

Clariant Frankfurt-Höchst

Höchst Industrial Park:
Clariant's biggest site worldwide.



Clariant chemicals loading

One of the most modern technological features for loading and unloading between storage and transport tanks can be seen at the Clariant Produkte (Deutschland) GmbH HPP1 plant in the Frankfurt-Höchst Industrial Park in Germany. At this production plant of the Pigment Business Unit, organic pink, red and purple pigments are manufactured for the automotive, printing and construction industries. Three pivotable, flexible hose joint arms from RS ensure that loading is performed safely and efficiently, in a way that does not waste material and that is friendly to staff.

Easier for employees



The sizes of people and hose line in comparison: It's a good job that the hose loading arm makes handling easier.

Relieve employees

Siegfried Cyron, foreman at C738, can still remember well the way things used to be. "Heavy hoses lay on the ground. We had to use our muscles to take them to the tanker truck and to heave them up to the level of the connection fitting. This was not only physically hard work, but also pretty tricky, as we were not allowed to tilt the halves of the coupling."

It was a kind of work that not only put a permanent strain on workers' backs but also one that cut the "life expectancy" of hoses and fittings. Marc Enterlein, customer support manager for Clariant, and team leader for industrial technology at Mühlberger, a technical distribution company with a warehouse and sales point in the nearby Building C379, supplying the industrial park with industrial safety and valve technology, etc., recommended the hose loading arm from RS Seliger as a solution.



Stands for engineering skills with customer benefits: RS – the strong brand in the system.

A long arm for safety's sake

The "new lightness" of hose

Loading systems such as the → **hose loading arm** optimise both the safety and handling in the loading process. They prevent torsion, bending and tensile loads, avoid mechanical damage to the hose cover from friction with the ground or from the hose being driven over, and so sustainably increase the lifespan of the hose.

Above all, they cut the physical burden on the employees to a minimum. Because besides this, attaching a coupling to the truck is now an effortless and precise matter, thanks to the high flexibility of hose loading arm technology: On the horizontal level, a number of movable limbs allow flexible bridging over a variety of distances. In the vertical plane, a lifting device supported by a gas spring can be installed, and then adjusted exactly to the local conditions – such as the weight of the fittings, for example. Now, for example, thanks to the hose loading arm, a hose line of DN 100 nominal width and a total weight (including medium) of more than 100 kg, can be moved virtually with the little finger.



Customer benefits made to measure

Additional features were necessary in the case of the loading station at C738. The materials used for pigment production, brought in by tanker trucks and pumped through two hoses into the storage tanks located upstream of production, have a high solidification point. In one case, the raw materials for the pigments crystallise at an temperature of around just 40°C, in another case at about 90°C. This means that the hoses must be electrically heated to 80°C or steam-heated to 100°C and



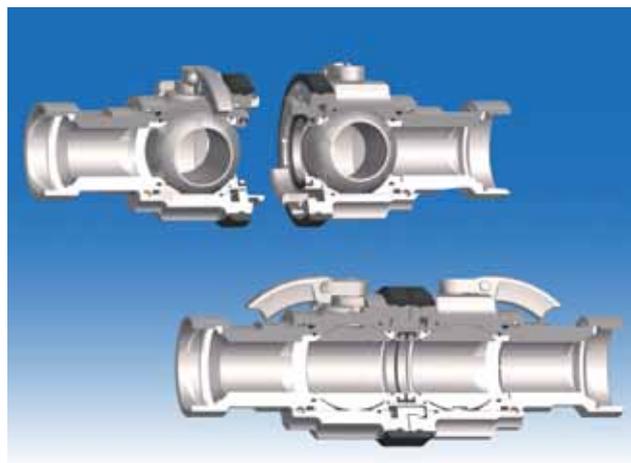
Hose loading arm (4.37 m) for a heavyweight class hose line with a weight of more than 100 kg.

A gas spring supported lifting feature with a stroke of +/- 250 mm makes handling easier and protects backbones. The fitting alone weighs more than 50 kg, and the hose line weighs the same.

protected from cooling by insulation. The heavier of the two tubes (nominal width DN 100) called for a gas-spring lifting device due to its heavy weight. And the lighter of the two was virtually a closed-loop system. This means that – in order to prevent a negative pressure – the mixture of medium and gas found above the medium in the tanker trucks is filled with gas forced out of the storage tank to be filled as early as the take-over process. This gas is transferred by means of a DN 25 gas displacement line. If the product enters the gas return line, this must be laid at a slope to ensure that the gas return hose can be drained. A loading arm with an incline of 5° makes sure of this.

In several rounds of discussions involving engineer Michael Adam from the project planning department at the manufacturer RS Roman Seliger with Marc Enterlein and with the operations engineer of the Clariant plant, Michael Lang, the requirements were precisely defined, measurements were taken, and solutions discussed. Michael Adam then drew up the custom solution for Clariant.

Clariant chemicals loading



Advantage of the innovation TK series: Higher flow rate than classical dry disconnect couplings (safety versions).



Connected with a flick of the wrist: The gas displacement line is connected safely and in seconds to the TK series of dry disconnect couplings from RS (DN 25 width). Automatic safety locks ensure that decoupling is impossible when the valves are open, and that the coupling halves are closed during uncoupling.



Foreman Siegfried Cyron opens the hose line's thermal insulation, in order to couple it to the tanker truck.

Special requests – yes please!

- ❶ **Gas displacement line, self-draining, DN 25 with a 5 m horizontal working area:**

Result: A special hose loading arm, consisting of 9 segments plus a storage feature with a maximum length of 5 m and an incline of 5°. The stainless steel corrugated tube that serves as the gas displacement line (total weight approx. 25 kg) is additionally fitted with the female section of an **RS dry disconnect coupling** of the TK series. Thanks to its ball valve technology, the TK series is ideal for this application. It offers: 1) Safety from escaping gas when decoupled; 2) Full cross-section in a coupled state, so avoiding additional pressure loss and ensuring maintenance of self-draining capability; 3) Suitability for the crystallising and hardening media being transported, which can also enter the gas displacement line via the mixture of gas and medium.

- ❷ **DN 50 discharge line with electrical heating and 3 m horizontal working area**

Result: A standard design hose loading arm, consisting of 4 segments plus a hose holder with a maximum length of 3 m, fitted with a stainless steel corrugated tube with electrical heating up to 80°C (total weight including medium, approx. 35 kg).

- ❸ **Steam-heated DN 100 discharge line with a weight of over 100 kg and a 5 m horizontal working area**

Result: A special hose loading arm, consisting of 5 segments plus a special storage feature to hold the existing connection fittings, with a maximum length of 5 m. The integrated lifting device allows a vertical height compensation of +/- 250 mm of the approx. 50 kg connection fitting. Fitted with a twin-walled stainless steel corrugated tube of DN 100 nominal width, steam heated at around 100°C.



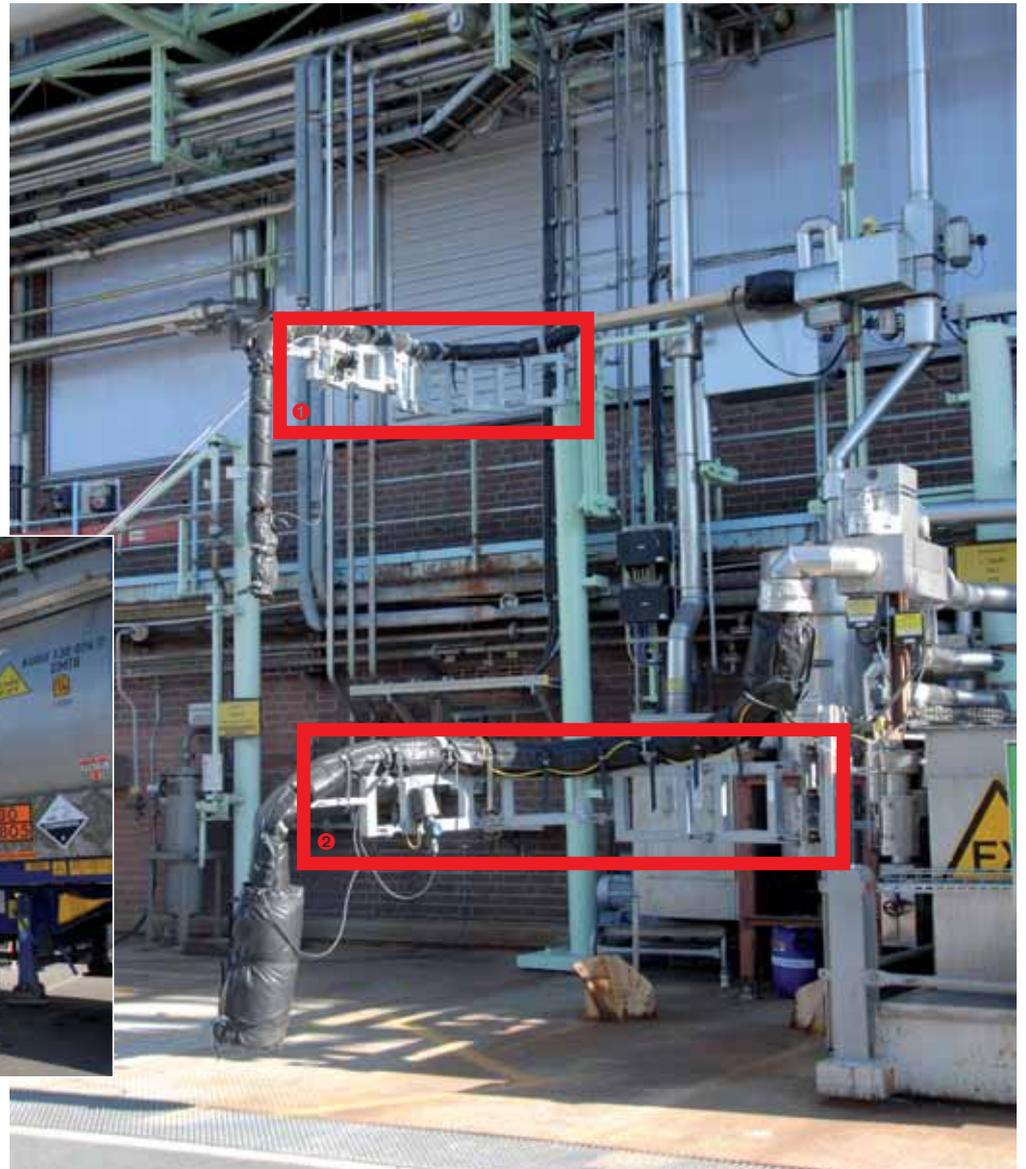
Heating and thermal insulation are compulsory: The solidification point of the raw material is around 90 °C.

Discharging without worries

Michael Lang now draws a positive balance after its two years of service: "The decision to choose the RS hose loading arm was absolutely correct. The colleagues at the discharge point are grateful that their work is physically easier and more relaxed. And the maintenance staff are happy about the extended life cycles of the material."

Safety in the system

Discharge point in Building C 738: Optimised for safety and ease of loading with RS hose loading arm technology.



Coupling in seconds

The hose line for gas displacement → **with a member of the TK series of dry disconnect couplings** from RS (DN 25 width) can be coupled safely and within seconds to its counterpart on the tanker truck. This way even viscous media can flow freely. During uncoupling, both ends are always closed again safely so that no leaks occur. Besides this, the TK dry disconnect coupling makes the use of a swivel joint superfluous, as this feature is directly integrated in the TK.



Easy discharging

At three points in Building C 738, custom versions of the → **hose loading arm** bear the load of the hose lines. This minimises the physical burden on staff. As it can be easily moved horizontally, no effort is called for to connect it precisely, e.g. to a tanker truck. At the same time, the hose lines are protected from tensile stress, torsion and mechanical loading of the hose cover, all of which significantly extends the maintenance cycles.



Why we rely on RS



Siegfried Cyron,

Clariant foreman:

"The hose loading arms have proven effective in every respect. Hoses and fittings last longer. And above all, the hard physical work is a thing of the past."

Engineer Michael Lang,
Operations Engineer, HPP1:

"We are pioneers in terms of loading technology. The word has got around. Many colleagues have now already seen the system and have been excited by the technology."



What RS does for safety



Engineer Michael Adam,
RS project planning:

"The Clariant loading station is not an "off the peg" solution but rather the result of continuous communication with Mühlberger and the users on site. Result: A customised solution that has real benefits."

Marc Enterlein,
Customer support manager
for Clariant, and team leader
for industrial technology at
Mühlberger GmbH
(Mainz-Kastel):

"We only work with premium partners because we want to give our clients the maximum possible benefit. RS Roman Seliger is our first choice for hose and valve technology."



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Clariant AG, Location: Frankfurt- Höchst

Facts and Figures

Clariant ("Exactly your chemistry") is a leading, globally active company in the specialty chemicals business. The enterprise is represented worldwide by over 100 group companies, and it employs around 17,500 staff. The headquarters are in Muttenz, near Basel, Switzerland. In 2009, Clariant generated a turnover of SFR 6.6 billion (about € 4.4 billion). In Germany, Clariant is represented by four companies, including the group's largest company worldwide: Clariant Produkte (Deutschland) GmbH. In all, around 4,800 people work for Clariant's German companies. Clariant produces a wide range of specialty chemicals at ten production sites in Germany. These substances play a decisive role in the customers' manufacturing and treatment processes, or impart crucial value-adding features to their end products. At the Höchst Industrial Park, a staff of around 1,600 is employed by Clariant. The location is assigned to the Pigments business unit. There, pigments are made for a variety of applications. www.clariant.de