Pigging to Reduce Load on Production Plants And Increase Productivity

Turnkey Pigging Solutions

Production plants work 24/7. The demands placed on them are increasing constantly due to frequent product changes. Higher demands placed on pro-duct purity further add to the requirements the plants need to fulfil. Pigging solutions provide one way of meeting these demands of the industry.

What is pigging?

Pigging is used in production plants to avoid cross-contamination despite frequent product changes. As a result, different products can be handled in one plant without requiring a separate pipeline for each product to prevent cross-contamination. In pigging, the contents of the pipelines in a production plant are cleared by a so-called „pig“ (pipeline inspection gauge). This pig is propelled by a medium (e.g. nitrogen, compressed air, solvent, etc.) through the piping system. Pigging systems need to be designed to ensure that piggable valves (product inlets and outlets as well as pig launchers and catchers), the pipeline and the pig are perfectly matched to one another. When designing a plant, it is important to take the individual, industry-specific requirements of the different processes and the customer‘s specific demands into account. As a result, plants can also be designed for pressure ratings higher than PN 25. This considerably increases plant safety for the operators on site.

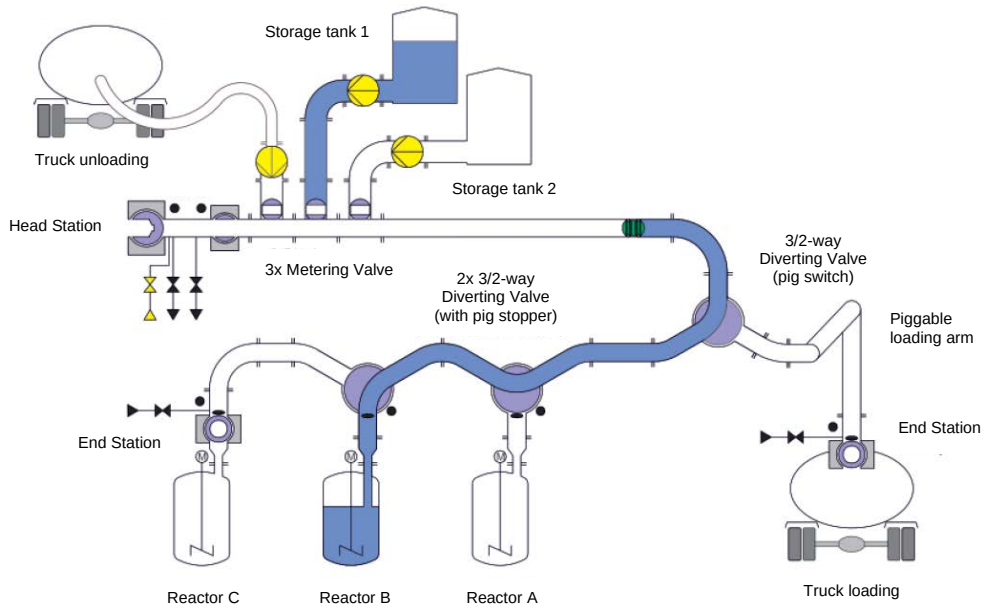
Different pigging systems

Basically, any medium that can be pumped can also be pigged; two different systems are available:

Single pig systems (see image: Single pig systems) are used to transfer products in tank farms or when loading and unloading vessels (oil or gas pipelines). In such systems, the pig is moved from the launcher to the catcher, thus pushing the product out of the pipeline.

Double pig systems (see image: Double pig systems) are used to package smaller quantities free of bubbles and prevent products from foaming. To do so, the product is pumped between two pigs. The medium to be packaged propels the first pig towards the catcher and is usually pushed out by the second pig, which is propelled by nitrogen for example. With such systems, it can be decided during a transfer whether the product is to be pushed towards the catcher as described or if it is to be taken back to the launcher by the propelled first pig. A second benefit of double pig systems is that they can be run in tandem mode, where a cleaning liquid is pumped between the two pigs and they are moved through the pipeline as a pair. This can reduce medium residues to the p.p.m. range.

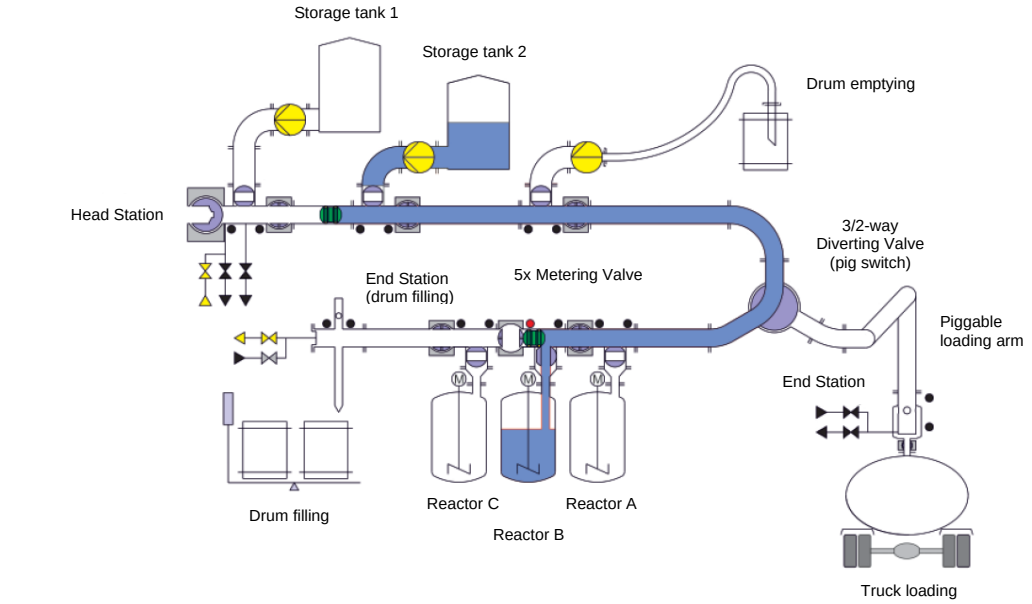
Single pig systems



Pig selection

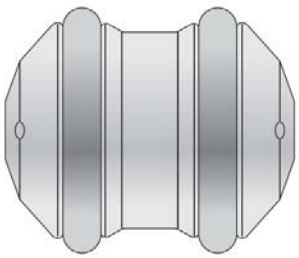
Pig selection is important and depends on the product handled in the specific plant. It is recommended to use FDA-approved materials resistant to chemicals or the product itself. Pigs can be propelled through the pipeline by a liquid or a gas. Their cleaning efficiency and service life strongly depend on the speed they are moved at, which should be around one meter per second.

Double pig systems



Long service life

To ensure a long service life of the plant and pigs, the requirements stipulated in DIN 2430 should be observed when designing pigging systems. The standard deals with piggable pipes, elbows, flanges and weld connections. Turnkey solutions coherently planned and implemented from the engineering stage to the installation on site allow all components to be matched exactly to one another and be tailored to the requirements of DIN 2430 as well as a long service life. Properly implemented pigging systems allow production plants to be used for different products without cross-contamination. They reduce the amount of water needed for flushing and rinsing and cut back the investment costs for a plant. In addition, product losses are reduced while productivity is increased.



Michael Miertz, head of Pigging Technology,
Pfeiffer Chemie-Armaturenbau GmbH