Efficient CAD/CAM programming for ambitious 5X machining

Claddings for harvesting machines, roof structures for buses, panels for sunbeds - only a few companies can manufacture such large-size plastic parts from polyurethane as is the case with PESTEL PUR-Kunststofftechnik GmbH & Co. KG from Chemnitz. The company was founded in 1990 by Ulf-Peter Pestel directly after German reunification. It has 50 employees on premises of 10,000 m² and it produces components with a shot weight of up to 100 kg and a surface of up to 4.00m x 2.00m.

In their own mold-making, the team headed by Michael Legler produce the necessary mold tools from customer-specific ideas or from delivered SolidWorks data. With a total weight of up to 19 tons, they are manufactured on three to five-axis portal milling machines. Bearing in mind that milling machines have to work through the night for machining such large moldings, two things are particularly sought-after: High machining speeds and absolute process safety.

“On the CAD-side we were excellently positioned at PESTEL PUR with SolidWorks”, explains Michael Legler, who has been active in the company since 2011. Over the years, however, the customer parts and the molding tools became more geometrically complex. Deep mold cavities and complex areas visibly overwhelmed the former CAM-system. Legler reports: “For a medium-sized mold half, around one
hundred CNC programs were necessary and each program had to be manually edited. In part, the post-processors covered only half of the machine functions that were available in the CNC controller.”

It got to the stage where Michael Legler felt that the expense of the CAM programming was unacceptable and the safety of milling was insufficient. So in early 2012, he resorted to looking for a more suitable CAM system. The requirements were clearly defined: Integration into SolidWorks, simple and fast programming of complex 5-axis molds, calculation and processing of residual material, a functioning collision control and sophisticated CNC post-processors. After extensive research on the internet about the current status of CAM systems and their scope of functions, a variety of suppliers presented their solutions to PESTEL PUR on-site. Two systems made it on to the shortlist.

After only 2 days during the testing phase, SolidCAM was the clear favorite. The CAM software was seamlessly integrated into SolidWorks, fulfilled its function and exceeded all demands placed on it. Mold-making manager Michael Legler reminisces: “Of course there are special solutions for a variety of applications. But for the individual and small-batch production of molding tools and machine components, SolidCAM is ideal.” Meanwhile, the CAM programmers at PESTEL PUR productively use all available 2D, 3D and 5-axis milling modules from SolidCAM except the 5-axis module for tube milling and impeller milling which are not required.
Over the past few months, the PESTEL PUR team have now also been using the iMachining technology. “We already knew about iMachining before this. But we always thought, that is not for us”, recounts Legler. “Ultimately we do not rough-machine any tool steels but instead mainly cast aluminum and high-strength rolled materials”. Application engineer Mario Bujack from the SolidCAM branch in Suhl did, however, convince Legler to do a test run in early 2015. Michael Legler: “Up until then, we always used insert tools for rough-machining. So our eyes lit up when we saw what end mills could bring to our machines”. The result has been a massive time saving in rough-machining.
The preparation of CAM machining is now extremely simple, according to Legler: “Because iMachining has the technology assistants which optimally control all machining parameters. In doing so, it includes the material to be machined, the tool used, the geometry of the model and the CNC machine data.”

What used to be a problematic work flow between CAD, CAM and CNC machining, has now transformed from nerve wracking to effortless since SolidCAM was introduced. **Thanks to SolidCAM’s seamless integration into SolidWorks, CNC machining can now be programmed far quicker**, processing the residual material runs smoothly and the integrated machine simulation enables reliable control.

Michael Legler is pleased: “It is now the case that the CNC programs can be sent directly to the control system without us having to edit them. What is more, we can sleep easy at night while the machining runs unsupervised!”.
Customer testimonial story - Efficient CAM programming for ambitious 5X machining with SolidCAM @ Chemnitz, Germany