

# RobotStudio™ Case Study: Toyota Motorsport GmbH



The engine, chassis, gearbox, suspension, brakes are all designed and built in-house by Toyota. All with the passion to make things better.

2002 was the first year out for Toyota in Formula 1. Toyota has always relished challenge and the entry into Formula 1 is no exception. Toyota Motorsport is building the entire car themselves. They are racing to win and Formula 1 is a show case for new innovations and technologies.

#### Panasonic Toyota Racing found the right tool

Toyota Motorsport in Cologne working exclusively with Formula 1. Almost all parts are produced in-house and all that for the production of three cars, two racing cars and one replacement car. In the canteen at the F1 plant are drivers like Cristiano da Matta and Oliver Panis having lunch together with the employees. Panasonic wide screens are mounted along the wall where the latest races are shown.

#### High speed demands high tech tools

The Toyota F1 plant in Cologne has high quality demand for their equipment and is fussy when it comes to choosing the right supplier. IRB 2400 robot is used for deburring of the cylinder head to the motor bloc for the new F1 car. Wolfgang Steinfeld was assigned to program the robot in RobotStudio about a year ago. "Before the installation of the robot system was the deburring made manually. The deburring process was a bottleneck in the production", says Wolfgang Steinfeld.

#### Waiting for the right offline programming software

The deburring process was very complex. Only the the cover side of the cylinder head had about 700 points to teach and the whole cylinder head had more than 3000 teach points. The only way to program this was offline. After a long period of searching for an offline programming tool that could match their requirements Toyota were presented to RobotStudio.

# Toyota Motorsport GmbH

“At that time the robot was parked and could not be programmed because we did not have the right tool. The entire trimming was performed manually by another company. Since the robot has taken over this task, the work process has become very smooth and quick. Before the trimming process had a long downtime - with RobotStudio we achieved the goal of trimming and the accuracy required by Formula 1. It was all about finding the right offline programming tool”, says Wolfgang Steinfeld.



“With RobotStudio I can easily change the robot program.” Wolfgang Steinfeld

## A fast way towards the goal

“RobotStudio fits Formula 1. It gives us a fast way to reach our goal. We invested in RobotStudio because it is user friendly and it has a simple screen interface. RobotStudio was adjusted according to our needs. We could easily and quickly add changes to the program”, ensures Wolfgang Steinfeld. Mr Steinfeld’s work has changed significantly since the introduction of RobotStudio. Today he enter CAD data, record documentation for the individual processing steps and program the robot in RobotStudio. Since Toyota has implemented the robot system the waste has been significantly reduced. The robot runs along the exact same contours and the human factor of inaccuracy is no longer an issue.

## Quick changes of robot programs

Toyota experience easy touch-ups of the robot program in RobotStudio. They produce a wide range of different details which requires a flexible way of working. “With RobotStudio I can reuse a lot of the robot programs and just perform the changes needed for the new task. This saves me time.

The change of the robot program for a new detail is now done in only a few days”, explains Wolfgang Steinfeld and continues; “Problematic work processes were significantly decreased because of the robot’s repetitive accuracy. The individual processes that the motor or the motor block must go through have become more consistent and can be performed without delays. The fact that the robot always trims along the same contours has led to quality improvements as well as risk reduction during the trimming process.”



Trimming of cylinder to the motorblock.

## RobotStudio has high potential

Toyota sees potential for RobotStudio in coming projects. A laser program is already in progress. “I think the potential of RobotStudio is far from exhausted. We will continue to work with RobotStudio and add additional components to the program. Next, we may include laser cutting in the work process”, concludes Wolfgang Steinfeld. by expensive production stoppage in the robot”, declares Ola Slupphaug.

## ABB Robotics

[www.abb.com/roboticssoftware](http://www.abb.com/roboticssoftware)