

## Vehicle component production Landshut

**Production of chassis parts:  
component factory in Landshut/Lower Bavaria.**



# Endless rotation

## Robot technology in the painting line

A "piece of Landshut" can be found in nearly every BMW. That's because the BMW factory in Lower Bavaria manufactures components for numerous models, which are then installed at the other BMW sites, whether in Dingolfing or Leipzig, in Hams Hall (GB) or Spartanburg (USA). Take for example the bumpers of the BMW 3- or 7-series. First they are shaped and then they are painted in the factory's three painting lines. The work is performed by "intelligent" robots. For the past year, five of them have been fitted with intelligent RS Roman Seliger valve technology, the DGLL machine swivel joint, which was specially developed for just such applications.



**Problem solved: Dipl.-Ing. Mario Bastian of RS (middle) in discussion with BMW employees Helmut Lehrhuber (left) and Josef Hien (right).**

The robot arm moves with the burner thirty times a minute to flame treat all the bumper surfaces. The automotive sector now uses large numbers of plastic components manufactured from polymer plastics such as PP (polypropylene) and these components must be activated accordingly with a flame prior to painting. At a burner temperature of about 1,000 °C, the pores are opened so that the first application of paint adheres better to the surface without the use of a primer and creates an inseparable bond. In Landshut, five flame treatment plants from the robot company ASIS are in use. Every plant comprises one controller unit, which controls the gas-air mixture and the actual burner itself, together with the electronic components of the control, visualisation, the automatic burner plus the entire electri-

cal wiring and the robot with the mechanical components comprising the cables, valves, pressure control devices and mass rate controllers. To guarantee the mobility of the burner on the robot arm, a swivel joint creates the connection between the burner "hand" and the hose for the natural gas/air mixture hose.

**Five days a week, running tirelessly for 24-hours a day: ASIS robots for heat treating the plastic bumpers.**

## Reduces usage downtime costs

This joint rotates thirty times a minute - which adds up to 4,320 times a day. This imposes an extreme load on the swivel joint. As long as it works flawlessly, the painting process runs; if not, the only things that continue to run are the costs. That was the situation before the current

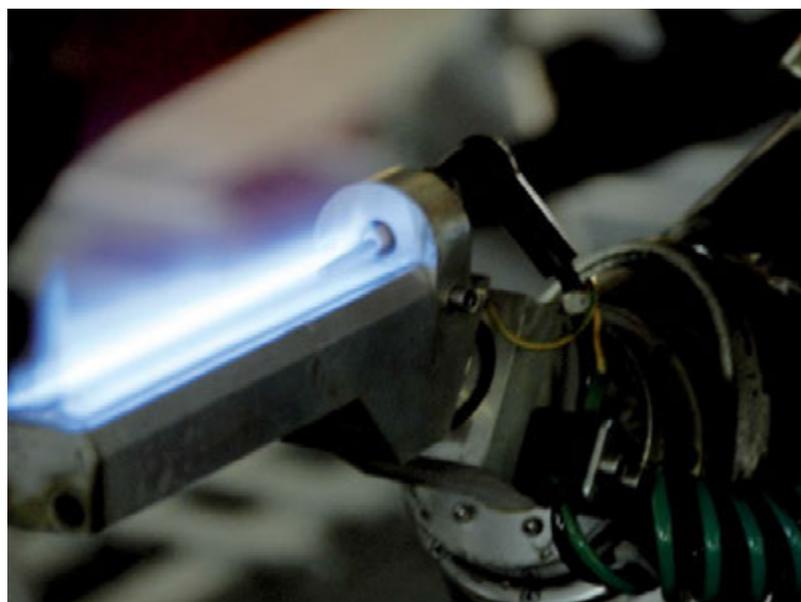
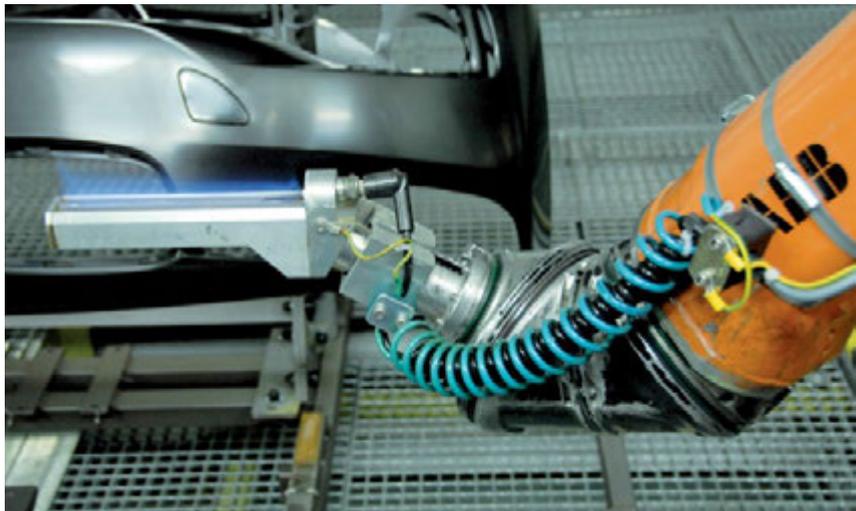
**The burner changes its angle thirty times a minute: The new machine swivel joint from RS makes it possible.**



# Seamless process

solution was installed. The standard swivel joints used were not able to cope sufficiently with the stress. BMW maintenance specialist Josef Hien recalls: "After just a few weeks, either there was too much play, which led to imprecise robot movement, or too little play, which meant that they 'seized up' and no longer allowed any rotational movement.

Unnecessary failures not only resulted in downtimes for dismantling the robot arms and replacing the swivel joint, but also made status inspections necessary.



**Guided at a constant distance along the parts for painting: The burner hand of the flame treatment robot with the new swivel joint from RS.**

significantly reduce the influence of the medium's pressure on the rotation of the swivel joint compared with standard swivel joints. This also makes the DGLL, which is low-friction especially when under pressure, ideal for use with high load reversals in robotics and plant and equipment manufacturing.

**Seated in the housing as the "wrist" between the arm and the burner hand: the low-friction DGLL swivel joint.**

## Lower costs, higher earnings

Since ASIS GmbH has been using the DGLL machine swivel joint at this critical point on the five flame treating robots, production is only interrupted for the regularly scheduled maintenance intervals. The Controlling

**In a total of five flame treatment robots, the low-friction DGLL joint ensures continuous movement.**

## Machine swivel joint for high stress variations

Helmut Lehrhuber, specialist in charge of Product and Process Planning, Plastics Exterior at the BMW Landshut factory, reported the problem to the systems engineering manufacturer ASIS, which then turned to a leading manufacturer of industrial hose valves, RS Seliger GmbH in Norderstedt. Dipl.-Ing. Mario Bastian, who supports BMW as a field representative, supplied the data and the specifications profile to Norderstedt, where Dipl.-Ing. Holger Brandt (Product Line Management) got down to work. Individual development to meet customer demands – the great strength of RS. His development work resulted in another innovation from RS: The extremely durable DGLL machine swivel joint. The use of an industrial ball bearing and the deployment of very low-friction x-rings as a seal



# Buying clever pays off

department is delighted with now banished usage downtimes – to date, none of the nine joints has required replacement. And BMW enjoys significantly lower costs for procuring and storing the valves and for personnel costs to repair the robots. It's a textbook example of how qualified procurement can turn maintenance and repair from a costly burden into a genuine cost benefit. Although the DGLL costs about four times more per unit than a conventional swivel joint, the acquisition has paid itself off many times over. After all, with a whole year without malfunctions, on average the operating time is already 15 times higher than previously. And the end of the service life is still a long way off. Josef Hien: "During my regular scheduled inspections, I always notice that the DGLL is still as tight and flexible as on the very first day"!



**The customised solution was developed at RS: The DGLL swivel joint between the gas hose line (left) and the burner (right) is installed in the housing (above, middle).**

**High productivity, high quality, trouble-free processes in the Landshut factory.**



# Safety in the system



## Machine swivel joint DGLL – a smooth operator

Among the →RS swivel joints/ball swivel joints, the DGLL machine swivel joint stands out because it uses an industrial ball swivel joint along with low-friction X-rings as the sealant. This significantly reduces the influence of the medium's pressure on the swivel joint's ability to move compared with a standard swivel joint. It also makes it ideal for use with high load reversals in robot technology and in mechanical and plant engineering.



# Why we count on RS



**Helmut Lehrhuber, specialist in charge of Product and Process Planning, Plastics Exterior at the BMW factory (Landshut):**

"We cannot tolerate downtimes in our production process. So we have to bring all the robot components up to perfect performance down to the last detail. With the RS machine swivel joint, we have made very good experiences in this area."

**Josef Hien, employee in charge of the Painting, Assembly Plastics Exterior area at the BMW factory (Landshut):**

"We used to have to take apart the flame treatment arm every couple of weeks to replace the swivel joint. Now during my regular tests the only thing I notice is that everything is running smoothly."



**Christian Buchner, Head of Technical Construction of ASIS GmbH (Landshut):**

"Our business is built on trouble-free processes, not corrective maintenance. It's also built on our good reputation. It's logical that we are extremely picky about our component suppliers and that we rely on valves from premium manufacturers like RS. The DGLL is now a standard component for us."

## What RS does for safety



**Engineer Holger Brandt, RS Product Line Management:**

"Wherever high performance is demanded which is not covered by standard products, RS develops customised engineering solutions which then set new standards."

**Dipl.-Ing. Mario Bastian, RS consulting:**

"It is only logical that premium high-tech suppliers rely on technology from other premium high-tech suppliers for their production needs.

In the final analysis, that always pays off."



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### **RS Roman Seliger** **Armaturenfabrik GmbH**

## **RS – A strong brand in your system**

RS - a global mid-sized company based in Norderstedt near Hamburg - is considered one of the leading manufacturers in the hose line and valve technology sector for the reliable conveyance and control of a wide variety of media. RS products are used in demanding applications from plant engineering to the chemical and pharmaceutical industry and at the interface between industry and logistics. The managing director is Dr. -Ing. Jens Reppenhagen.

[www.rs-seliger.de](http://www.rs-seliger.de)



### **ASIS Automation** **Systems & Intelligent** **Solutions GmbH**

## **Robots – Solutions from Ideas**

ASIS Automation Systems & Intelligent Solutions GmbH based in Landshut was founded in 1998 and has its roots in the automation and process control of industrial manufacturing processes. Along with software for industrial automation, its fields of activities include assembly, control cabinet and plant engineering. ASIS provides complete solutions, particularly for the automobile and supplier industry. The managing director is Dipl.-Ing. Hans-Jürgen Multhammer.

[www.asis-gmbh.de](http://www.asis-gmbh.de)