



## CASTING WITH CATIA

The Swiss vonRoll casting Group is one of the most innovative customer foundries in Europe. For the design and optimization of complex industrial casting work, the enterprise relies on the CATIA V5 solution by Dassault Systèmes.

### HIGH DEMANDS ON THE CAD SYSTEM

“We maintain the highest standards in our work and our products, and we expect the same from our service providers”, says Dr. Anton Rechsteiner, Head of Engineering / Technology in describing the corporate ethic of vonRoll casting. One of the challenges is to stay highly focused on the special conditions of foundry modeling. For example, internal component geometries must be manufactured using separate forms – the so-called cores – which serve to create cavities within cast-metal parts.

A further challenge is that almost all parts must feature a certain draft angle to allow the cast to be removed from the sand bed after forming. Since metal casting involves flow, fill and solidification processes, flow- and stream-optimized design is essential. This places serious demands on the CAD system.

To be able to realize and optimize customer-specific models with all their complex geometries, vonRoll casting has been relying on CATIA for more than a decade.

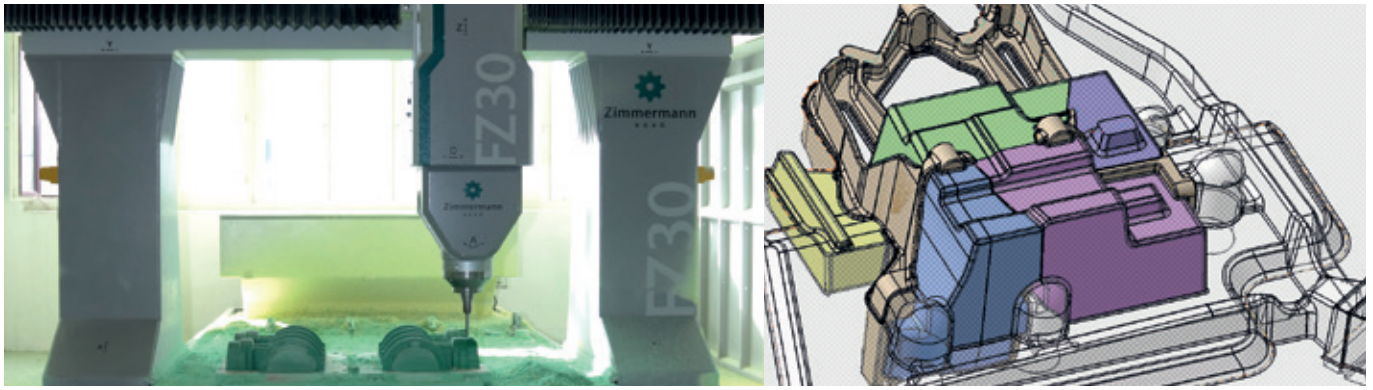
### MANY REASONS TO CHOOSE CATIA

“Our primary goal was to find a system that would offer end-to-end coverage from the customer’s specification sheet to the finished model. In CATIA, we’ve found just the right solution”, explains Dr. Anton Rechsteiner. An additional strong argument in favor of CATIA was that a very important customer was already using the same system. “This way, we as the supplier, were able to ensure problem-free data exchange with our client”, Rechsteiner continues. vonRoll casting started its long-term relationship with CATIA in 1998 – at the time, with Version 4.

About 6 years later, the company migrated to V5. The current release status is V5R20. Computer-aided design enables vonRoll casting to implement complex free-form surfaces and intricate cast parts with many interior cores, and to reproduce these at any time. The company was also able to drastically reduce its runtimes.

**»For us, a decisive aspect in favor of CATIA was the total congruence between CAD and CAM.«**

*Christof Suppiger, CAD-CAM Director at vonRoll casting.*



Thanks to the end-to-end CAE chain from the customer specification sheet to the finished model, vonRoll casting now needs up to two-thirds less project time than before CATIA introduction, regardless of project size and complexity. In addition to CAD, the system now also covers full casting simulation, the generation of milling data and the manufacture of the models. “Nowadays we can create cast forms that we could only dream of in the past”, says Dr. Rechsteiner CENIT (Switzerland) AG takes care of solution availability and maintenance. Based in Effretikon in the Swiss Canton of Zurich, CENIT also offers training workshops for users, provides methodology consulting services, and assumes systems integration responsibilities.

## SIMULTANEOUS ENGINEERING – CREATING THE PERFECT SHAPE

From manhole covers to internally ventilated brake discs to sophisticated compressor casings, vonRoll casting has more than 180 years of experience in supplying know-how and experience in casting complex components. In the field of iron casting with lamellar and spheroidal graphite, the well-established enterprise with its 600 staff numbers ranks among the market leaders in Switzerland and across Europe. Customers include manufacturers of large diesel engines and commercial vehicles, mechanical engineering firms and businesses from sectors such as power generation, tooling machinery, elevators and rail vehicles. The Engineering Center is the heart of vonRoll casting’s innovation potential.. Here, the industrial casting pieces are engineered and optimized in collaboration with the client and with the aid of casting simulation. Where required, the parts are dimensioned in line with pre-determined usage criteria using the finite elements method. In this context, the principle of simultaneous engineering ensures reduced cycle times in product development. Once the customer has approved product release, the CATIA data is transferred to the NC module to generate the milling program. Plastic models are manufactured on two large, 5-axis portal milling machines – 24/7 if required.

## ABOUT VONROLL

In the sphere of iron castings and spheroidal graphite, vonRoll casting is one of the most modern and innovative customer foundries in Europe.

Thanks to interdisciplinary, integrated and process-oriented operating methods (simultaneous engineering), vonRoll casting possesses thorough, wide-ranging casting technology and application-specific expertise. The materials spectrum ranges from cast iron using lamellar and spheroidal graphite, to special alloys such as SiMo, Ni-Resist and bainitic iron (ADI).

### [ AT A GLANCE ]

#### Challenge

High demands on the CAD system: all parts must feature draft angles so that the model can be extricated from the sand bed after forming. Since metal casting involves flow, fill and solidification procedures, flow- and stream-optimized design is essential.

#### Solution

vonRoll casting uses CATIA to realize and optimize complex-geometry customer models

#### Benefits

- Reduced time cycle in product development
- End-to-end system covering all steps from the customer specific file to the finished model
- Complex free-form surfaces and intricate parts with many interior cores that can be readily implemented and reproduced at any time
- As a supplier, problem-free data exchange with customers

**»CATIA allows us to create complex free-form surfaces and intricate parts with many interior cores, and to reproduce them at any time«**

*Dr. Anton Rechsteiner, Head of Engineering / Technology at vonRoll casting.*