The combination of GIT and WIT – Injection Moulding Results

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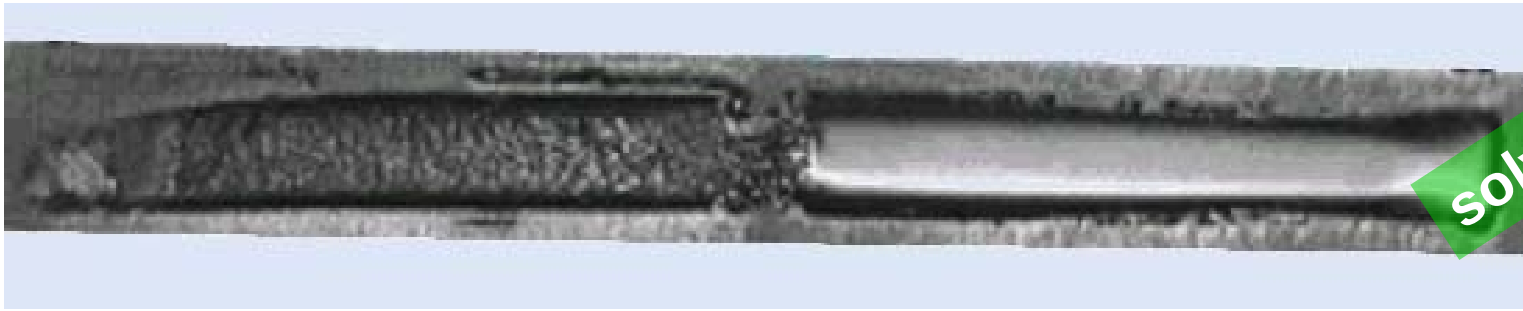
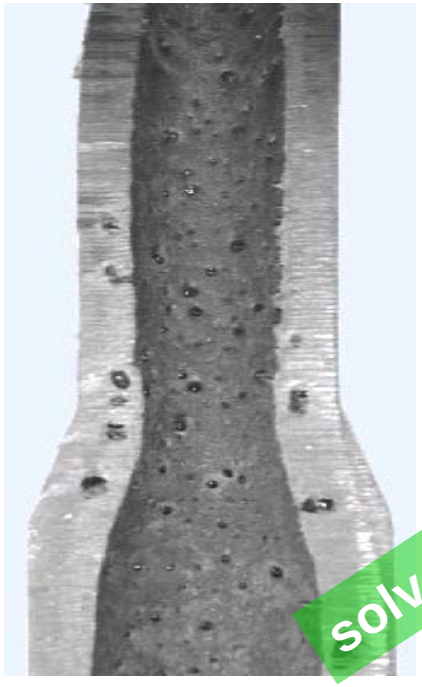
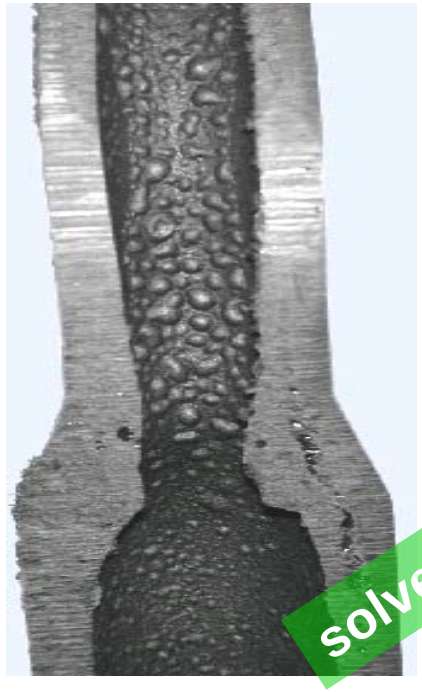
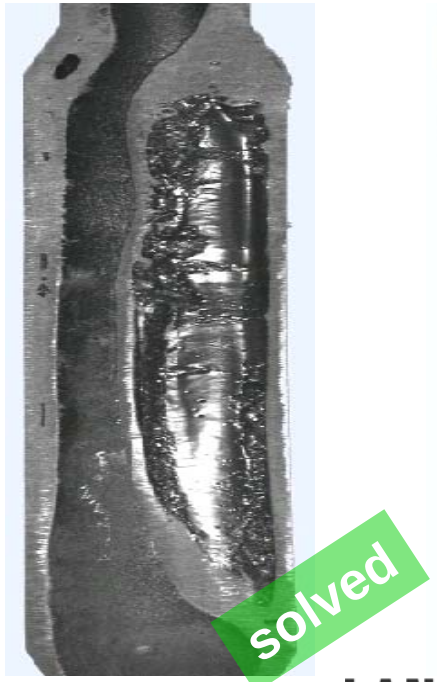
Typical WIT-Faults









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Combination of GIT- WIT

- **Build up of a gas bubble in front of the water**
- **Reduction of surface roughness in comparison to WIT caused by gas bubble in front of water**
- **Pressure increasing and – holding by water**
- **Use of the good heat capacity of water**
- **Reduction of cycle time in comparison to GIT**
- **Enterprise TiK (Technik in Kunststoff) has a patent for that technology**

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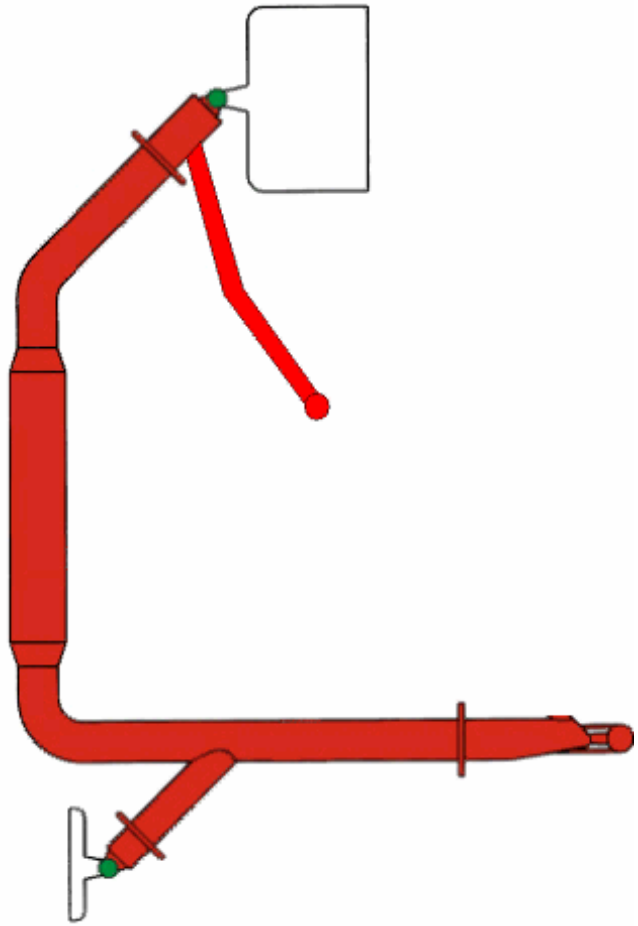
Processing of GIT- WIT combination

1. **Build up of a gas bubble**
2. **Water injection directly afterwards**
3. **Opening of special WIT-GIT valve**
4. **Opening of auxiliary cavity valve after gas bubble**
5. **Blow out of the hole cavity**



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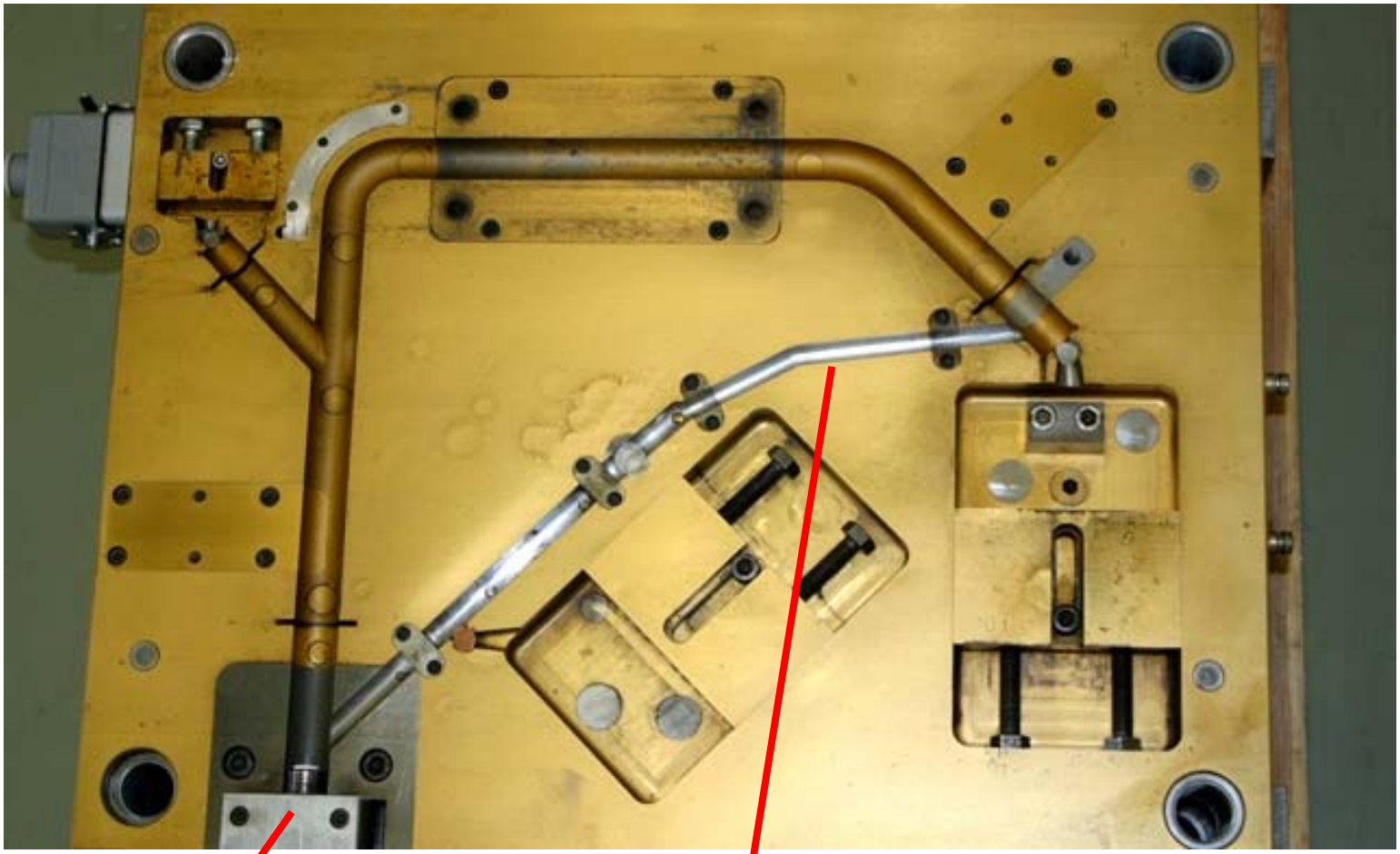
Mould details



TiK-WIT-Injector

Changed sprue situation

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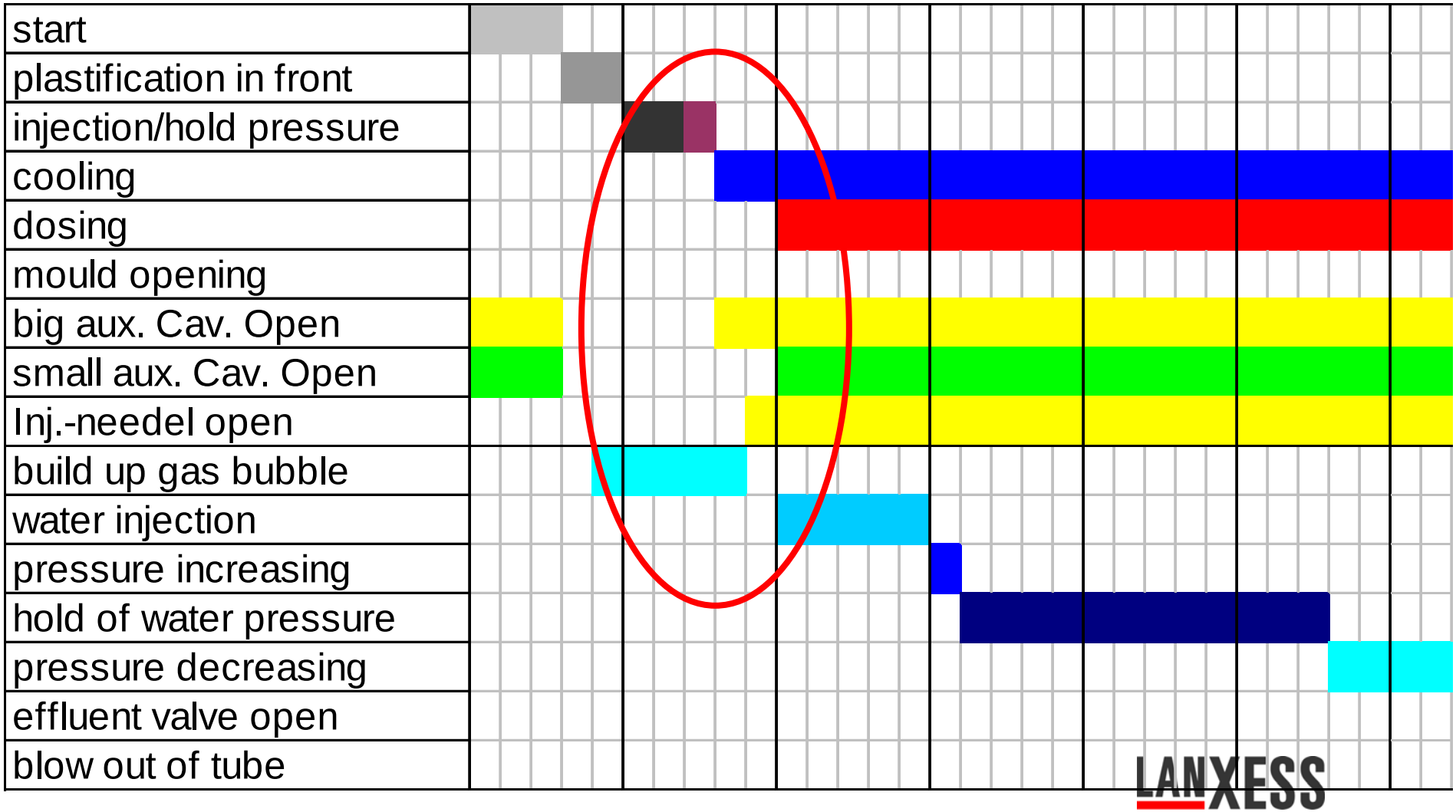
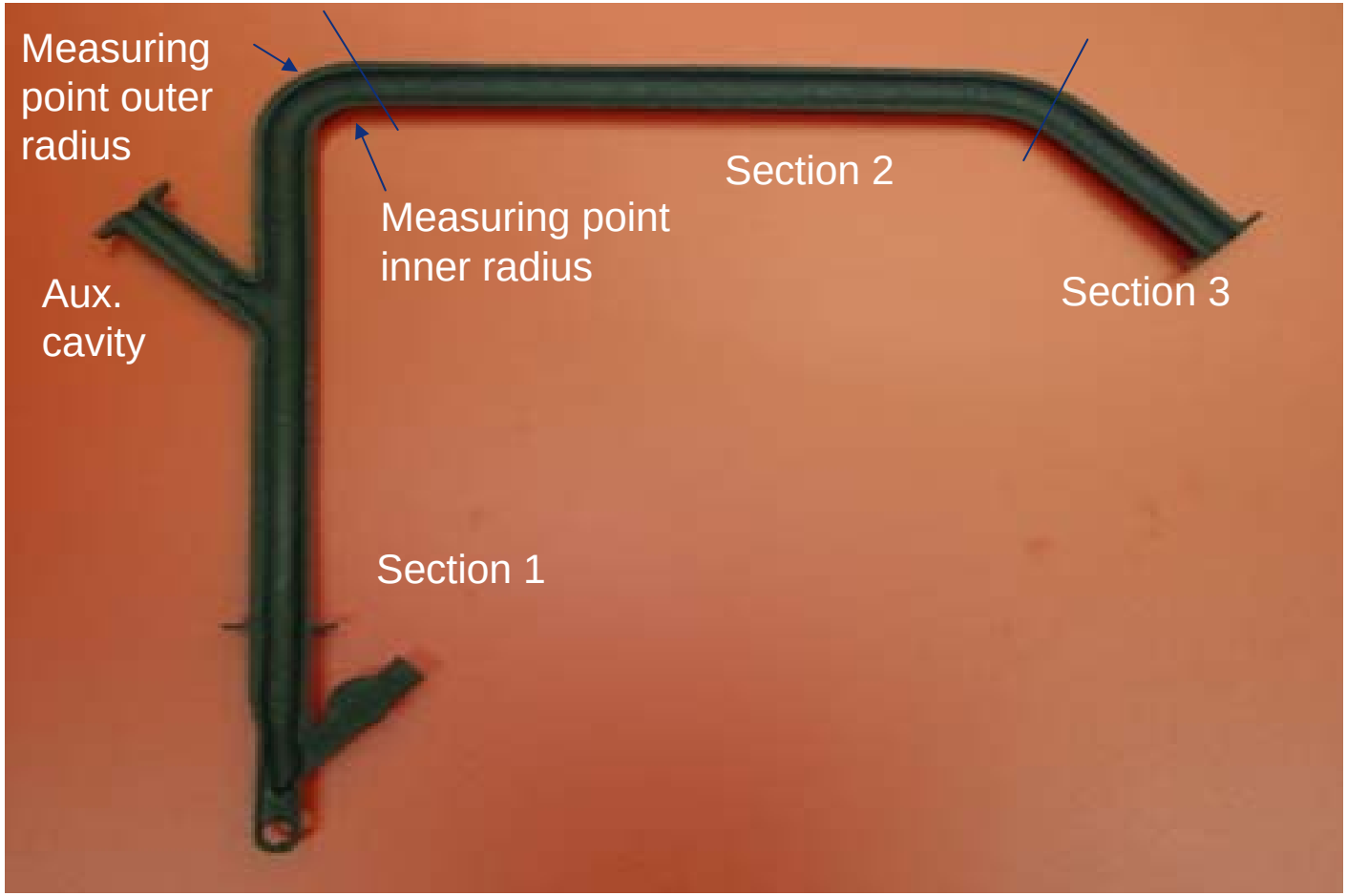
Flowchart


start
plastification in front
injection/hold pressure
cooling
dosing
mould opening
big aux. Cav. Open
small aux. Cav. Open
Inj.-needel open
build up gas bubble
water injection
pressure increasing
hold of water pressure
pressure decreasing
effluent valve open
blow out of tube

Part sections for quality observing



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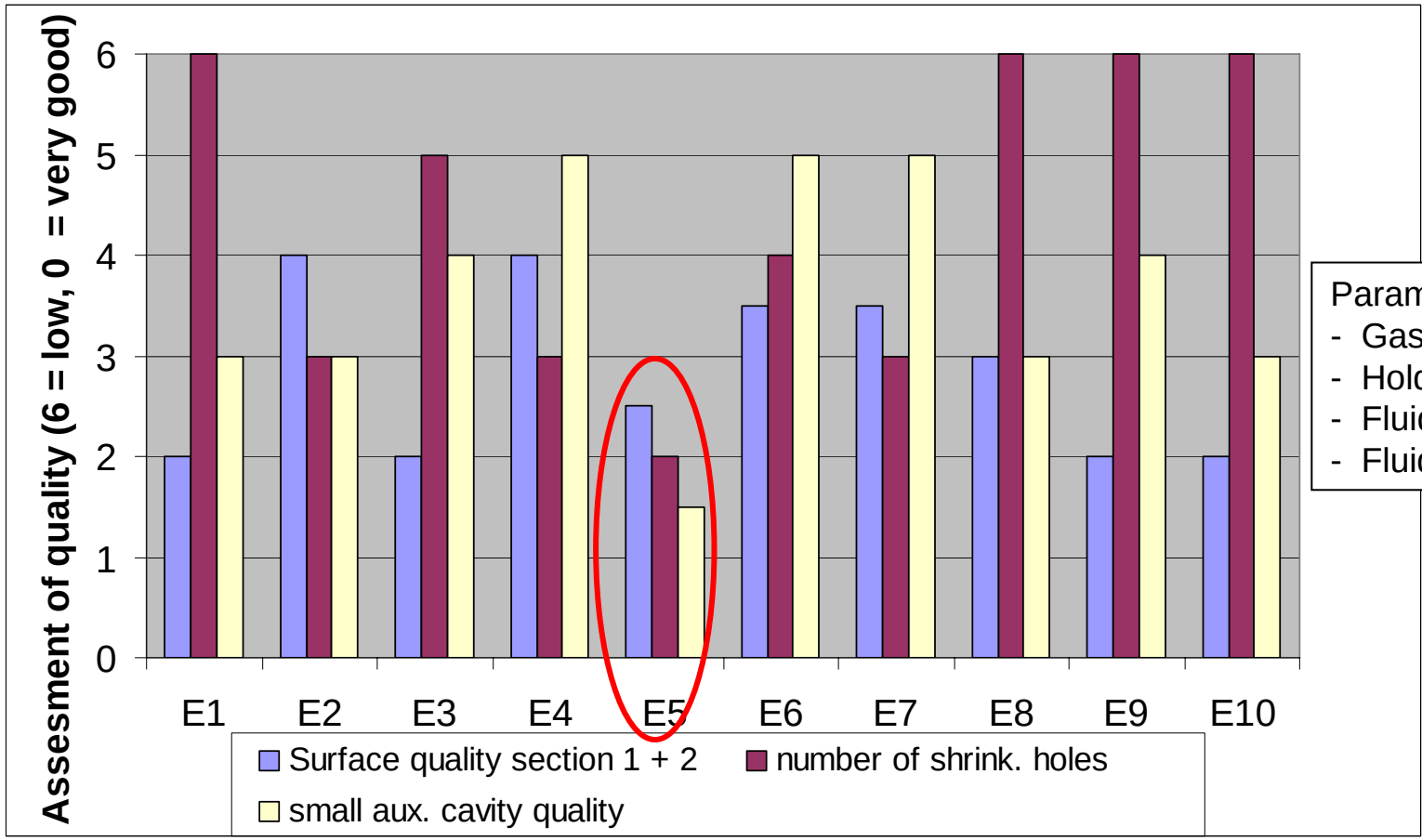
Results with statistical design of experiments



Parameter E5:
- Gas pressure 30 bar
- Holding time 6s
- Fluid injection time 2/18s
- Fluid pressure 40/200 bar

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Continued design of experiments

- **Variation of parameters around to test no. 5**
- **Variation of diameter at the main tube**
- **Use of different Durethan Grades**
  - **AKV 30HRH 2.0; AKV 30 X (TP424-006); DP2-2224/30**
- **Use of different humidities in the granule (0,03 bis 0,07%)**
- **Change of the injector system (TiK-axialinjector and radialinjector)**

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Analysis of results

parameter	surface quality	aux. cavity	shrinkage holes
constant rising cavity	↑	0	0
material humidity 0,07%	←	0	←
material humidity 0,03%	→	0	→
pressure drop down during proc.	0	0	↓
change of cavity diameter	0	0	↓
material M/Gf	↑	0	0
material pur Gf	←	0	0

↑	positiv
↓	negativ
0	no message possible
→	more positiv
←	more negativ

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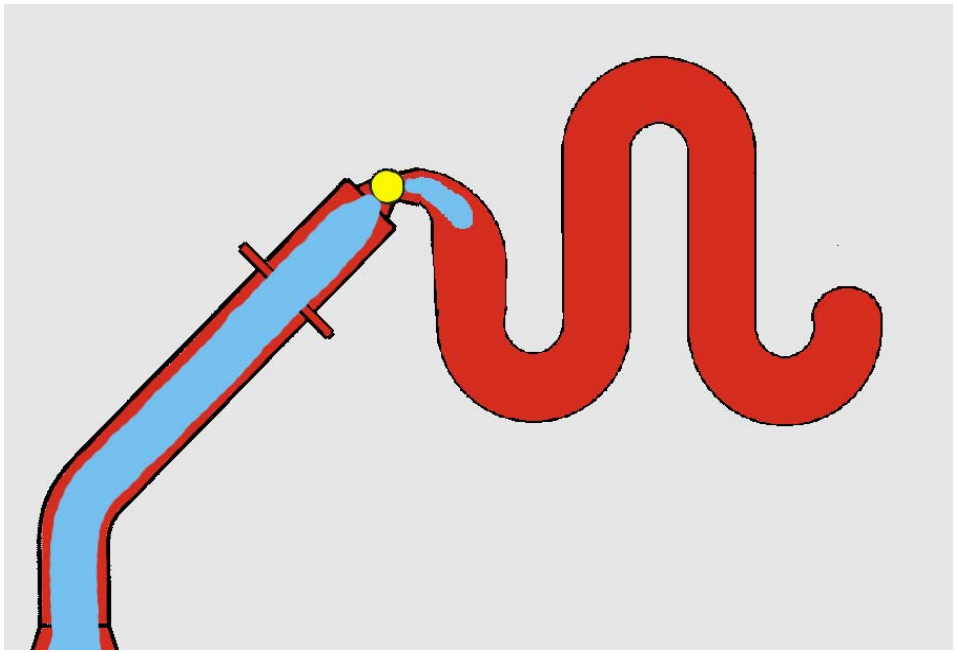
Geometrie of aux. cavities

Aux. cavities should be a similar geometry like the tube



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Our Durethan ® grades for GIT- WIT

Media tubes

- GIT: PA66 30% GF (AKV30GIT H2.0)
- WIT: PA66 30% GF+M (DP2-2224/30 H2.0)
  PA66 30% GF (AKV 30 X (TP424-006))

Door handles, Pedals, ...

- GIT: PA6 30% GF (BKV130GIT)
- WIT: PA6 15% GF (BKV15G H2.0)
  PA6 30% GF (BKV30G H2.0)

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GIT-WIT Combination for a cooling pipe, Fa. Heyco

technology:

- GIT-WIT combination

application:

- Cooling pipe

Manufacturer:

- Heyco, Herschen

Material:

- Durethan® AKV 30 X (TP 424-006)

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Summary

- GIT-WIT combination is a patented processing alternative to pure WIT
- one get the advantages of GIT:
  - good surface qualities
  - stable process conditions
  - less process failures
- and of WIT:
  - short cycle times
  - cheap fluid media
- a volume rate controlled GIT-WIT equipment is needed (e.g. Maximator, PME)

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Gas- and Waterinjection

Contakt

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