



## COMPUTED TOMOGRAPHY

### COMPARISON OF RESULTS FOR NUMERICAL SIMULATIONS OF CASTINGS WITH XRAY COMPUTED TOMOGRAPHY RECONSTRUCTIONS

#### TASK

The results of numerical simulation of solidifying industrial casting are compared to results of x-ray computed tomography reconstruction of the same part. The topic of the present work is a comparison between the predicted and the actual porosity in the casting.

#### EQUIPMENT

##### MAGMASOFT - MAGMA GMBH

- Foundry Simulation Software
- Version 4.4 + HPDC – Module
- Casting: Al Si9Cu3(Fe)
- Initial Temperature: 640°C
- Mold: X38CrMoV51
- Initial Temperature: 180°C
- Model: 20 million elements

##### V|TOME|X C – PHOENIX|X-RAY

- 3D CT-System
- 240 kV Microfocus X-ray Tube
- Focus 4 – 200 µm
- 16 Bit Flat Panel Detector
- 512 x 512 Pixel Resolution (3 fold ext.)
- Voxel Size: 244 µm<sup>3</sup>
- Volume Size: 820 x 760 x 493 Pixel

#### CONCLUSION

The position of porosity detected by x-ray computed tomography in the presented casting agrees well with predictions by numerical simulation of a high probability of porosity due to lack of feeding in the last solidifying regions.

