



**Schmidt &  
Heinzmann**

COMPOSITE EQUIPMENT & MACHINERY

# TOPCON 2023

Integrated Deburring/Deflashing/Milling Process In The  
SMC Press Automation Process

Christian Fais

Images (from left to right, top to bottom): Composites World, Digital Trends, Green Car Congress, Magna



# Schmidt & Heinzmann | Key Facts

**1949**

Founding



**130**

Employees



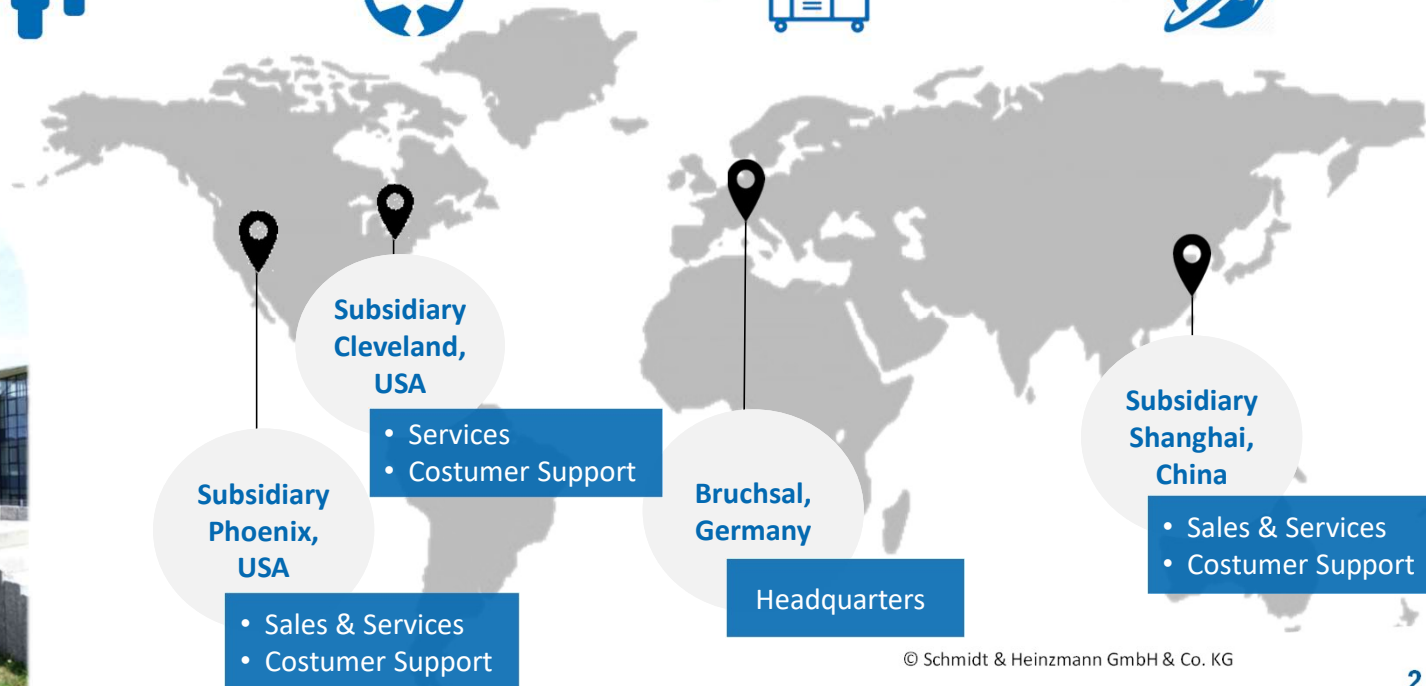
**Privately**  
owned company



**Manufacturer**  
of composite machinery



**World wide**  
delivery



# Composite Equipment & Machinery



**SMC Production**



**Automated Bonding**



**Automated Preforming**



**Fiber Processing**



**Press Automation**



**Cutting & Stacking**

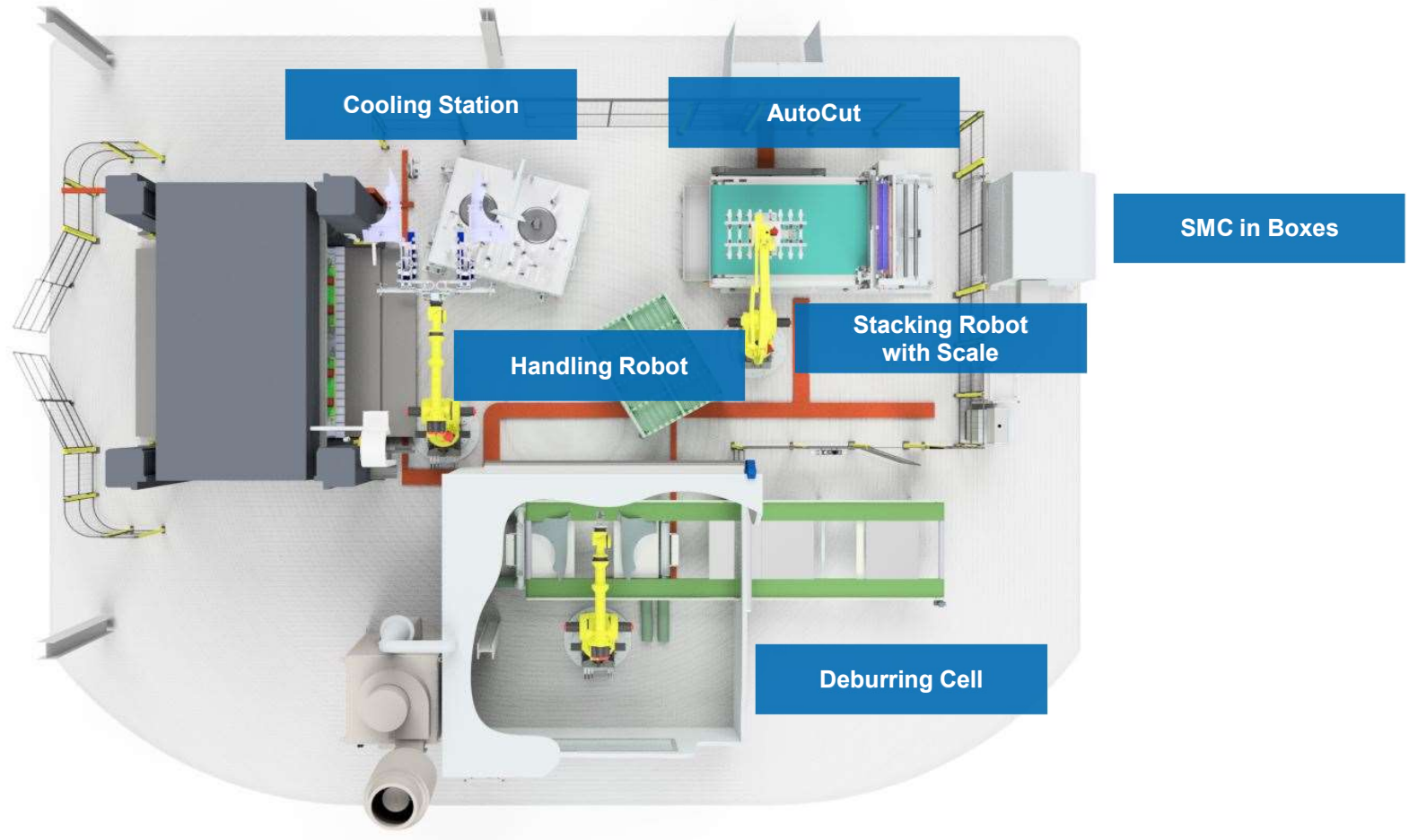


**Automation & Robotics**

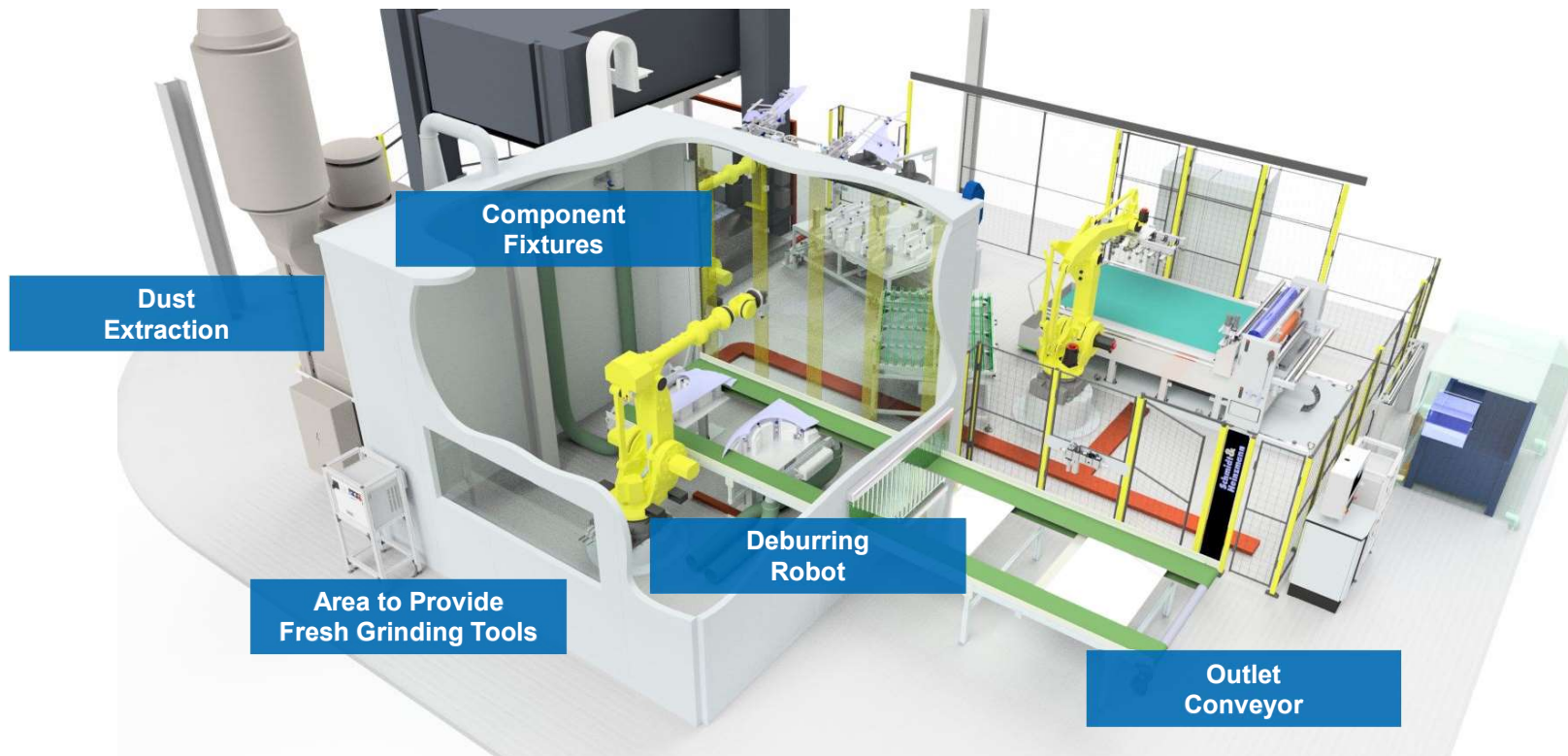


**Polyester Plate Production**

# Integrated Deburring/Deflashing/Milling Process



# Deburring/Deflashing/Milling Cell



# Highlight: Dust Extraction

Dust Separation

Local Extraction  
included in Fixation

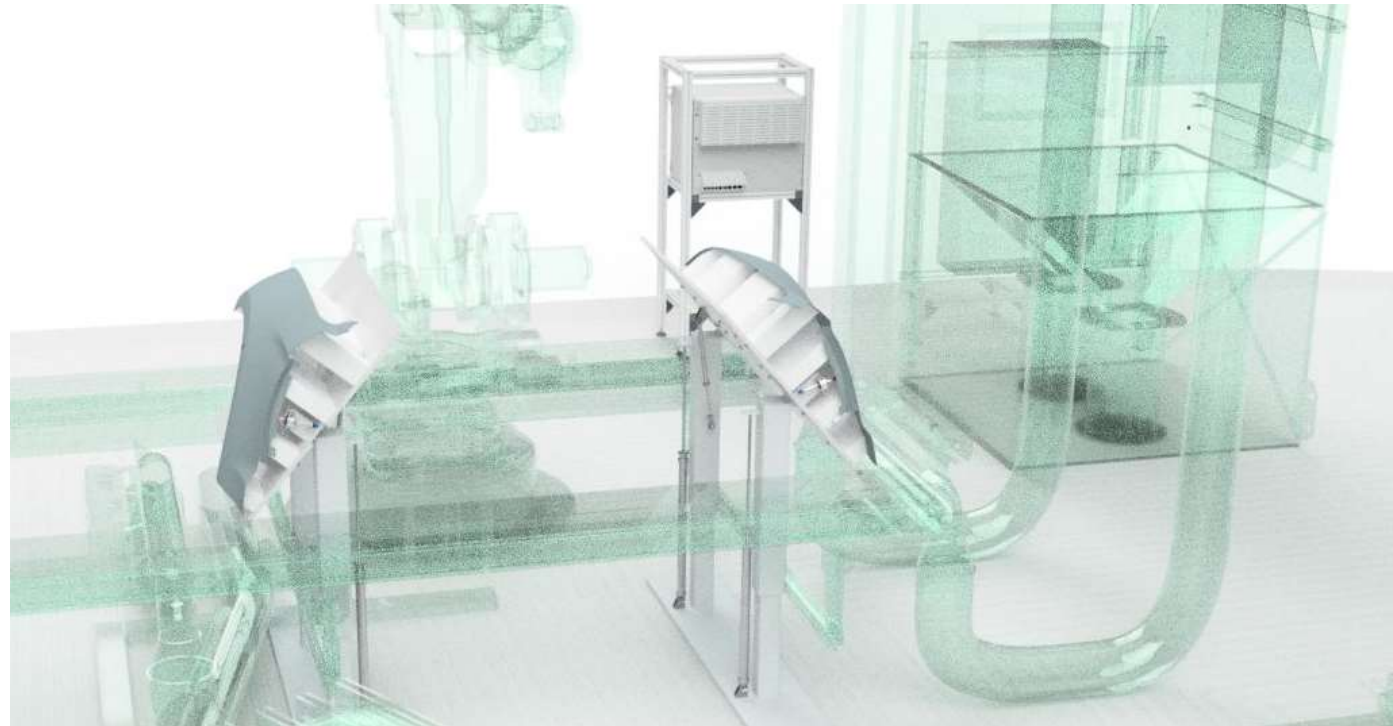
Tornado Systems

Ionization of Air

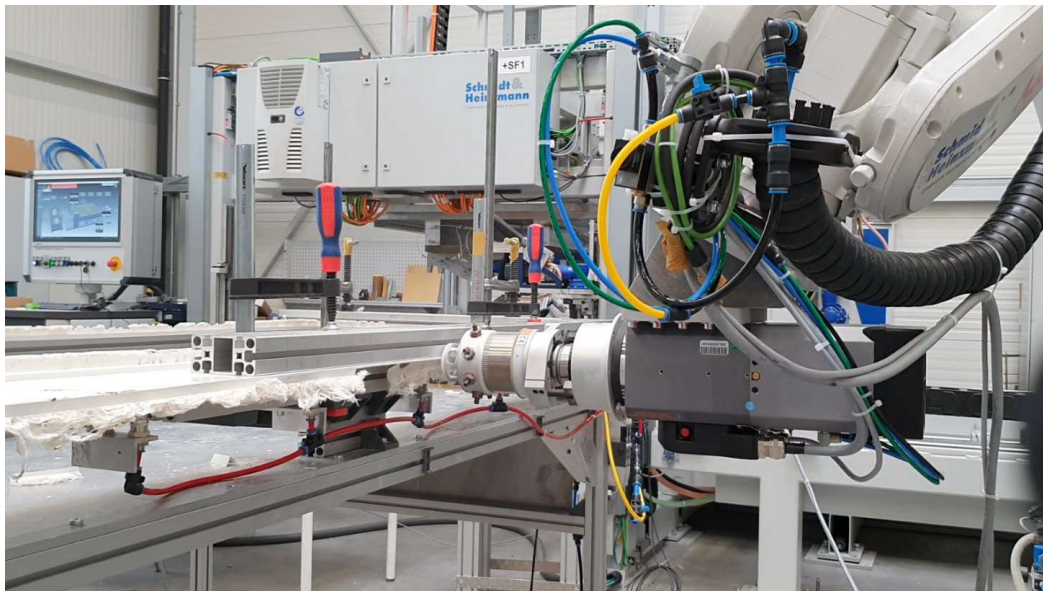
# Highlight: Component Fixation

## Lifting and Tilting of the Components

- Reduces waste on surface
- Places components on conveyor after deburring

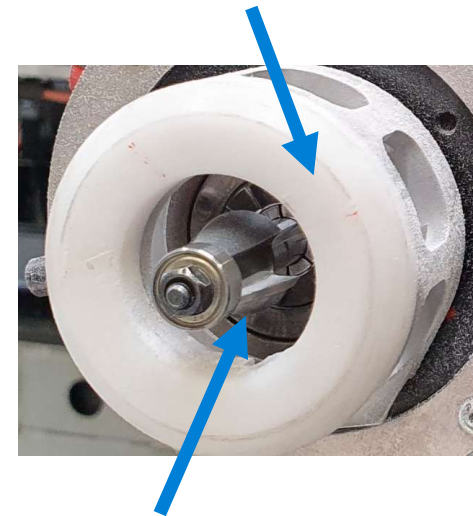


# Concept Deflashing Outside



3D-Aggregate with surface copying function in 3 axis

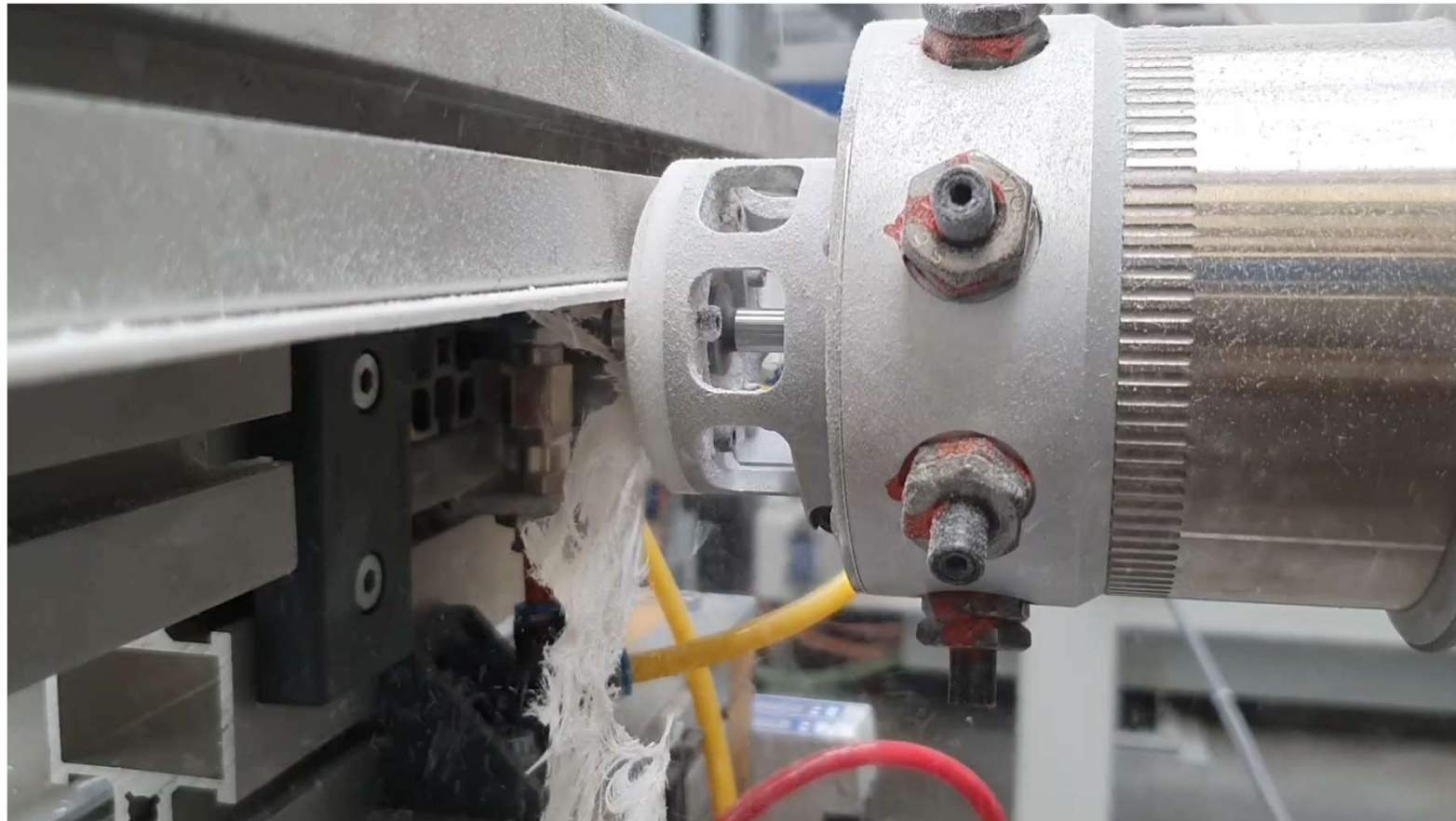
The final contact tool will be metal



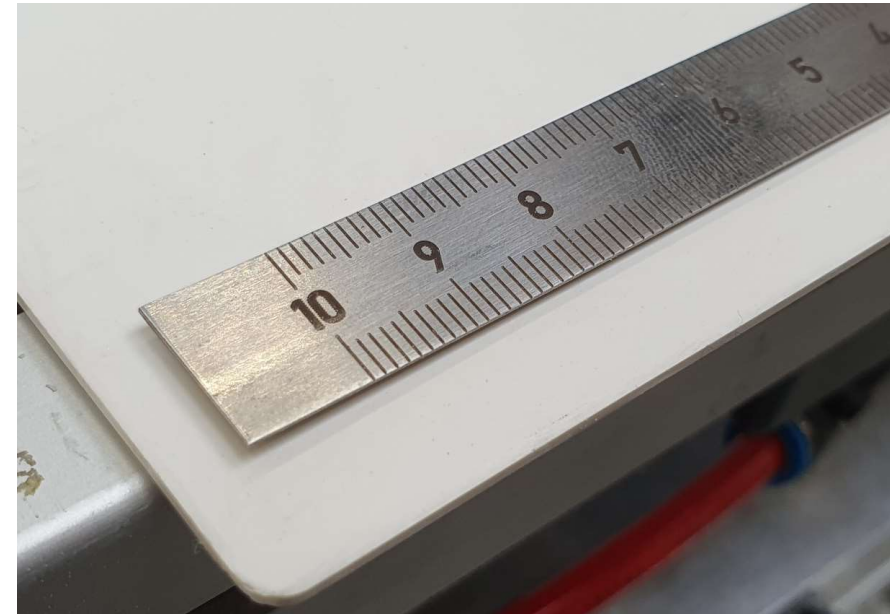
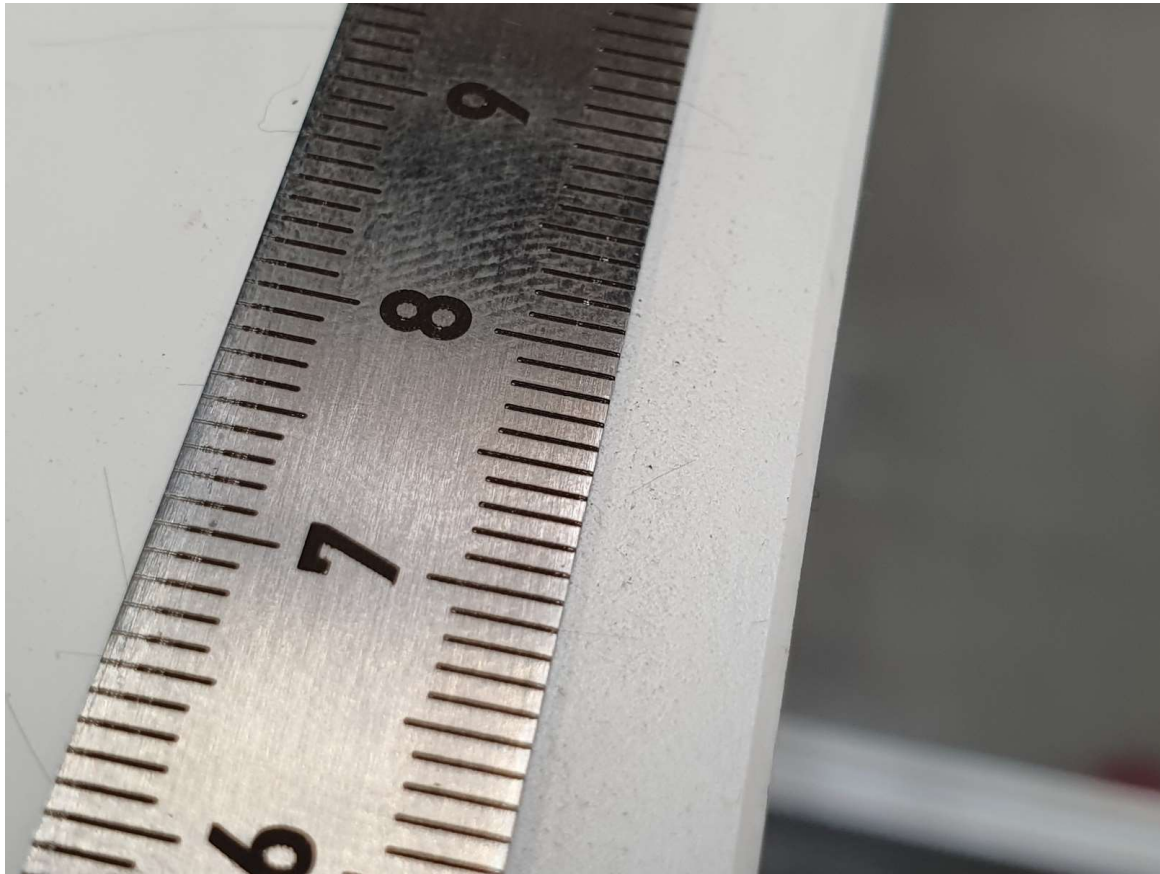
Carbide cutter (10° angle) with surface copying function (bearing)



## Deflashing Outside - Video



## Deflashing Outside - Results



- The deflashing result is smooth and regular with speed 80 mm/sec
- The visible milling surface is 1 mm wide

# Deflashing Outside - Conclusion

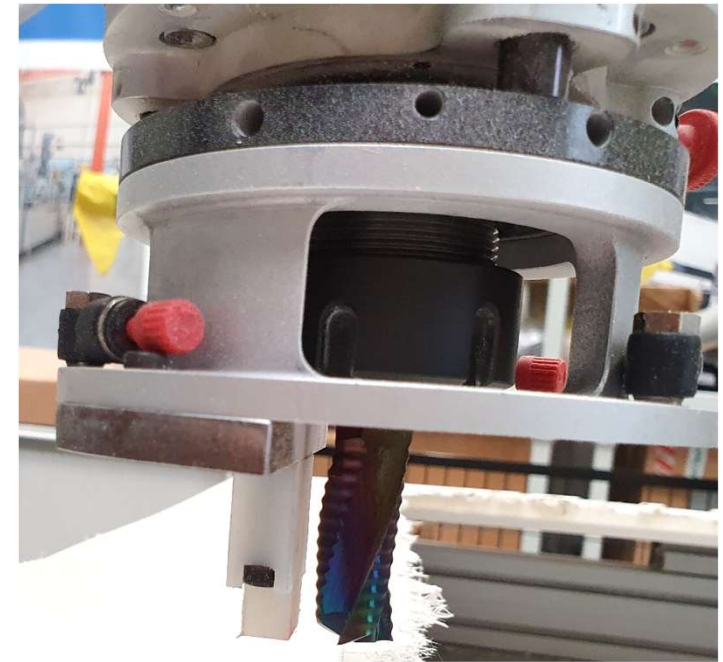
## Optimization of process reliability and result:

- special design milling cutter with 15° and at least 4 teeth
- Pre-machining step to remove large flash material to prevent chipping:
  - additional machining step with cutting tool (saw blade)
- Limitation of axis movement to 1 dimension to prevent stick-slipping of the contact tool

# Deflashing Window - Concept



1D-Aggregate with surface copying function in z-axis

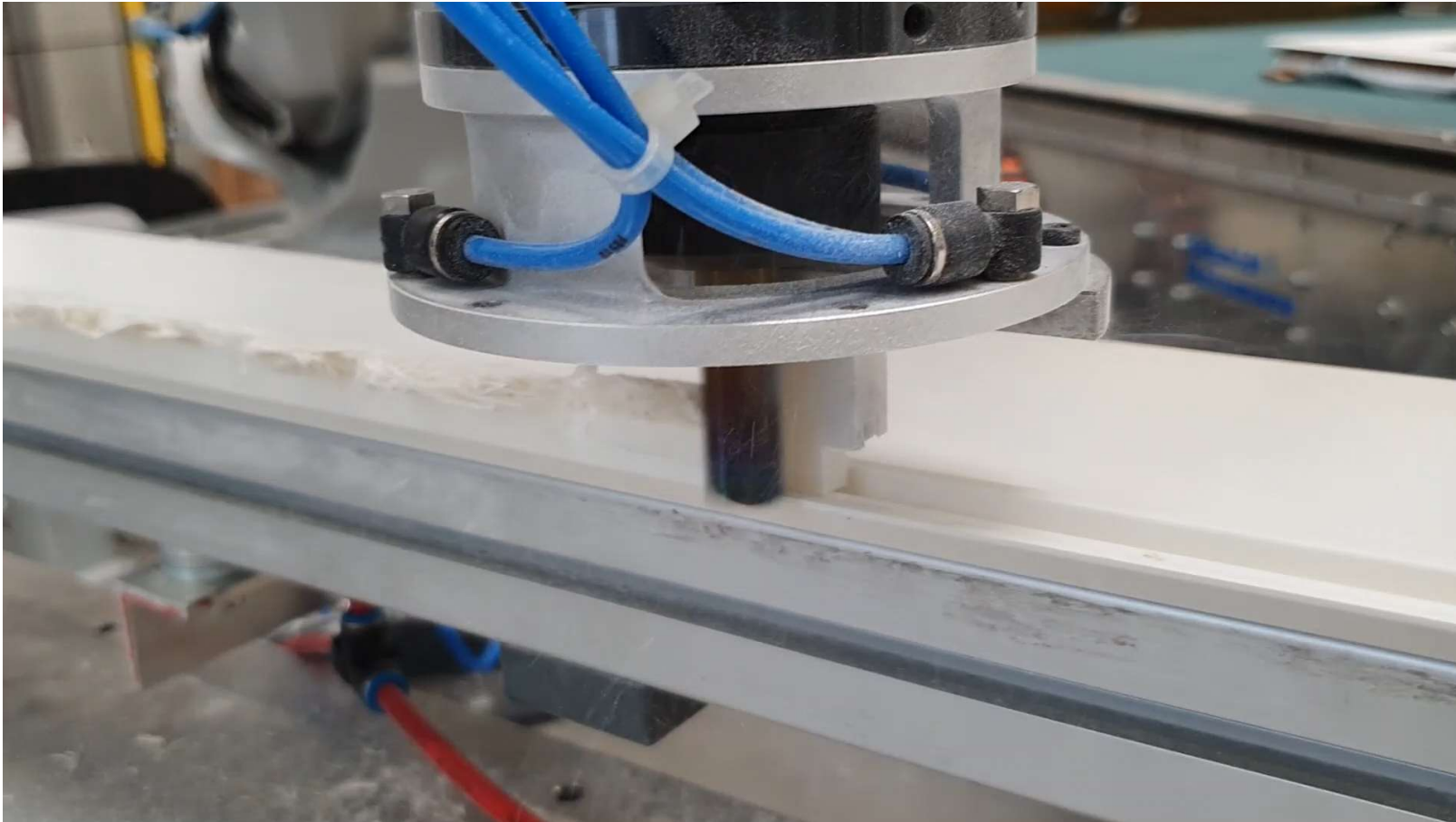


The final contact tool will be metal

milling tool with 5° cutting angle

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# Deflashing Window



# Deflashing Window - Results

## Results with pre-cutting step

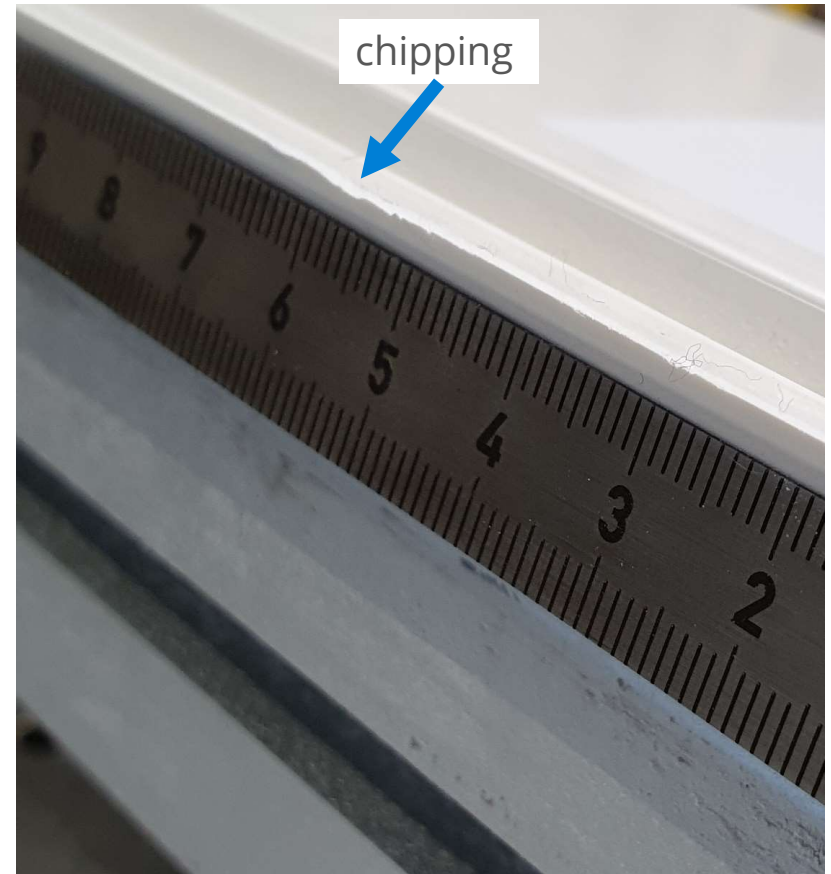
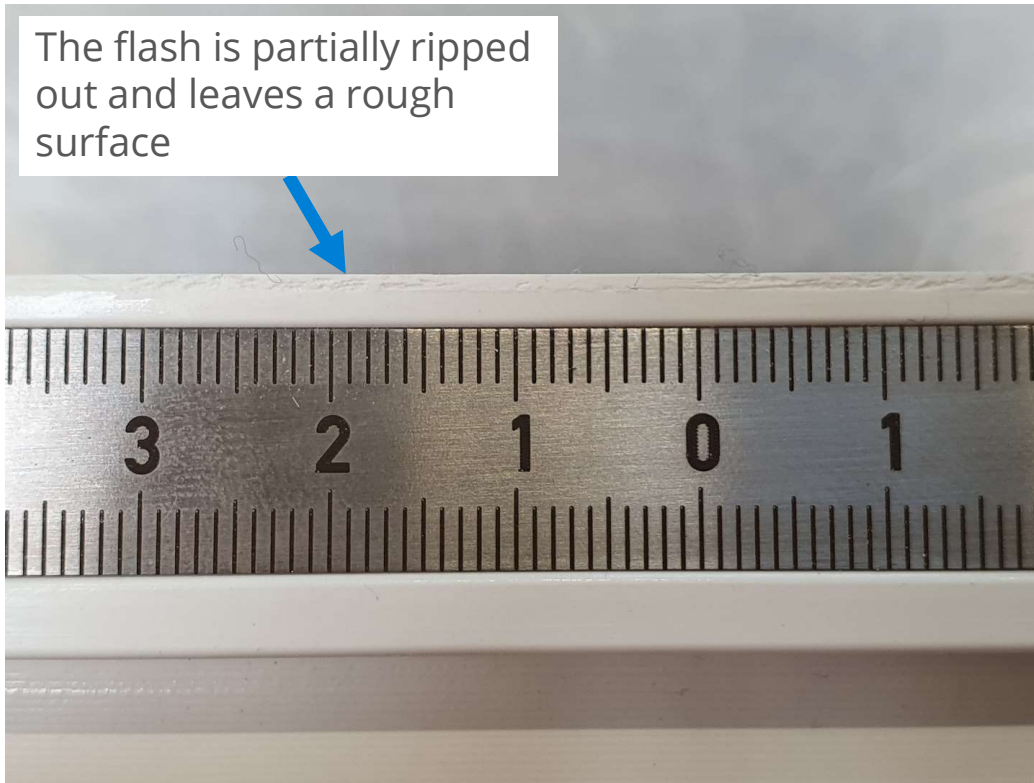


- The visible milling surface is 1-2 mm wide

# Deflashing Window - Results

## Results without pre-cutting step

The flash is partially ripped out and leaves a rough surface



# Deflashing Window - Conclusion

Optimization of process reliability and result:

- Milling Tool:
  - optimized design milling cutter with at least 4 teeth
  - reduce cutting edge height
- Pre-machining step to remove large flash material to prevent chipping and improve surface:
  - additional machining step with cutting tool (saw blade)
- 2 dimension Aggregate with additional radial contact tool
  - contact surface will be clamping device instead of the door skin





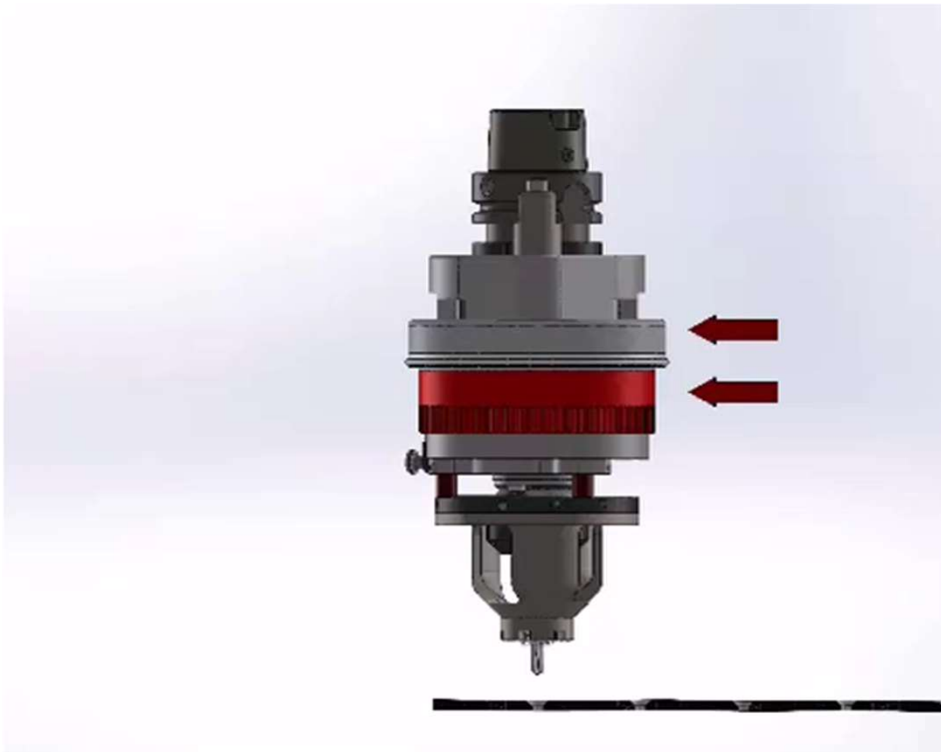


## Countersinking with the spindle

- Different depths of the countersinks due to shape deviations of the material.

***Complicated measuring or manual reworking is necessary!***

# Milling Concept



- Compensation of the shape deviations through the use of a Floating Aggregate.

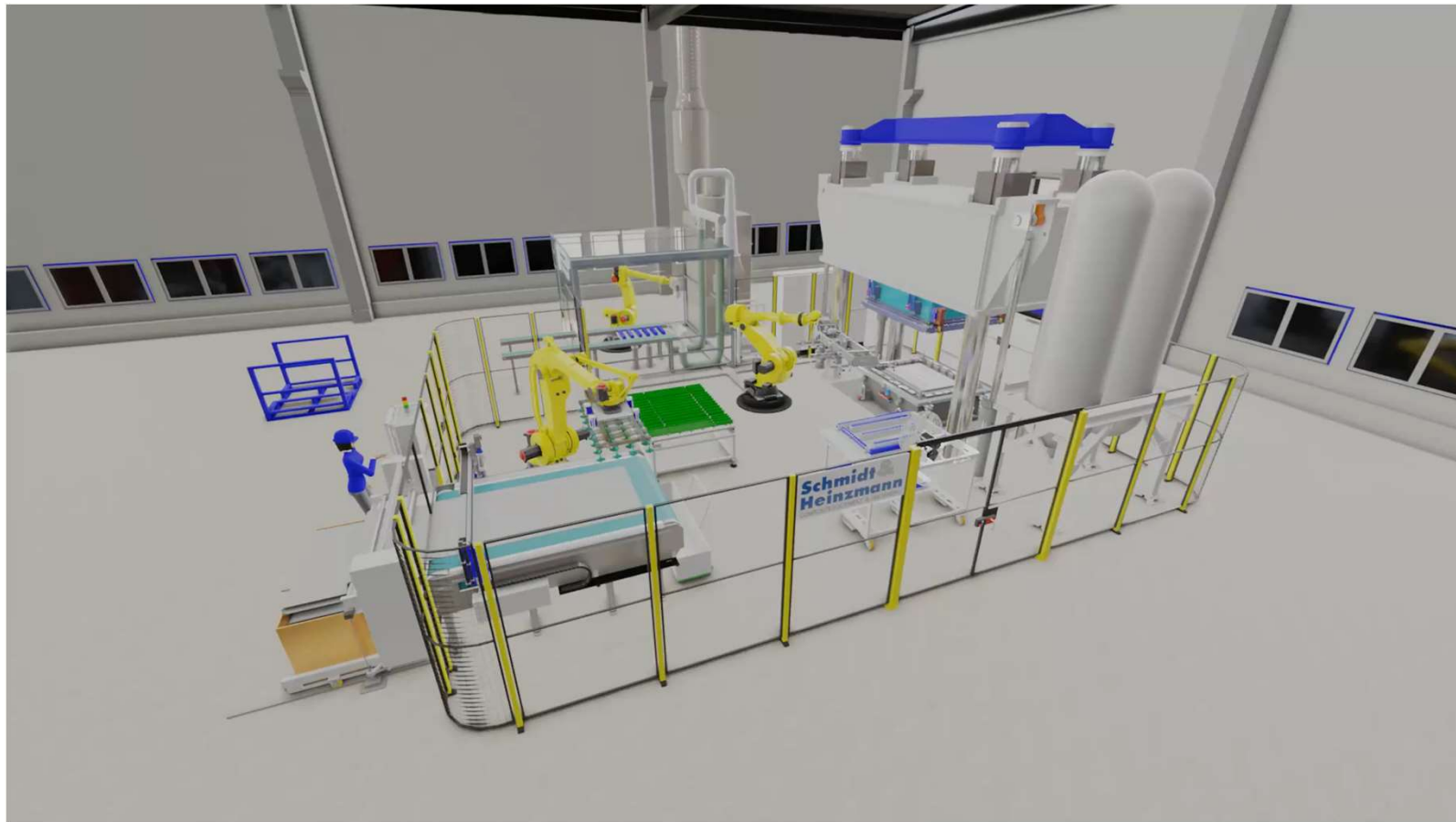
***All countersinks will be perfect!  
No manual reworking!***

# Benefits through the use of Floating Aggregates

- No manual rework
- No measurement during processing
- Significantly shortened working hours
- High process reliability
- Highest quality standards with minimal reject rates



# Full Animated Process



# Process Cooperation



C6 COMPOSITE TOOLING

[www.c6-tooling.de](http://www.c6-tooling.de)

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***Thank You !***