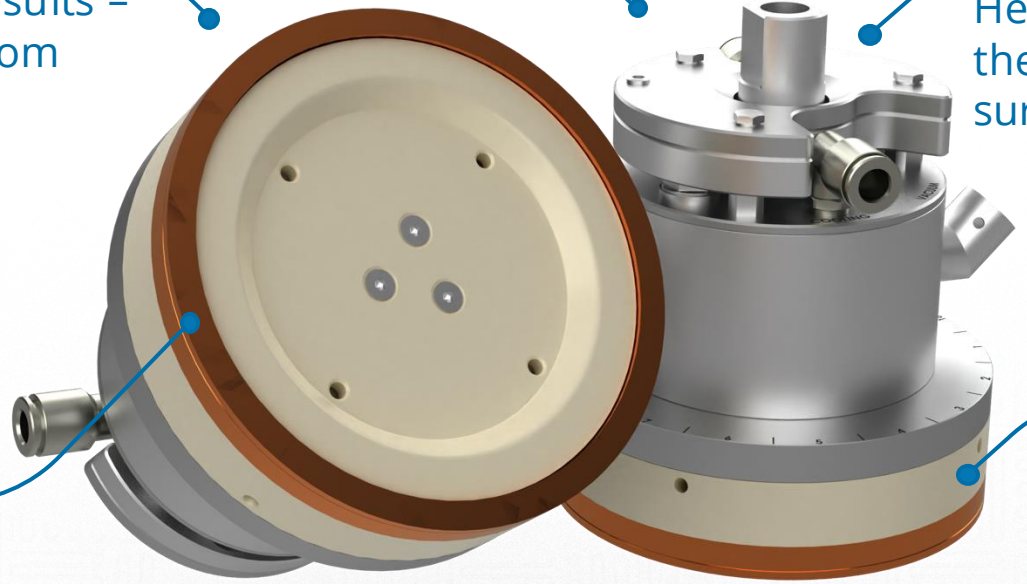
How it works

Pixel-wise heating with fully temperature control



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

Heat only at the sealing surface



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

Mono-Material Processing

The accurate sealing temperatures enables processing of mono-materials with small processing windows (small sealing temperature window)

Inline-Quality-Control & Monitoring

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

- Product residues
- Wrong positioned lids
- Doubled lids

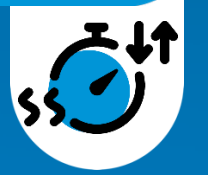
Energy Saving

Up to -50 %

watttron technology reduces energy consumption by up to 50% during continuous operation and by up to 90% during ramp-up. This also minimizes the thermal impact on the machine, ensuring more efficient and gentle operation.

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 fast 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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Temperature control

- The set temperature is kept very precisely
- To make it easier to open the packaging (for example a yoghurt cup), a lower temperature can be set in the area of the opening-flap

16 individual controlled heat circuits with integrated sensor

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Fast temperature change

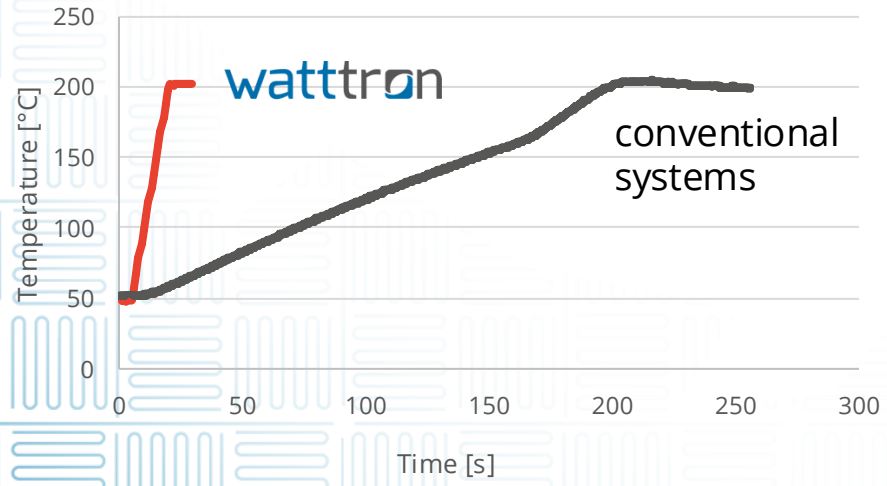
Fast ramp-up:

- Heat-up-rate 10 °C/s (higher on request)
- 20 °C to target 200 °C within 18s “ready to seal” (instead of >10 minutes)

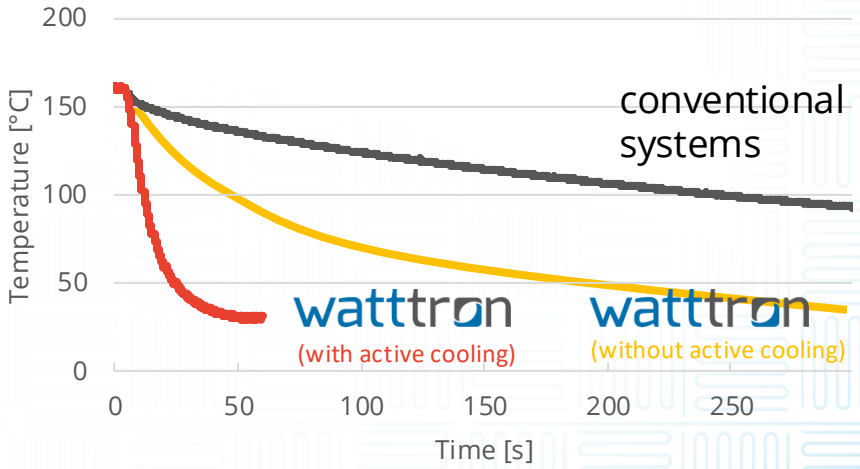
Rapid cooling: internal active cooling system

- cool-down-rate up to 8 °C/s
- 160 °C down to 100 °C within 7s (instead of >15 minutes)

Heat up process - target 200°C



cool down process from 160°C



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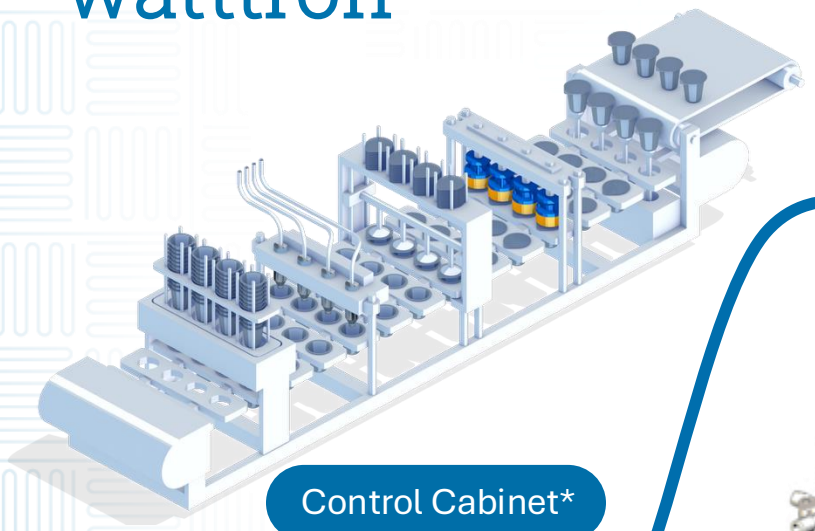
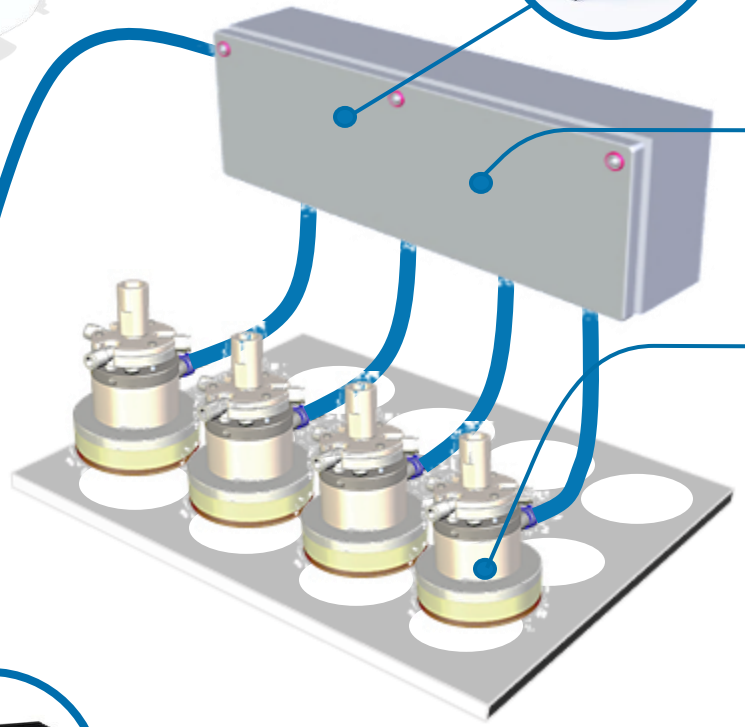
Integration Example and provided components by watttron

All components available in stainless steel!



Control Cabinet*

watttrixHub



Junction Box*

Sealing Head(s)

Stand-Alone-HMI*

watttrixServer Performance

* can be delivered as an option

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Integration Example – Machine Communication

PLC communication

No machine communication

Digital machine communication

01000
101

Ethernet/Fieldbus machine communication

MQTT
Modbus
EtherNet/IP
PROFINET

HMI Integration

Stand-Alone - HMI

Embedding watttrixGUI into machine HMI

Integration into existing HMI

OPTIONS
Classique
CM OFF
Watttron
CM ON

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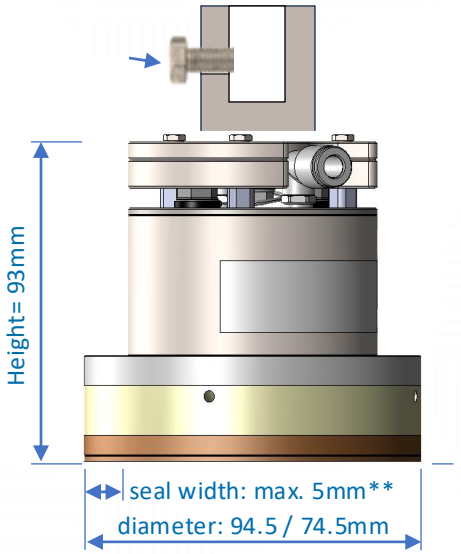
Standard Products and Specification

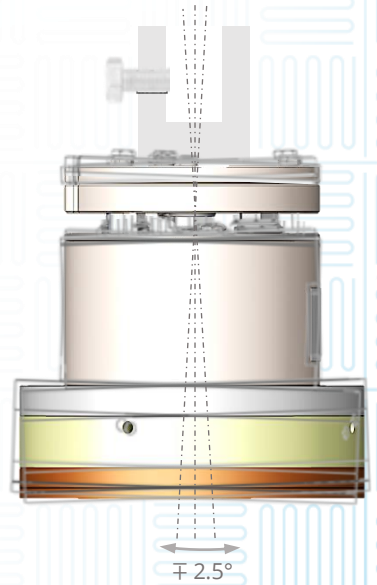
D 95mm Cup Diameter

D 75mm Cup Diameter

machine specific adapter*
(typ. 20 to 40mm)



angel-compensation



Specification	Value
max. Temperature	250°C
max. seal pressure	3 MPa (actual pressure on seal surface)
max. Power	approx. 500W
operating voltage	36 to 48V DC
height	90mm (+ adapter for machine integration)
cable length	max. 1.5m (on customer request)
cable bending radius	90mm (extra flexible)
heat-up rate	10°C/s
IP-protection	designed for IP 67

* needs to be designed an manufactured according the specific machine

** Smaller seal width or specific profiles on request, standard surface is flat

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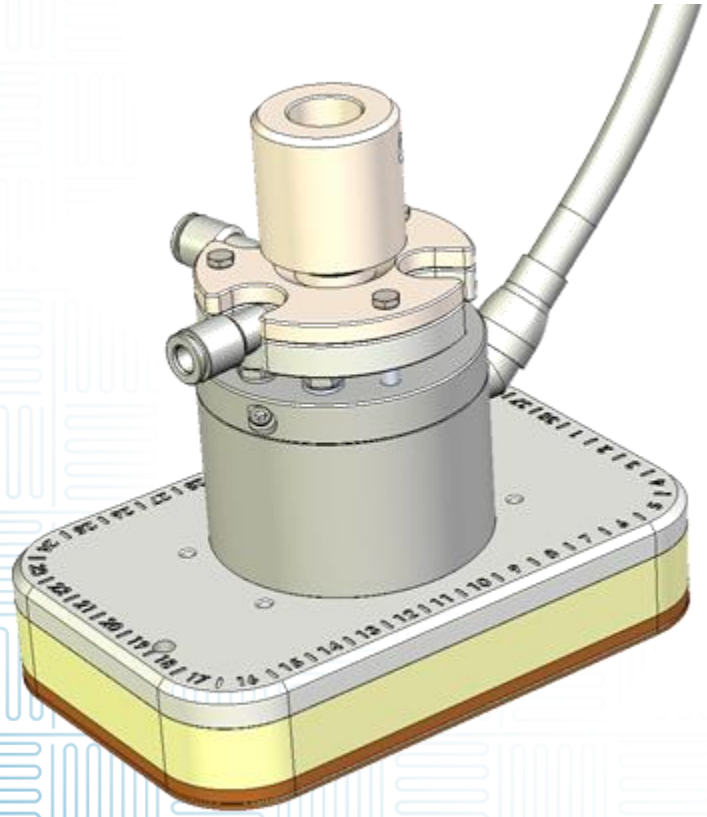
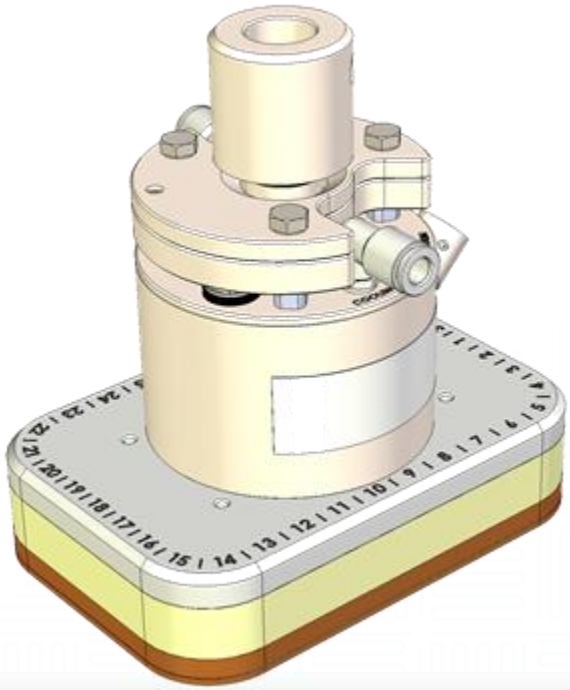
Format-Specific Products

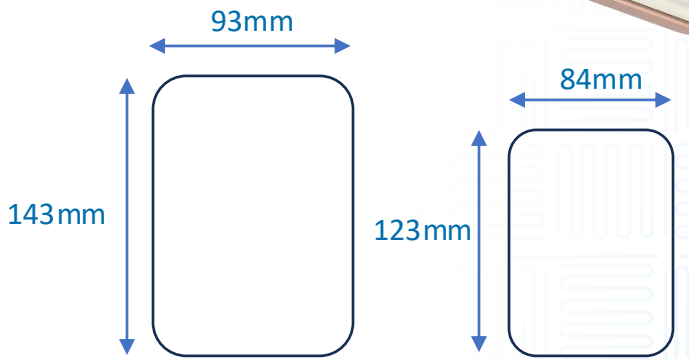
500g Rectangular Cup



250g Rectangular Cup



Available Formats:



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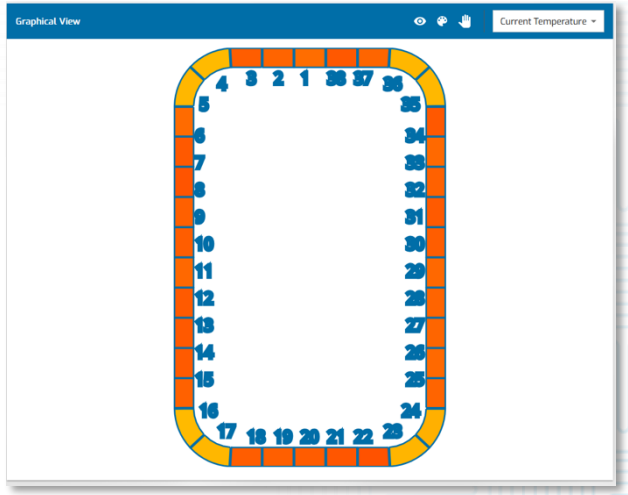
Application examples



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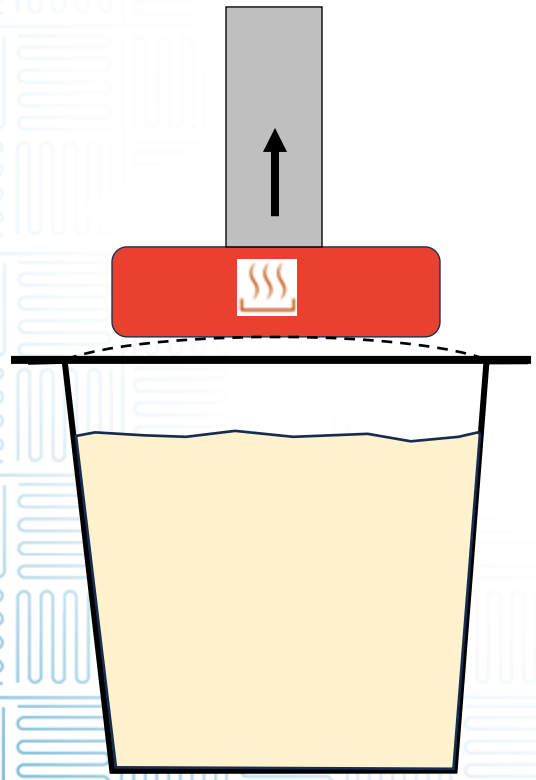
Sealing Quality in Comparison

Conventionally Sealed

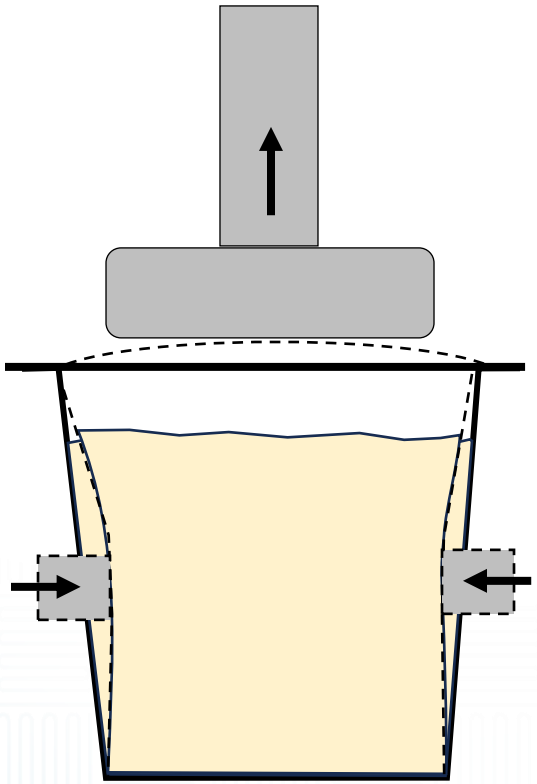
Sealed with watttron technology

Current solutions

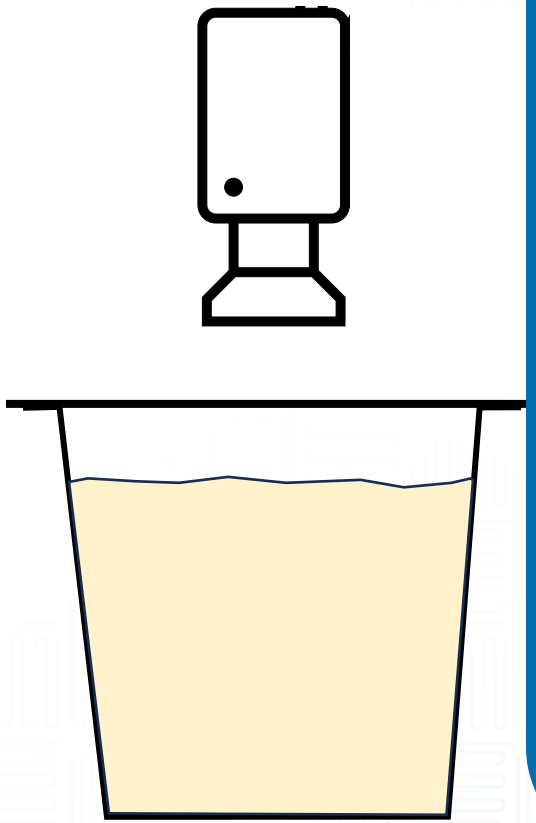
Head space heating



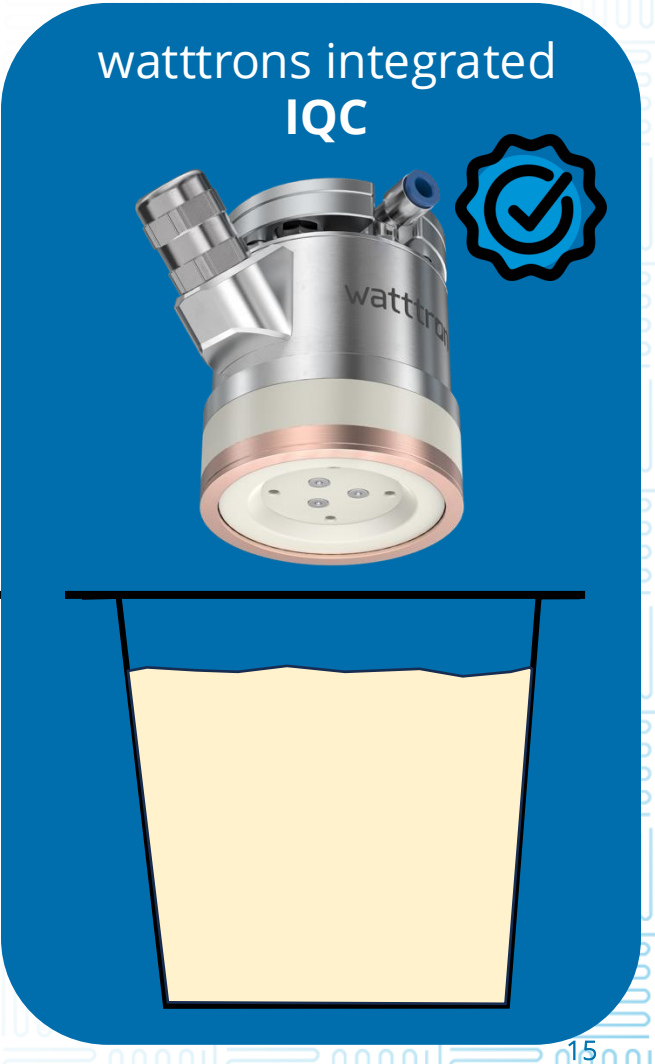
Cup Squeezing



(IR) Camera Inspection



watttrons integrated **IQC**



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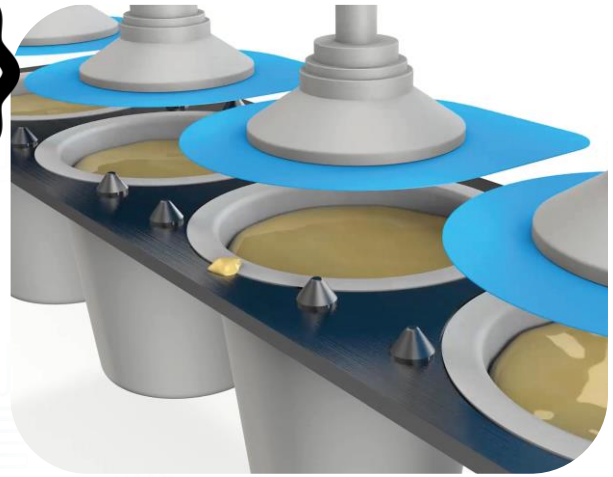
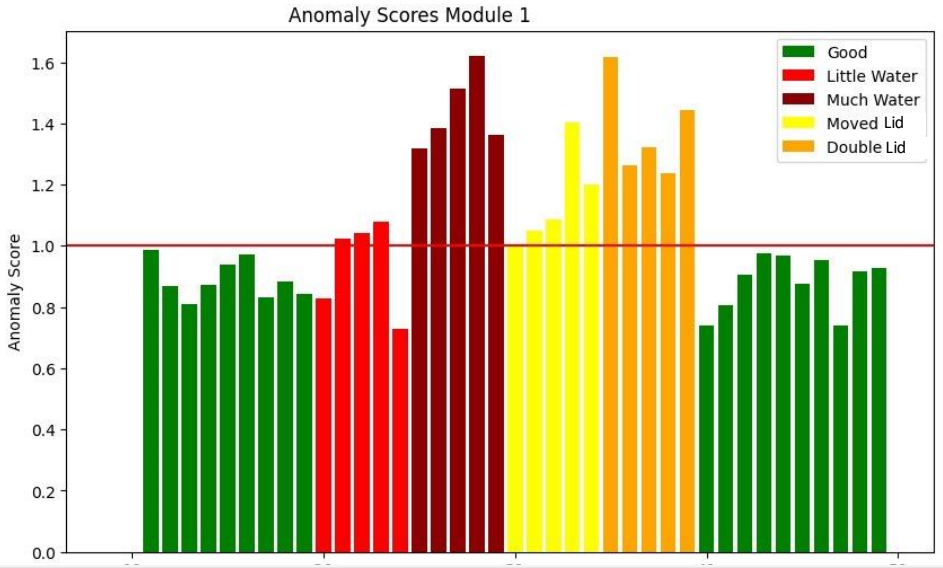
Temperature and Power Monitoring

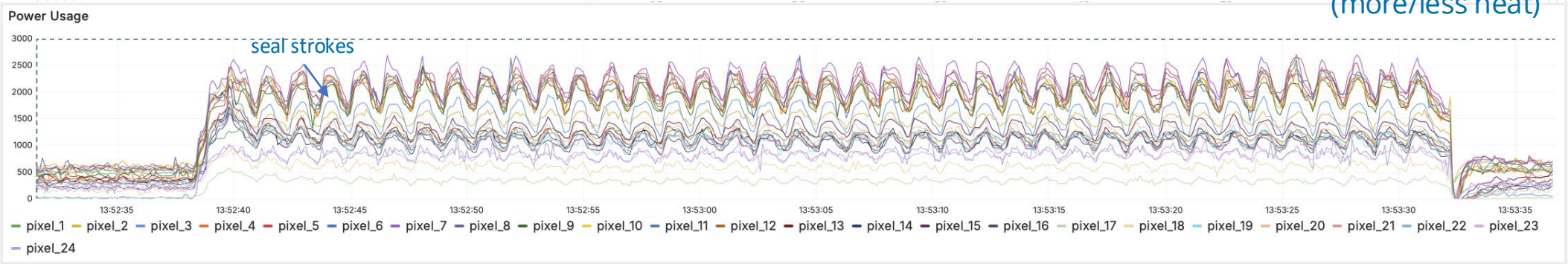
- Lots of temperature data and power-usage (seal power) recorded as base for **Inline-Quality-Control**





Principle:

- Measuring power/heat flow for every single heat pixel – approx. every 100ms
- Contamination (fluid) means more heat needed to hold temperature (enthalpy of vaporization)
- Displaced or doubled lids also affect the heat flow (more/less heat)



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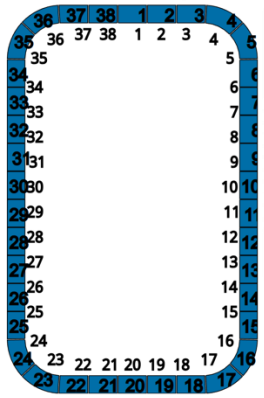
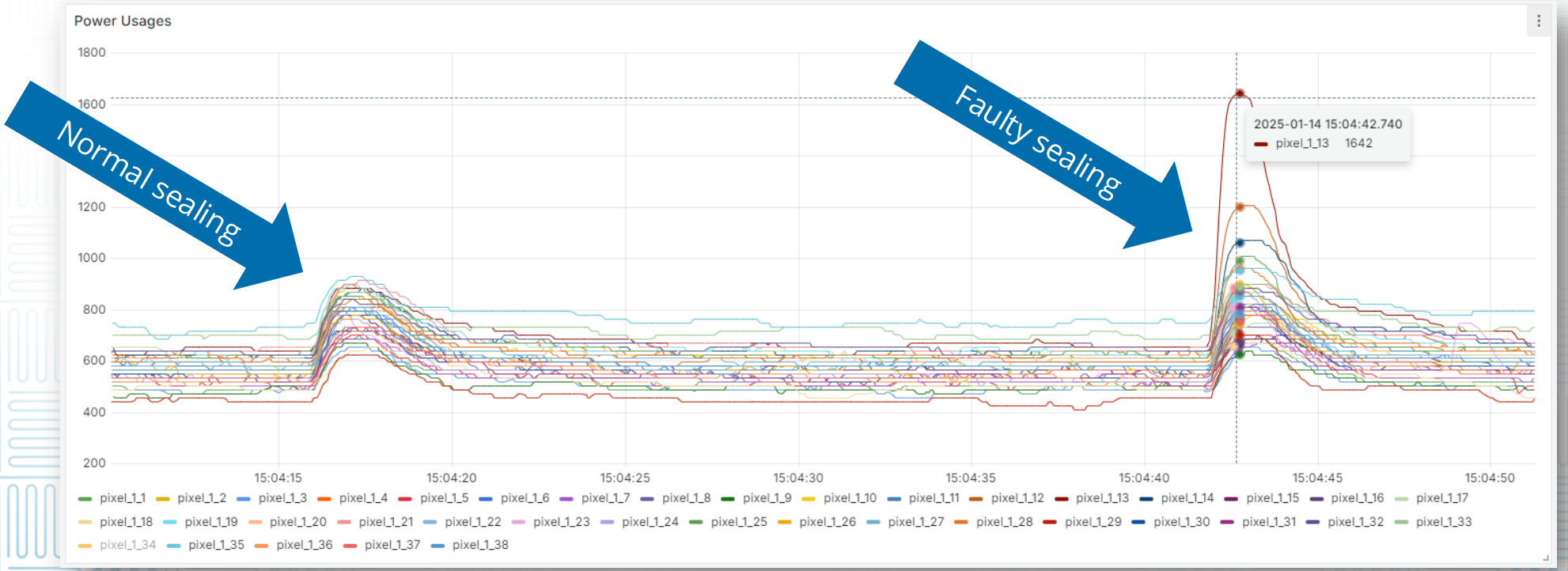
Inline Quality Control IQC

Piece of Chicken Skin
Large Contour Sealing





Automated model-based Inline-Quality-Control

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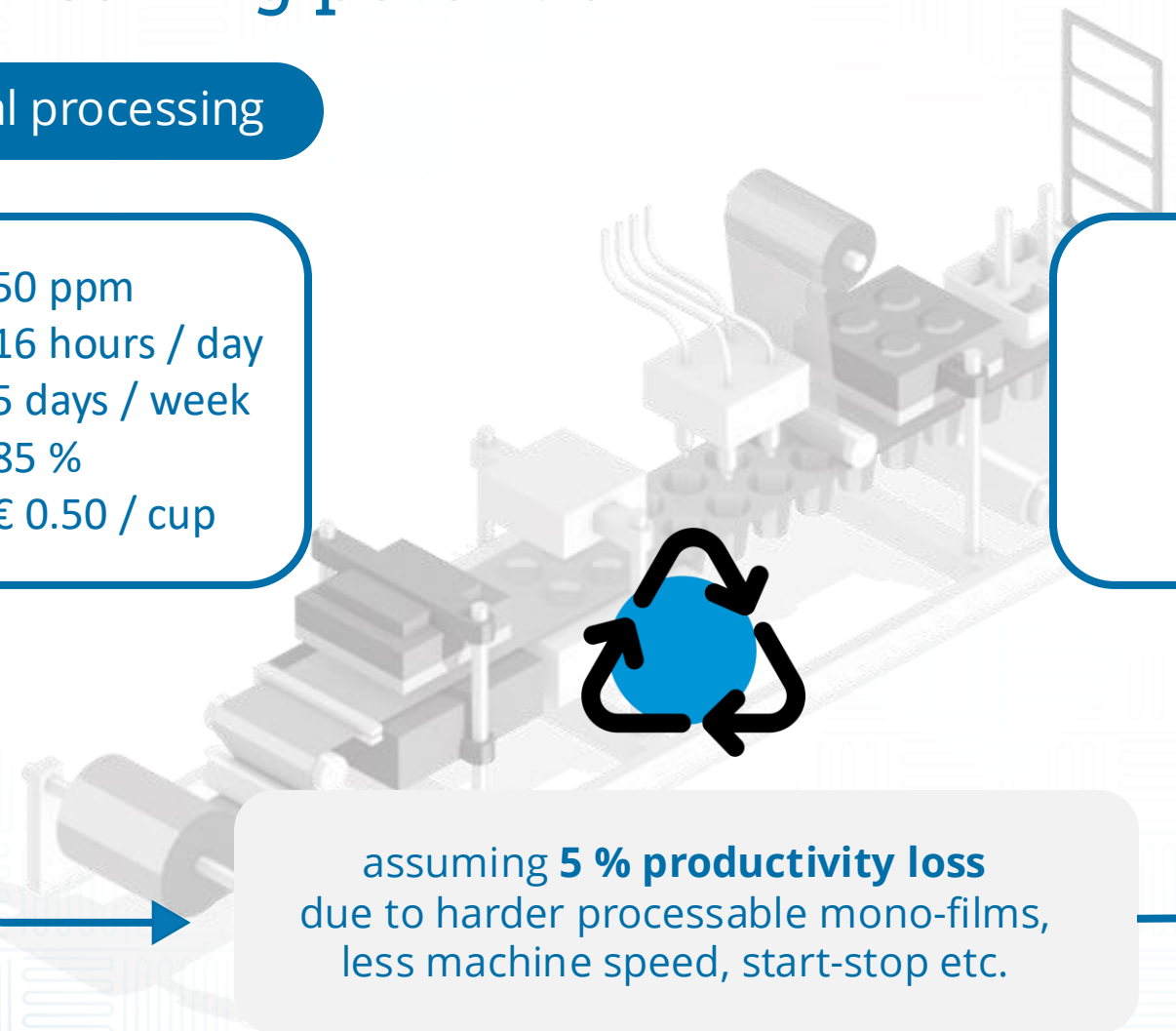
Explore your saving potential

For mono material processing

Machine speed:	50 ppm
Machine output:	16 hours / day 5 days / week
OEE:	85 %
Revenue:	€ 0.50 / cup



assuming **5 % productivity loss**
due to harder processable mono-films,
less machine speed, start-stop etc.

Revenue potential of:

~ € 260,000 / year

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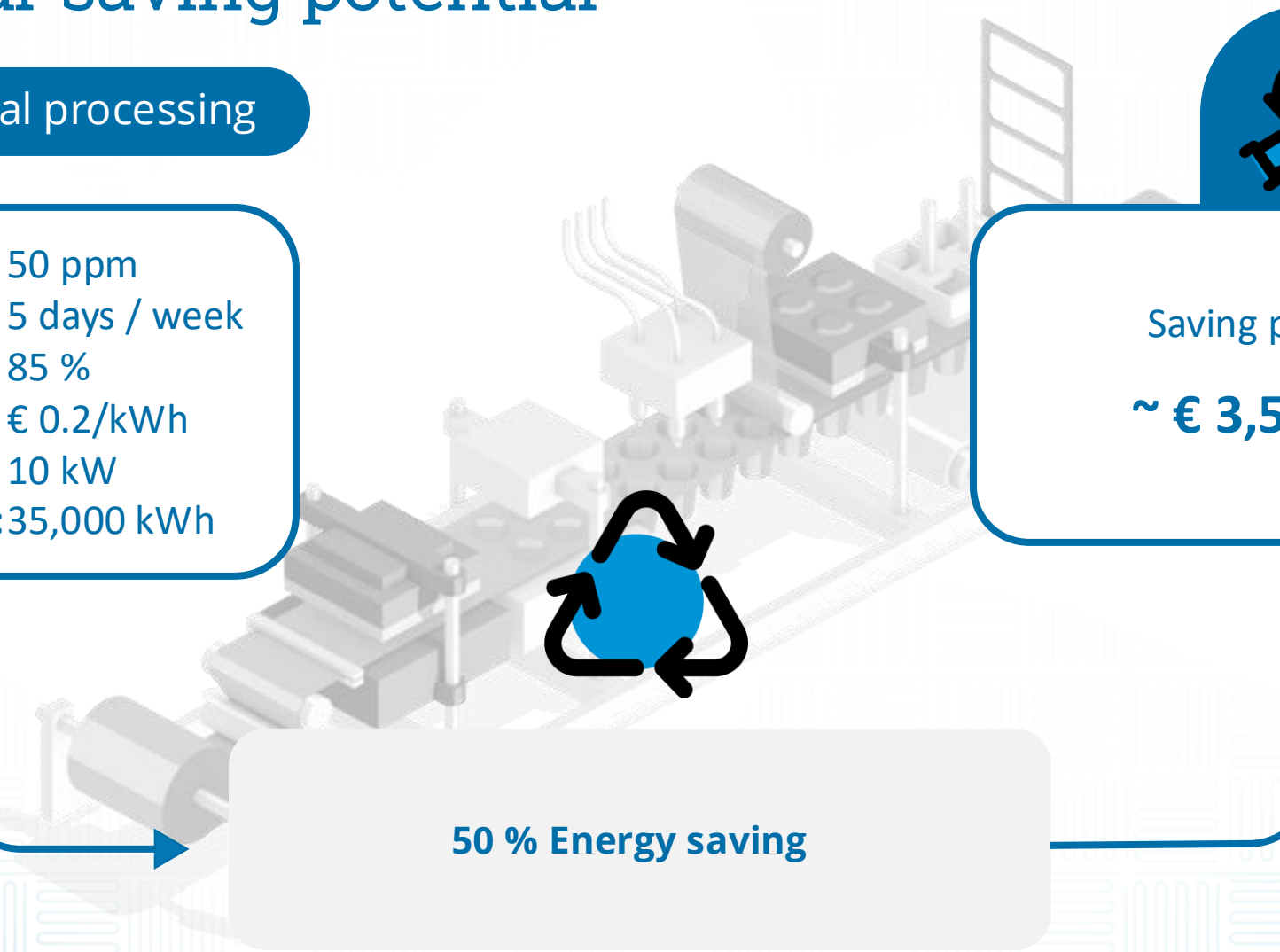
Explore your saving potential

For mono material processing

Machine output: 50 ppm
5 days / week
OEE: 85 %
Price/kWh: € 0.2/kWh
Curr. Power usage: 10 kW
Energy usage/year: 35,000 kWh



50 % Energy saving

Saving potential of:

~ € 3,500 / year

Contact

See you soon!

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