

PDC-Teknik is casting aluminium objects and offering comprehensive solutions to their customers, i.e. from the initial construction of the object and the manufacture of die-casting mould tools and all way through to surface treatment and mechanical assembly.



RobotStudio makes posh design possible

Basically, all production at PDC-Teknik is automated with ABB robots. From the casting process, to the removal of objects and lubrication of the mould for robot grinding. RobotStudio is used primarily in connection with robot grinding as many of the objects which are grinded at PDC Teknik are subject to very high surface requirements which are difficult to achieve with manual programming. Among the primary customers of PDC-Teknik are companies as Bang & Olufsen and Fritz Hansen Furniture, companies with high quality demand.

“Before we invested in RobotStudio, we programmed all our robots manually, i.e. both our casting machines as well as our robot grinders. On the casting machines, the implementation of the programs is fairly quick and easy. On the robot grinders, however, this is much more complicated and time consuming”, says Klaus Sønderhegn, responsible for IT and robot technology at PDC-Teknik.

Manual programming didn't work

“The primary reason that we decided to invest in RobotStudio was that we were given the task to cast, polish and grind the four-footed swivel base for the famous Danish Furniture Designer *Arne Jacobsen's* Egg and Swan chair. I started out by trying to program it manually. However, as the surface requirements between the polished and the grinded surface are very high, and requires a 100 percent straight line all the way through, it was practically impossible to achieve this by programming manually, explains Klaus Sønderhegn and continues:

“I then received a demo of RobotStudio from ABB and imported my CAD file, which was available as a result of the mould construction, and we were able to apply the surfaces with the points horizontally tangent to the surface, and I then succeeded in producing a grind that was 100 percent straight all the way through”.

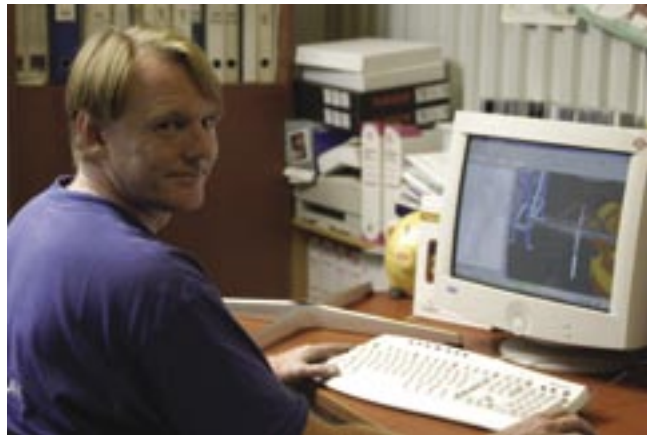
The result:

“RobotStudio solved the problem in connection with the very advanced geometry and the surface requirements of this object with its polished top side as originally designed by *Arne Jacobsen*.” *Friz Hansen Furniture*, the producer of *Arne Jacobsen* chairs, is today one of PDC Teknik’s largest customers.

A virtual robot instead of a real one

Klaus Sønderhegn has CAD files on all new objects. The process of applying surfaces to existing geometries and grinding them with a 100 percent precision is very time-saving when programming in RobotStudio.

“The introduction of RobotStudio has also meant that we have been able to run more objects with a shorter change-over time. This, in turn, has meant that instead of having to invest in an extra grinding robot because of manual programming we now actually do not need to invest in a grinding robot, says Klaus Sønderhegn.



“High surface requirements are difficult to achieve with manual programming.”

Klaus Sønderhegn, PDC Teknik A/S

Programming during production

“I use RobotStudio for creating new programs in my everyday work and I use it when positioning our robots. We do not install any new robots without first making a simulation in RobotStudio to achieve optimum range and, also, so that we are able to include as many machines as possible on one robot. One of the most important advantages that I experienced when I first started to use RobotStudio was that it allowed us to program our robots during production, i.e. allowing us to prepare the next objects to be run”, explains Klaus Sønderhegn.

Super-optimization

Another advantage according to Klaus Sønderhegn is that you can carry out super-optimization.

“Previously when we were under pressure we would start production even though we were well aware that the cycle time wasn’t optimal. Now we can carry out super-optimization continuously at the same time as we are running the production until we achieve the perfect result and the optimum cycle time. Productivity has improved after the introduction of RobotStudio. During the implementation of new projects, we have reduced the implementation time from typically 3 - 5 days to a couple of hours a day”, states Klaus Sønderhegn.

Collision detection

In connection with the introduction of RobotStudio we have also gained the advantage of the feature in RobotStudio called *Collision Detection*.

“If you have measured all your machines out with a 100 percent precision and everything has been tested correctly, this feature actually allows you to correct programs without having

to run them through manually. The various possible collisions with external equipment, fixtures, machines etc. can be estimated in RobotStudio, explains Klaus Sønderhegn.

The RobotStudio skill will be spread

In the close future Klaus Sønderhegn hope that the programmers working in production and the employees in charge of the assembly of robots will learn RobotStudio.

“With this skill at the shop-floor we can reduce running-in and installation time even further. Besides, the RobotStudio *help* file is very good. So far I have found all the features instantly in the help file where it is shown step-by-step”, finalizes Klaus Sønderhegn.