

Solvay Solexis has chosen Fluiten mechanical seals for working polymer latex

Fluiten, an Italian company that works in the rotating shaft seal sector, has installed a triple mechanical seal at the Solvay Solexis plant at Spinetta Marengo (Alessandria). The previous seals on a device for working polymer latex were replaced with Fluiten seals in order to improve its efficiency and reliability and ensure greater production continuity.

Solvay Solexis is the international leader on the fluorinated materials market, and is part of the “Specialty Polymers” Strategic Business Unit of the Solvay group. The Spinetta Marengo plant, in the province of Alessandria, is its most important production site.

Solvay took over and merged with Ausimont in 2002 and created the fluoropolymer market leader Solvay Solexis. The Spinetta Marengo production plant has a staff of 600 workers and is the largest manufacturer of fluorinated products.

Solvay Solexis' new requirements

Solvay needed to find a solution that could fairly reliably solve a reactor sealing problem while taking safety, respect for the environment and plant efficiency into consideration. Furthermore the need to alter the sealing system stemmed from the necessity to extend the meantime between repairs, which were very frequent (every 20-30 days).

“During one of our first visits to the Solvay Solexis plant, we realized that the previous mechanical seals were one of the bottlenecks in their production process and caused frequent plant shutdowns,” said Rino Campaniello, Fluiten sales manager.

As a result of several inspections by its sales technicians, Fluiten proposed a solution that aroused the interest of the Solvay technicians. Fluiten then performed a study to adapt the initial idea to the specific context after receiving technical documents concerning the plant.



Service Department - Pero (MI)

Fluiten's proposal

Fluiten suggested Solvay Solexis should install a new system of mechanical seals on a machine for working polymer latex. This machine is on the cutting-edge in terms of know how in the production of high technology polymers.

The fluids inside machines with rotary shafts are very often extremely viscous and contain suspended solids. They are frequently polymer solutions that tend to solidify and prevent correct seal operation, especially where gaps and recesses in the machine do not allow fluid turnover.



Metrology laboratory

To meet these requirements, Fluiten has developed a seal model whose structure has no recesses where the process fluid may stagnate. The seal is built using suitable materials that resist the abrasive action of the process fluid in order to reduce overheating and prevent undesirable solidification and polymerization. The TC seal model was engineered for this application, customized and installed as a triple seal, which guarantees high safety even in the event of main seal breakage and allows the production to be completed.

Furthermore, during the processing stage, the products made by this plant require safety devices to prevent emissions into the atmosphere that are able to operate in extreme conditions in order to ensure utmost reliability in terms of safety for workers. Before assembly at the Solvay-Solexis plant, the sealing system underwent strict dynamic tests on the Fluiten test beds, where actual machine operating

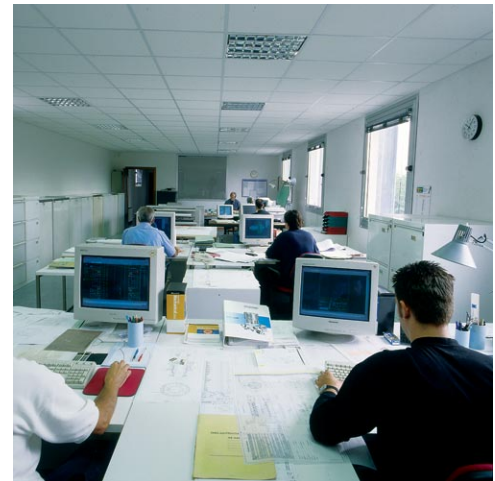
conditions were simulated thanks to the use of latex supplied by the final customer. Another problem that was faced concerned the flushing system. The TC seal system needs flushing from an external source. Since the previous flushing system turned out not to be suitable for the new mechanical seal, Fluiten also supplied the customer with a central flushing control unit with instruments and controls suitable for use in the control room in order to ensure correct seal operation.

Main plant benefits

The benefits mainly regarded costs, since the new sealing system ensures production continuity and less down time. As already said, plant shutdowns previously occurred about once a month, whereas they now take place every two years. This leads to a decrease in maintenance costs thanks to fewer overhauls. Furthermore, overhauls used to be performed in emergency conditions, whereas they can now be planned in advance. Certainly one of the major benefits is greater safety, owing to the triple - rather than double - seal, which eliminates risks for people and allows the production cycle to be concluded even in emergency conditions.

“As a result of the work carried out together with Fluiten, we achieved excellent results in terms of safety and production efficiency and have reduced overhaul costs,” says Mr Gargiulo, maintenance engineering manager at Solvay-Solexis.

“The work at the Solvay Solexis plant has helped us solve other cases with similar seals on several polymerization devices,” adds Rino Campanello. “Thanks to our engineering department and sales and after sales services, Solvay Solexis achieved very significant results. As a consequence, the company has decided to use the same sealing system on the most important equipment in their production cycle.”



Fluiten technical office

The Fluiten TC seal

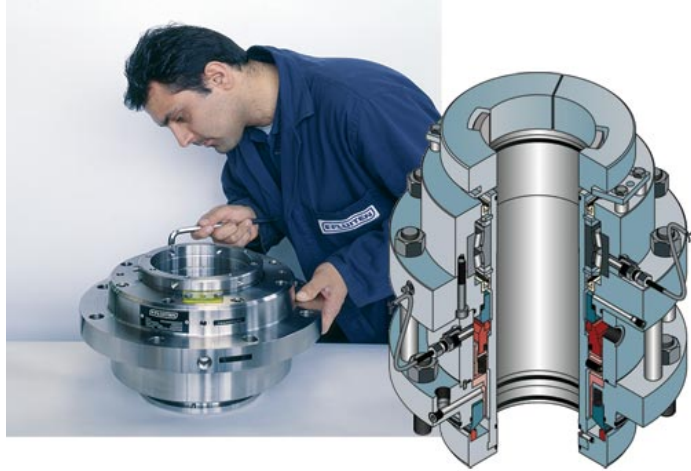
The Fluiten TC mechanical seal has standardized seal rings designed with the aid of finite element analysis (FEA) to prevent the deformation caused by pressure or heat induced by the process. Consequently they are suitable for heavy duty use. The TC may be fitted to top-entry, bottom-entry and side-entry centrifugal or displacement pumps, agitators, reactors and polymerizers for very abrasive fluids with high viscosity.

The TC seal is hydraulically balanced so that it may also be used at high pressures, and keep power consumption and, therefore, heat generated to a minimum.

The TC seal has been widely used on gas and liquid flows in the chemical sector in the working of polymers, latexes, paints, inks, paper pulp and slurry in general, as well as on highly abrasive fluids. Furthermore the design of this seal, with a clean cut shape and easy access for washing, has made it possible to develop a seal unit for use in the pharmaceutical and biotechnological sectors where absolute equipment sterility is essential. Several companies have moved over to TC type seals. **Infineum**, for instance, changed the seals previously used on its top-entry mixers, where vapour solidification prevented correct back-to-back double seal operation.

Enel fitted these seals on its pumps used in desulphurization systems to reduce their wear, thus extending the meantime between repair with considerable benefits in terms of maintenance cost reduction.

Eni Raffineria also fitted TC seals at a plant where the displacement pumps had to transfer a highly viscous abrasive fluid and required flushing with a clean liquid from an external source. Thanks to the Fluiten seals, this expensive system was eliminated and the results achieved were highly satisfactory in terms of seal life.



TC seal group mounting