



Maximum safety with N2LOCK®. Inert gas lock for the manual charging with bulk solids.



Manual charging with activated N2LOCK® system

Abstract For the charging of a reactor with small-sized primary products, the Evonik Röhm GmbH decided to use an inert gas lock from Linde to minimise the admission of air/oxygen into the reactor. Linde's N2LOCK® system provides an inert atmosphere at the charging hole through a targeted purging with nitrogen, thus avoiding the formation of an ignitable mixture.

Reference customer:
Evonik Röhm GmbH,
Darmstadt

As a subsidiary of the specialty chemical manufacturer Evonik Industries, Evonik Röhm GmbH can look back on a tradition of over 100 years, playing an important part in the business line of coatings and additives. 2800 employees work at the company's sites in Darmstadt, Weiterstadt and Worms. The core competencies of the company lie in methacrylate chemistry. The most famous product is known all over the world under the name of PLEXIGLAS®. Besides the production of basic and special monomers, various moulding materials, powders and semi-finished products, Evonik Röhm GmbH is also an expert in the production of lacquer raw materials, reaction resins and lubricant additives.

Challenge In the production of high-quality lacquer products for the food and pharmaceutical industries, Evonik Röhm GmbH charges a reactor with bulk solids, which are then dissolved in the organic solvent butyl acetate. Due to the appreciable vapour pressure of this organic ester, the admission of certain concentrations of atmospheric oxygen can lead to the formation of an ignitable gas mixture, which may result in an explosion. In order to avoid this risk, the reactor is constantly kept under an atmosphere of nitrogen. However, Evonik Röhm GmbH was still looking for a solution for the critical moment when the reactor is opened for charging.

Solution In order to effectively avoid the admission of air at the charging hole, Evonik Röhm GmbH chose the N2LOCK® inert gas lock, which has been specially developed for this purpose. The N2LOCK® ensures that the charging hole is continuously purged with gaseous nitrogen. Nitrogen is supplied without any difficulties via the existing nitrogen supply grid on site. Due to the flexibility of the N2LOCK® concept, the inert gas lock could be tailored to the specific dimensions and requirements at Evonik Röhm GmbH.

Results With the N2LOCK® system, Evonik Röhm GmbH is enabled to meet current legal regulations and to substantially improve the safety of its employees. The applied installation has been running smoothly since start-up and fully meets the expectations of the customer. Safe operation is guaranteed at all times.

In practice, the oxygen content is considerably below the target of 7.5%. Regular control measurements have repeatedly indicated a content of approx. 1-2%.

- Customer benefits**
- Safety at the workplace
 - Robust design
 - Easy handling for the operator
 - Safe operation

Customer statement Mr Hammann, assistant production manager of Evonik Röhm GmbH: "We decided in favour of Linde's N2LOCK® system as the solution was readily available and optimally suited for our charging operations. The uncomplicated installation and the robust design allow for an easy operation."

Supply to a reactor with N2LOCK® system (basic diagram)

