

## BASF SE, Ludwigshafen

Administrative headquarters: Friedrich-Engelhorn-Haus.

A safety-conscious company that relies on the safety  
of the RS brand in the area of fluid handling:  
BASF SE, Ludwigshafen parent plant, at 10 km<sup>2</sup> the  
largest industrial complex in Europe.



# BASF chemical production



**BASF is a company of superlatives. The world's largest chemical group was incorporated as "Badische Anilin- und Soda-Fabrik" in Mannheim in 1865 and is now headquartered in Ludwigshafen/Rhein. The BASF city with its 200 chemical production plants, several hundred laboratories, technical centres, workshops and offices is the largest industrial complex in Europe and the world's largest integrated chemical site. Over an area of more than 10 square kilometres, some 34,000 employees work on the development, testing, manufacture and sale of thousands of different products. The safety standards are also among the best in the world, both in respect of the people in the Rhine-Neckar metropolitan area and the company's own employees. As part of the chemical industry's international "Responsible Care" programme, BASF has not only committed itself to acting in a responsible manner towards people and the environment, but also to the continuous improvement of plant and industrial safety. One practical implementation of this for years in the area of fluid handling has been the routine use of fittings and safety technology from the "RS brand".**

**Deka factory: Adhering to all safety rules has led to ever longer periods without a reportable accident.**



**Safety chamber with safety technology: TR male parts on all interfaces.**

**Another example can be seen in the Deka factory, where dry disconnect and breakaway couplings from RS Roman Seliger have been in use for ten years.**

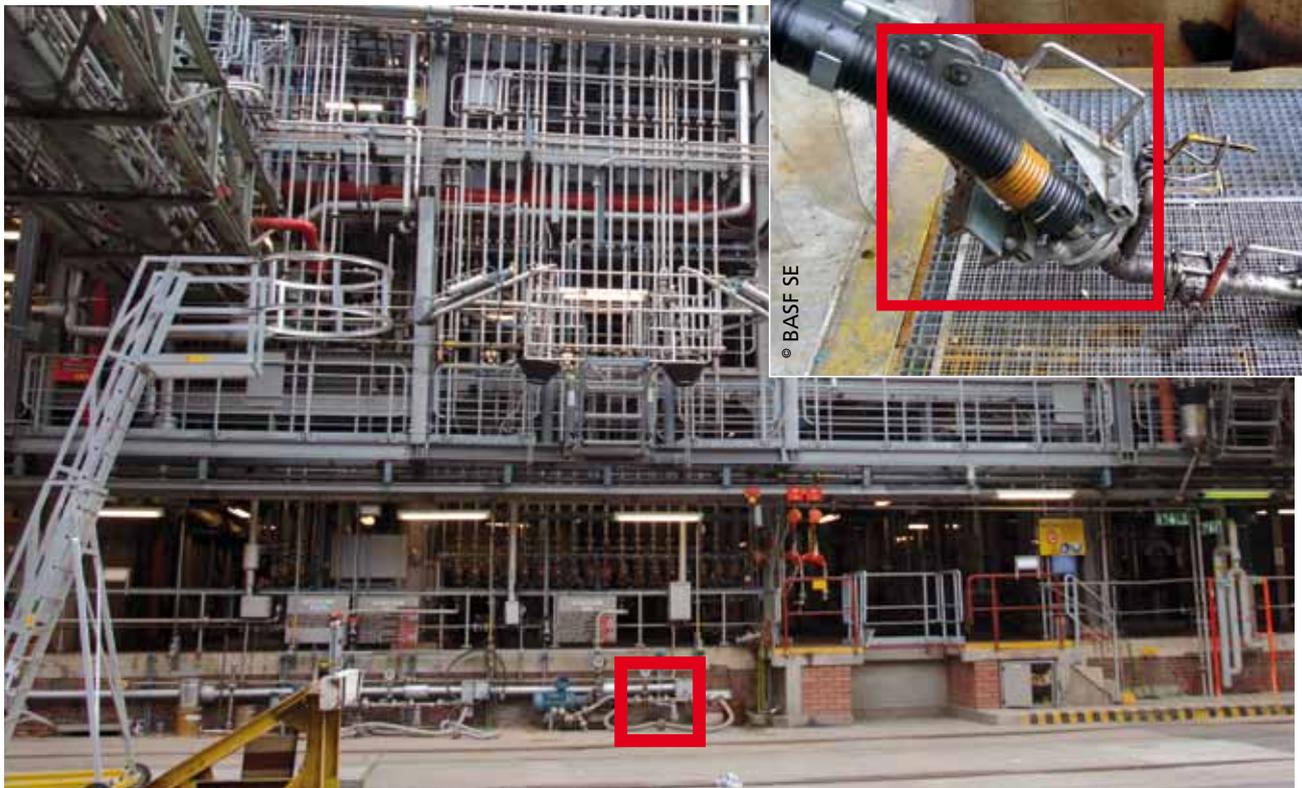
**The Deka factory is one of the oldest buildings in the BASF complex, but has nothing in common anymore with the old production facility apart from its traditional name. Its old walls now house an ultra-modern plant for manufacturing intermediate products for the pharmaceuticals industry, construction chemistry and pest management. Preliminary products for paints, disinfectants and additives for polyurethane production are also produced here.**

## **Increased process efficiency: From ten minutes to ten seconds**

Modern multi-purpose plants often manufacture several different products and product varieties. Flexible media flow adjustment/conduction is needed for this, along with regular adjustment of pipework and fittings. Hose lines between individual plant parts create "flexible" connections where it is impossible for valves to do so. This results in a lot of coupling,

as all the different kinds of media accessing the various hoses, pipework and fittings are in constant flux. Every coupling procedure means an interruption to the process. This presented a major challenge as flange connections were still prevailing in the Deka factory instead of quick coupling systems. Having to loosen and reconnect flanges meant an interruption of at least ten minutes, even with employees who were well used to the work. This had to be reduced in the interests of an integrated process. According to the plant manager at the Deka factory, there was

# System safety



## Leak-free coupling

Some of the pipes in the Deka factory carry problematic chemicals, such as amines. This is another reason for achieving the highest coupling safety standards. The sophisticated valve technology of the → **TR dry disconnect coupling** ensures that problematic media are consistently blocked off at the moment of decoupling, thereby preventing leaks.



## Decoupling in emergencies

Rail and road tankers are filled using hose lines at the Deka factory's loading stations. ABV series breakaway couplings → **at the interface between plant and logistics** ensure that shunting mistakes like "driving off too hastily" cannot end in catastrophe. At a defined tensile load - long before the hose tears - the **ABV** cuts the connection and safely closes the separation points.



## Effortless tanking

The → **SGA hose loading arm** bears the weight of the spiral hoses with the heavy flange coupling at various points in the plant. This minimises the physical burden on the employees. As it can be moved horizontally, no effort is required to connect it precisely e.g. to a truck. At the same time, the hose line is thereby protected from tensile stress, torsion and mechanical loading of the hose cover, significantly extending the maintenance cycles.



# System safety

a lot of learning the hard way before this was achieved. After months of testing using various alternatives, the decision was taken in the Deka factory to switch from flanges to a quick coupling system. A dry disconnect coupling was chosen in particular for safety reasons and a TR from RS for reasons of quality. And the employees have seen excellent results from this! What previously took ten minutes is now a ten-second job - an instant change in media.

## Added value: Increased safety

The safe quick coupling function is just one feature of the TR, which has been principally developed as a safety coupling. Decoupled hose lines form closed systems thanks to the dry disconnect coupling mechanism. At the moment of decoupling, the valves in both the male and female sides close "automatically". Therefore, there is no need for additional closing of taps as with open flange connections, nor residue disposal. Coupling practically takes place during operation, providing the maximum safety from leaks and evaporation. This not only makes work easier for

employees but also protects them from health risks. Following this initial step towards increased safety from leaks, there was a second step towards greater safety from incorrect connections. The challenge: critical media, such as highly odorous amines, are sometimes stored in the tanks and flow through the pipe and hose lines. However, the (unintentional) mixing of amines and non-aminers is a particular prob-



**4 x advantage: faster, more efficient, safer, with less force.**

lem. Adding different colours to the amines (green) and non-aminers (blue) was the first right step. But only the mechanical coding of the male and female parts of the TR, i.e. the use of the key/keyhole principle, has ultimately made the mixing impossible. This is another significant safety advantage for employees as well as the work process and plant.



**In the green zone: TR coupling.**

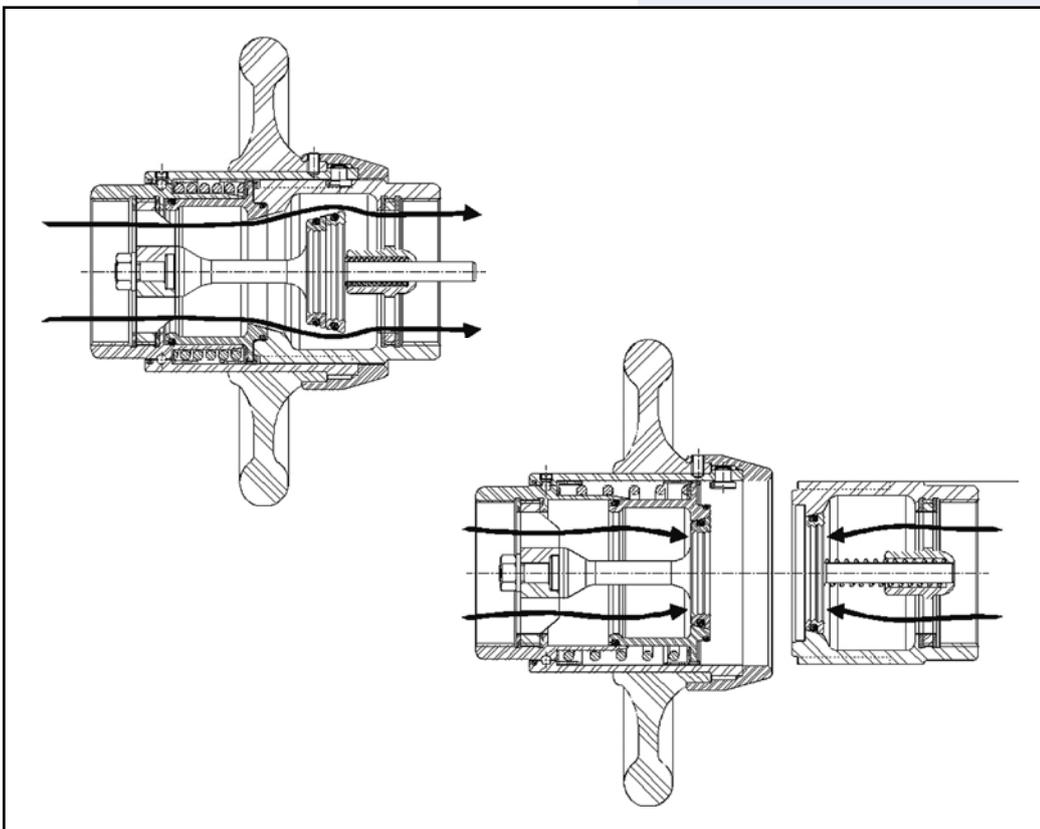
## Added value: Less maintenance costs

There has also been a significant increase in safety in the loading area. A range of pipelines (now all equipped with TR male parts) open out into the tank wagon station on the external east wall of the Deka factory. Hose lines via which chemical products are pumped from the Deka factory

# System safety

**Mechanical coding with the TR dry disconnect coupling: practical application of the key/keyhole principle.**

to the road or rail tankers are connected here. Previously, damage was always occurring in the area where fluids were transferred, e.g. from tankers being moved while fluids were still being loaded. Tired of the repeated need for repairs and increased maintenance costs and given higher safety requirements, solutions were looked for and the principle of breakaway couplings found.



**TR dry disconnect coupling: open system in a coupled state, closed system in a decoupled state.**

The company opted for the ABV breakaway coupling from RS in various nominal widths. It functions according to the "predetermined breaking point" principle. Therefore, if there is a tensile load during loading, e.g. from a tanker moving during shunting while the loading hose is still connected, the ABV effects a controlled separation of the line. The open ends are safely sealed at the same time. This protects the pipe/hose line and its fittings from damage and the service staff and the environment from unwanted media leaks which might arise if a hose ruptured,

multi-section, horizontally pivotable arm supports the weight of the hose when the hose lines (media hose, gas hose, possible power cable) are placed on the arm. This takes the burden off employees during loading, while simultaneously protecting the hose line from mechanical loads such as torsion, axial distension, bends, cover abrasion and being driven over. This also increases the product life, thereby extending maintenance cycles. At a company of superlatives like BASF, this adds up to significant savings across all applications.

for example. The division concerned has been successfully using ABVs at the tanker station for a long time now. Along with the tangible reduction in maintenance costs, there has also been a considerable "incidental" increase in safety for people, the environment and the plant.

## **Added value: Longer maintenance cycles**

Using the SGA hose loading arm at different loading stations on the complex has had the same effect on maintenance costs and safety. The

# Why we rely on RS



**Markus Kerner, Chemical worker, plant operator, BASF:**

"Anyone dealing day in, day out with chemicals just feels better about themselves knowing dry disconnect couplings at the interfaces to the hose and pipelines are ensuring safety. The ABV at the tanker station has already been successfully in use for a long time."

## What RS does for safety



**Grad. eng. Mario Bastian**

### **RS field service:**

"Our solutions are not developed on the drawing board, but directly on site. We are in constant dialogue with BASF and Rala. This is the only way we can ensure real benefits for our partners."

**Rolf Effenberger,**

### **SAT dept., Rala GmbH & Co. KG:**

As a technical retail business supporting BASF in the area of fluid handling also for many years, we rely on the safety of the RS brand when it comes to fittings. After all, RS is a partner that combines the highest level of quality with a high degree of innovation and service."



**Stefan Gauweiler,**

### **Field service, Rala GmbH & Co. KG:**

"When dealing with sophisticated applications in the chemical industry, qualified advice normally steers you away from standard solutions towards high-quality fittings, and therefore frequently to products from RS."



### **RS**

#### **Roman Seliger**

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**BASF SE –**

The Chemical Company

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## Facts and Figures

With business partners in more than 200 countries, six affiliated facilities, some 385 production sites worldwide and approx. 105,000 employees, BASF is the world's leading chemical company and active in all important global markets. BASF operates the world's largest integrated chemical complex at Ludwigshafen am Rhein. It is the headquarters of the BASF Group, which consists of more than 320 subsidiaries and associates. Its portfolio covers the five business areas of chemicals, plastics, performance products, agricultural pesticides and nutrition as well as oil and gas. The BASF Group posted a turnover of €50.7 billion in 2009 and achieved operating profit before special items of approx. €4.9 billion. Intelligent system solutions and high-quality products help its customers to be more successful. BASF acts in accordance with the principles of sustainable development. Dr. Jürgen Hambrecht is the Chairman of the Board of Executive Directors.