

## RobotStudio™

# Case Study: Volvo Construction Equipment Cabs AB



Anders Nilsson is in charge of programming at Volvo Construction Equipment Cabs.

Volvo Construction Equipment (VCE) is one of the world's leading manufacturers of construction machinery. At VCE Cabs AB in Hallsberg, cabs for contract machines, hydraulic and fuel tanks, plus car bodies and hydraulic cylinders are all manufactured. For Anders Nilsson, robot welding technician at Cabs, the picture is clear: "Time-consuming online programming leads to long, costly production stops. We cannot afford that."

Anders Nilsson, robot welding technician at VCE Cabs AB in Hallsberg is a veteran in offline programming. There are currently five robot cells working in production in Hallsberg, four that weld cabs and a robot cell that welds tanks. "We have been working with offline programming since 1995. RobotStudio is used to program welds on cabs. The robot then carries out the weld stages on the tack-welded cabs in the robot cell," explains Anders.

### Complex programming

The cabs which VCE Cabs produce are massive things, and the online programming required climbing on large ladders, which was time consuming and risky. There was also the risk that robots and objects would collide, which could have had devastating consequences. "It is significantly more complex editing a program online in a programming box outside in production than to do it offline in a PC in an office. Time-consuming online programming leads to long, costly production stops," points out Anders. "When I was programming robots online, I was forced to take manual measurements using squares and levels. Programming was difficult and time-consuming. It was easy to make a mistake when measuring and end up with less suitable gun angles and welding positions," he explains.

### 100 % certainty

The huge advantage of offline programming is that the production facility can remain in operation at the same time as the robots are being programmed. "With the RobotStudio application for welding, RobotStudio ArcWeld PowerPac, I can control gun angles, tilt and seam positions. By getting angles of inclination in figures, I know for sure that if I am welding

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in this way, the results will be good. RobotStudio runs on S4, ABB's own control system. This means that when I have produced a program that functions in RobotStudio, I can know with 100 % certainty that it will function in reality," explains Anders. Anders continues: "If I use different software which has some form of data conversion, I can never be completely certain that the program will function in reality."

## RobotStudio is easy to use

However, the greatest difference between RobotStudio and Unix-based software is that Unix environment is significantly different from what you are used to in a PC. Even the simpler operations have to be learnt from scratch. "We chose RobotStudio as an offline programming tool in our latest project because it is easy to use and maintain, among other things. The user support, training program and options to buy services from ABB's consultants were further important reasons that led to our choice of RobotStudio," states Anders. The rule of thumb is that it takes an hour of programming per weld to get an approved production quality. If you add to this the fact that each cab consists of an average of 250 welds, then a lot of time is spent programming offline.



"The time when robots were programmed out in the workshops will soon be past," says Anders Nilsson, robot welding technician at Volvo CE Cabs.

## RobotStudio payed for itself after the first project

Offline programming of a weld is about 20 % faster than programming the weld online, which may sound like a marginal time saving. "Our products are complex. If you then consider what a production hour in a weld cell costs, then the money invested in software pays for itself after the first project.



A lot of time can be saved by programming offline in RobotStudio.

## Suppliers are checked

Besides programming welds, Anders also uses RobotStudio to check new equipment by simulating its functionality in RobotStudio. "In this way, we can check that it will be possible to implement what the supplier is promising. In all cases, we have made changes and improvements in the basic data. In this way, we get a more efficient solution and are able to avoid costly mistakes," he states.

## The future is offline

"Within the none too distant future, offline programming will be the only way to program. The time when robots were programmed out in the workshops will soon be past," says Anders convincingly.

### FACTS VOLVO CE CABS SOLUTION:

<b>RobotStudio version:</b>	2.0, ArcWeld PowerPac
<b>No of copies of RobotStudio:</b>	2
<b>Robot models in use:</b>	IRB 140 (5)
<b>Controller versions:</b>	S4C+
<b>Payback time RobotStudio:</b>	After the first project

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