CASE STUDY

FLUORINATION OF PLASTICS

INTEGRATED CONTROLS AND INDUSTRY 4.0 CAPABILITIES OF THE EDWARDS GXS VACUUM PUMP ENSURE SERVICE-RELATED COST SAVINGS AND CONSISTENT RESULTS

edwardsvacuum.com

For over 30 years, Woltering Verfahrenstechnik GmbH has delivered F_2/N_2 inline and offline vacuum systems for barrier fluorination, OXI™ fluorination and electroplating systems. Woltering has become the preferred OEM partner for designing and building fluorination plants, F_2 generators, galvanizing plants (SO_3) and in-house Fluorination servicing. Woltering's process is the ideal solution for fluorinating recycled bottles boosting the Agro market in Brazil creating a demand for recycled canisters and bottles.

Woltering Verfahrenstechnik manufactures stainless steel chambers in the required size as well as the residual gas neutralisation. The other plant components, such as the supply unit, vacuum equipment, piping and fitting technology as well as control, are coordinated and designed with reliable partners for the respective customer project.

Woltering places a premium on safety and environmentally friendly practices. Their fluorination processes are safe due to the targeted dry chemical reaction under vacuum, from a reliable vacuum system.

KEY FACTS

Customer	**Woltering Verfahrenstechnik GmbH (www.woltering-process.com)**
Region	**Germany**
Sector	**Plastics Fluorination Systems**

BENEFIT **A RELIABLE VACUUM SYSTEM WITH REPRODUCIBLE RESULTS AND THE ABILITY TO REMOTELY MONITOR THE PUMP PERFORMANCE LEADING TO SERVICE-RELATED SAVINGS UPTO 80-90%.**

VACUUM SYSTEMS

1. CHALLENGE

Temperature, time and pressure are critical to the fluorination process. Woltering specified a modern, compact vacuum system that is capable of handling reactive fluorine, deliver fast pump down pressure and provide flexible vacuum during the evacuation cycle in the requirements. The vacuum system needs to have excellent sealing to prevent fluorine leak in to the environment as well as be compatible at all concentrations of Fluorine mixtures upto 20% (F_2/N_2).

2. SOLUTION

Woltering places high demands on quality and performance. Their fluorination systems are delivered to global customers, which required them to partner with a vacuum solution provider with a similar global footprint. Edwards proved to be the perfect fit for Woltering to deliver the optimum fluorination system performance by combining their application expertise with Edwards vacuum solutions.

Edwards suggested the GXS dry screw vacuum pump with its unique screw technology, advanced temperature control and intelligent on-board control panel.

The premium GXS dry pump offers enhanced features:

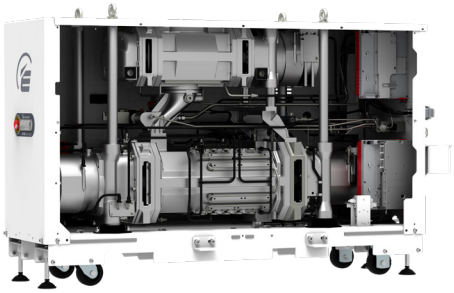
- Intelligence to monitor pump conditions with Industry 4.0 remote control capabilities
- Advanced pumping mechanism for improved thermal control to help prevent fluorine condensation
- Intelligent control panel to optimise and automate the process
- Hermetically-sealed variants ideal for fluorination
- Integrated solvent flush options to remove fluorine accumulation
- Customisable with a pump-booster combination or systemisation to meet requirements
- Proven sealing design that prevents fluorine migration from the pumping chamber

3. OUTCOME

Due to the reactive nature of Fluorine, dry vacuum systems are an ideal choice for fluorination. Oil-sealed or Liquid Ring vacuum pumps are not suitable because they absorb fluorine and create an unstable environment to produce hydrogen fluoride.

The Edwards GXS intelligent dry screw vacuum pump has been able to provide proven performance for both offline and inline plastic fluorination processes. The intelligence capabilities of the vacuum pump allow for remote monitoring. Since Woltering plans, designs, manufactures and delivers everything from a single source, the GXS pump's systemisation capabilities was ideal to program and build to their customer's specific needs.

The global Edwards footprint ensure timely service to Woltering's installations worldwide.



GXS vacuum pump

We installed a fluorination system with the Edwards pump at our customer 20 years ago which was working flawlessly until it was upgraded to a newer system two years ago.
Edwards has always provided timely support and given us the opportunity to improve and deliver reproducible results and performance to our customers. Edwards GXS is the go-to vacuum system for our offline fluorination systems because it has the right combination of compact footprint and integrated controls which make it very easy to program. The Industry 4.0 capabilities of the GXS allow us to remotely monitor the pump performance giving our customers service-related savings.

Edwards has delivered spectacular timely global service to several of our customers worldwide. Their vacuum expertise, application knowledge and willingness to go above and beyond is commendable.

Roedel Siegfried, Global Manager – Fluorination, Woltering Verfahrenstechnik GmbH.

Publication Number: 3602 562 9 01
© Edwards Limited 2019. All rights reserved.
Edwards and the Edwards logo are trademarks of Edwards Limited.