CASE STUDY

RETHINKING SOLVENT DRYING: FROM OIL-LUBRICATED TO DRY VACUUM TECHNOLOGY

edwardsvacuum.com

Customer Challenge



A leading pharmaceutical manufacturer faced a familiar challenge: rising vacuum system operating costs and increasing maintenance demands in a solvent drying process.

The process relied on a 600 m³/h oil-lubricated vacuum pump used for solvent drying applications involving primarily ethyl acetate, with smaller quantities of acetone.

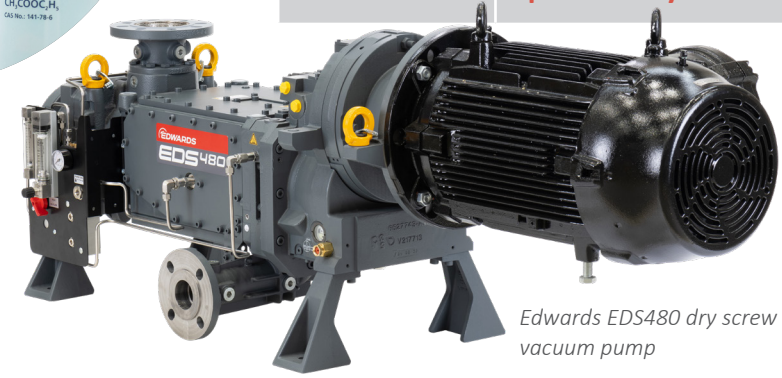
With production performance critical, the question was simple but significant: could a modern dry vacuum solution reduce costs while maintaining drying efficiency and process reliability?

The critical questions:

1. Could dry vacuum technology reliably handle solvent vapours in a demanding pharmaceutical process?
2. Could a smaller vacuum system achieve the required vacuum levels and drying performance?
3. Was it possible to reduce operating costs without introducing operational risk?



KEY FACTS	
Application	**Solvent drying**
Region	**Italy**
Sector	**Pharmaceutical Industry**
BENEFITS	**Reduced Operating Costs**
	Maintained Process Performance
	Optimized System Design



Edwards EDS480 dry screw vacuum pump



Looking beyond Pump Capacity

Rather than simply replacing the existing vacuum pump with a like-for-like alternative, Edwards conducted a detailed review of the entire vacuum system.

Process conditions, vapour loads, conductance, leakage rates and pipework configuration were analysed to identify the true vacuum requirements and uncocer efficiency improvement opportunities.

The Solution

Following a comprehensive system assessment, Edwards recommended an ATEX-compliant EDS480 dry screw vacuum pump.

Despite having a lower nominal pumping speed than the existing system, the solution was engineered to achieve the required vacuum levels and drying performance while reducing energy consumption, maintenance requirements and installation footprint.



Edwards EDS480 dry screw vacuum pump - Final tests before delivery - Germany

Customer Benefits

The project delivered several benefits to the customer:

REDUCED OPERATING COSTS

Reduced utility consumption and elimination of oil-related maintenance activities and disposal costs

MAINTAINED PROCESS PERFORMANCE

Confirmed that a dry vacuum system could meet the required drying performance and vacuum levels without compromising process reliability

OPTIMIZED SYSTEM DESIGN

Optimized system conductance through targeted pipework improvements, enabling a right-sized vacuum system with a smaller footprint and reduced operating costs

Why the Project succeded?

Success was achieved through a combination of vacuum technology expertise, application knowledge and a complete system-level assessment. By evaluating the entire process rather than focusing solely on pump sizing, Edwards identified opportunities to improve efficiency, optimize conductance and confidently transition the application from oil-lubricated to dry vacuum technology.

Publication : CC GV EMEA
© Edwards Limited. All rights reserved.
Edwards and the Edwards logo are trademarks of Edwards Limited.