

Cleaning after thermal deburring

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The Company

Thermal Deburring

Cleaning after thermically deburring

Summery



The Company in figures:

Owner-managed, midsize company:

- 40 Employee
- approx. 10,0 Mio. € annual turnovers
- 3.200 m² Production area

1972 founded by Jürgen Höckh

1974 Customer worldwide are using Höckh-Cans-Washers

1987 First company who uses vacuum for the drying process

1994 Patent for solvent plant under full vacuum

2002 Development of the compact Multiclean- LC series

2005 Build up of the world's largest full vacuum plant with 65.000 liters filling volume

2008 Michael Höckh becomes CEO

2013 Jürgen Höckh retires, Joachim Höckh becomes CFO

2017 Opening of several showrooms (USA / Europe / Asia / ...)

Till Now: Represented worldwide with aqueous-, solvent- and hybrid applications



Joachim and Michael Höckh

Operations:

Development, design , assembly of standard- and customised machines. Aqueous systems, solvent machines under full vacuum. Machines for a Hybrid process (DUO)

Industries:

Aerospace, Medical, Automotive, Precision parts, Heat treatment, Pharma, Stamping, Deep drawing, Turning and many more.

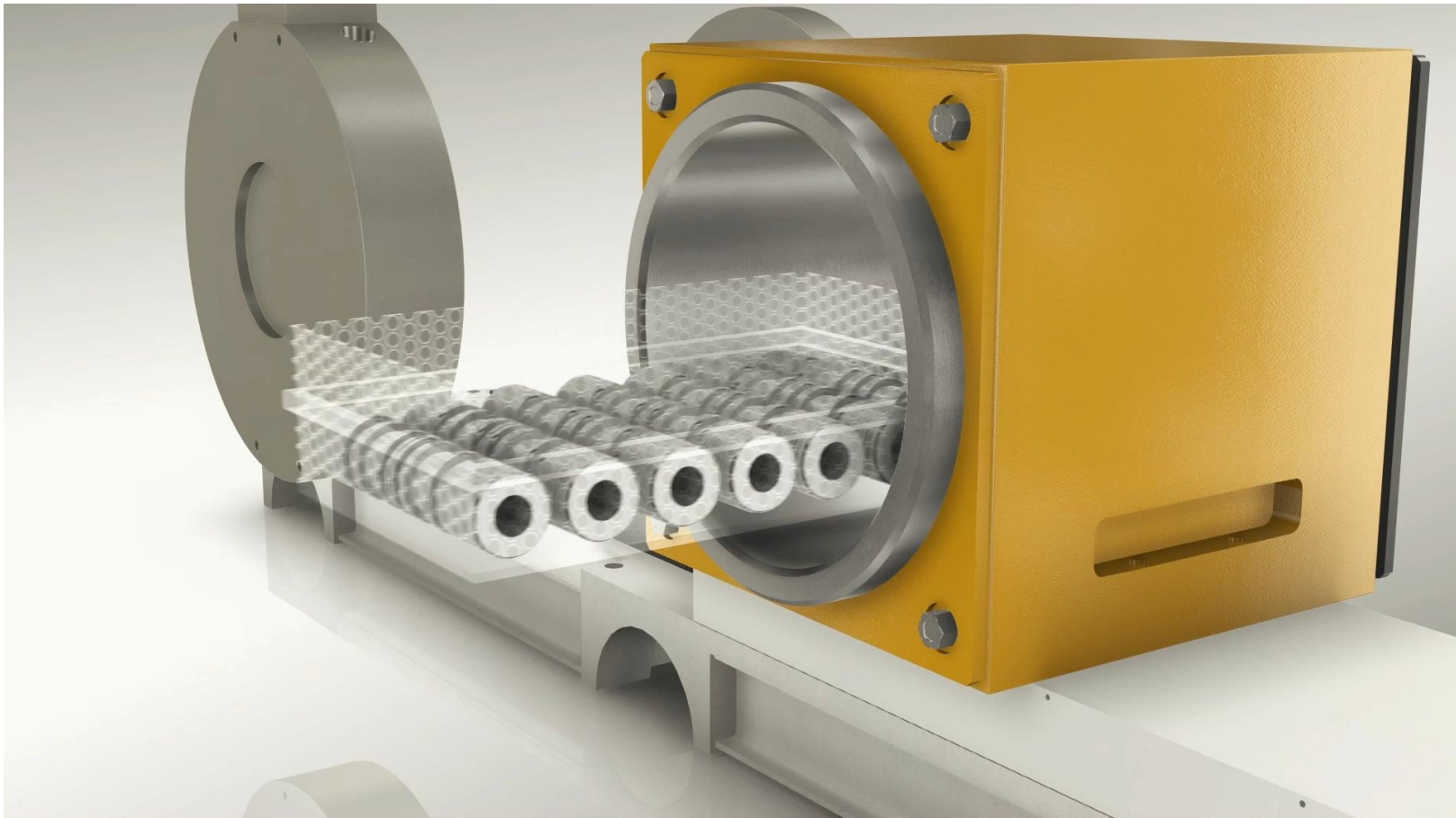
Markets:

Europe
USA, CAN, MEX, India, China, Japan, Thailand, Taiwan, Australia...

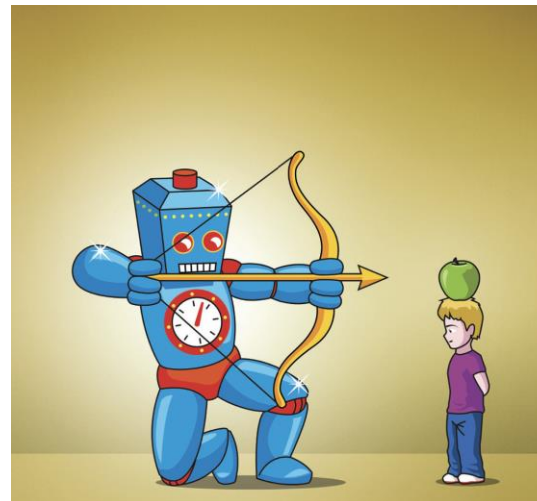
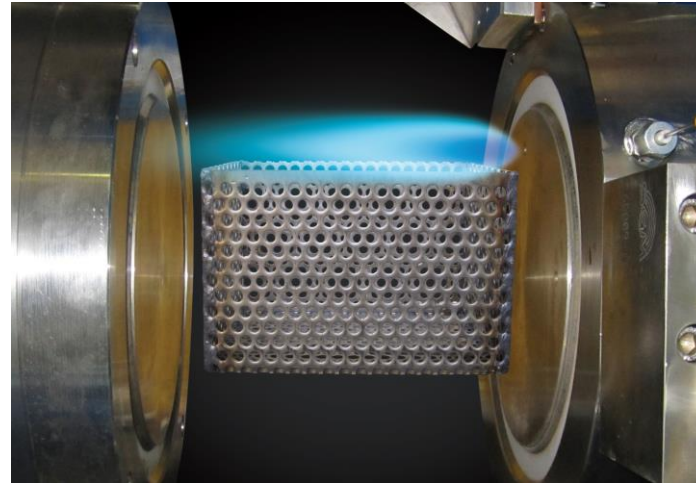
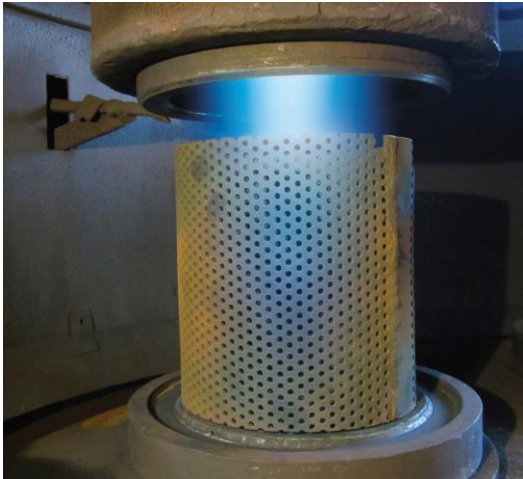


Your strong partner

What happens during thermal deburring?



The revolutionary SGM process:

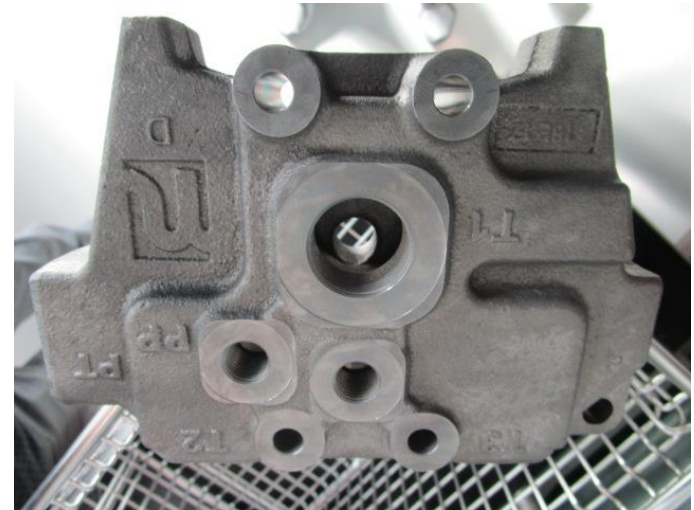


Cleaning after thermally deburring



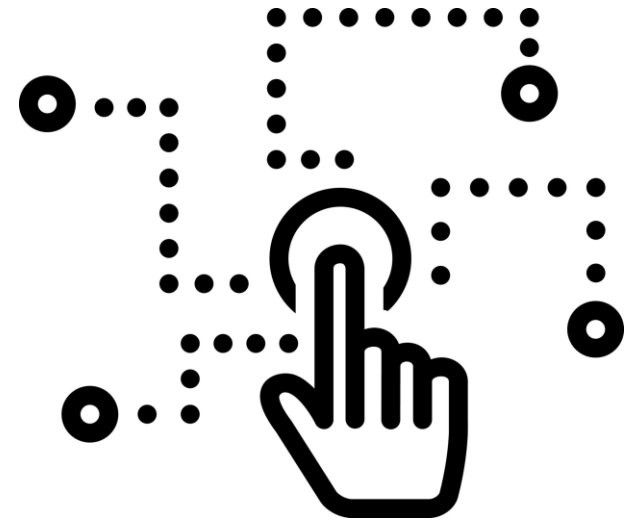
source: eco-entgratungcenter

The oxide layer should be removed!



Cleaning selection process:

- Which contamination?
- What material?
- Amount of dirt?
- Cleanliness requirement?
- Possible anti rust protection (preservation/passivation)?



Follow-up-process:

Packaging?

- clean for disposal

Welding / Soldering / Painting?

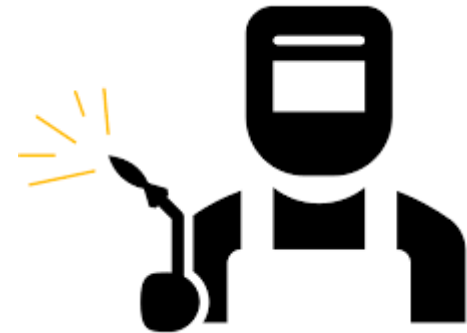
-Free of filmic contamination

Blasting?

-Free of filmic contamination

Galvanizing?

- free of contamination, to relive the electroplating (soak cleaning)



Example 1

Material:

- Steel

Contamination:

- Rust after TEM

Requirements:

- Rust-free
- Passivation

Following-up-process:

- Post-processing
(mechanically)



Sequence of cleaning

Cleaning with a neutral derusting agent:

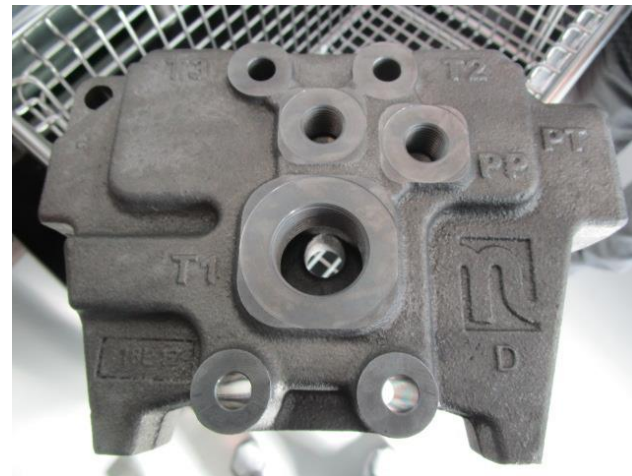
- Aqueous cleaning with 3 tanks
- Cleaning with neutral derusting from tank 1
- Ultra sonic than turbo-spray tank 1
- Turbo-spray tank 2 incl. passivation
- Turbo-spray tank 2 incl. passivation
- Vacuum drying
- Total time ~12 minutes



Multiclean A-Standard

Cleaning result:

- Free of rust
- Dry
- Temperature of the parts was approx. 40°C
=> assembling / handling
- Visible protected with passivation/
anti rust protection
- Customer is happy



Example 2

Material:

- Steel

Contamination:

- Oil
- Particles
- Burrs

Requirements:

- Surface tension $>40\text{mN/m}$
- No particle $>150\mu\text{m}$

Following-up-process:

- Assembling /Sale



Sequence of cleaning

Cleaning with a neutral derusting agent:

- Aqueous cleaning with 4 tanks

Before TEM

- Mild alkali degreasing in tank 1
- + Rinsing from tank 3 und 4

After TEM

- Cleaning with neutral deruster in tank 2
- Ultra sonic than turbo-spray tank 2
- Ultra sonic than turbo-spray tank 3
incl. passivation
- Turbo-spray tank 4 incl. passivation
- Vacuum drying

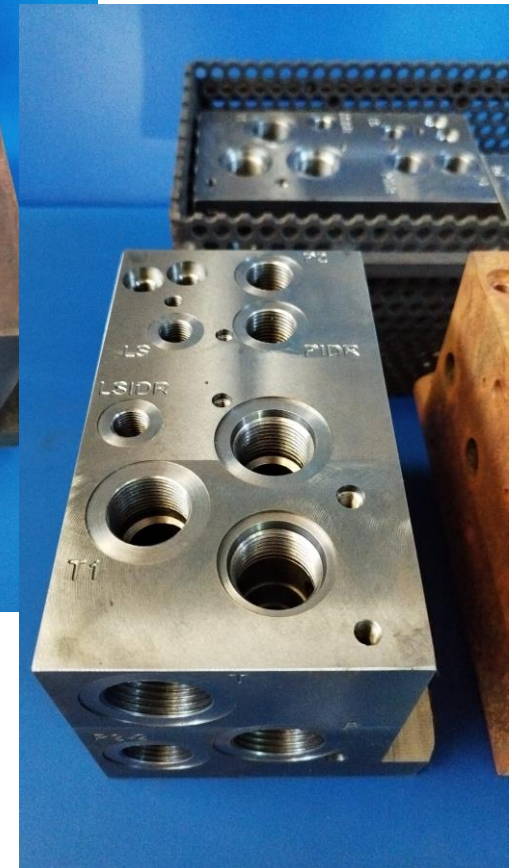
- Total time ~16 minutes



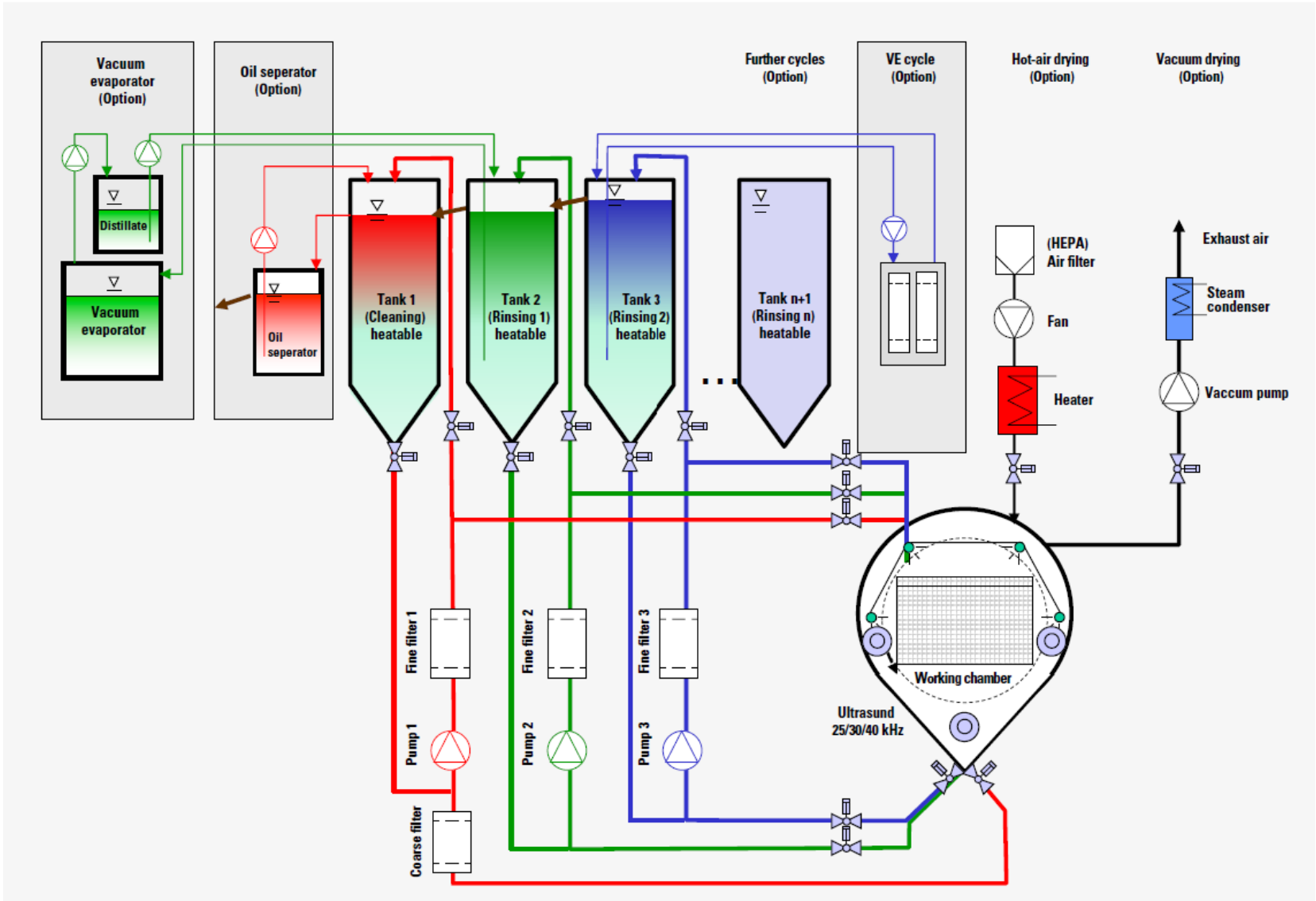
Multiclean A-2 PRO

Cleaning result:

- Free of rust (also inside the channels)
- Dry
- Temperature of the parts was approx. 50°C
=> assembling / handling
- Anti rust protected because of passivation
- Surface tension $\leq 44\text{mN/m}$
- No particle $>125\mu\text{m}$ (Soll $<150\mu\text{m}$)
- Customer is happy



Case example: process



- **Thermically deburring**

There are different ways to make a thermically deburring. After thermically deburring the parts will oxidate.

- **Cleaning after TEM:**

- it is possible to use neutral deruster or acids to remove the oxidation.
- The cleanliness requirements are important
- what is the following-up-process?
- Is there any need for a passivation?
- Different kind of parts need different types of cleaning mechanics
- At the end the parts need to be in a condition to get into the following-up-process
For this a machine is needed which will be able to bring continuously the same results.

Thank you for your attention

Any questions?

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