

WILFLEY A9 INCREASES SAFETY AND RELIABILITY

WILFLEY®

DURABLE. WATERLESS SEALING. INDUSTRIAL PUMPS.



Market:
Ammonium Nitrate

Product:
**Model A7/A9, Wilfley
Waterless Seal
Technology**

Application:
AN transfer/pumping

Country:
Australia/Indonesia



BACKGROUND

Chemical compound ammonium nitrate is a white crystalline solid and is highly soluble in water. It is predominantly used in agriculture as a fertilizer. Its other major use is as a component of explosive mixtures used in mining, quarrying, and civil construction. Manufacturing explosive grade ammonium nitrate involves several major unit operations including solution formation and concentration; solids formation, finishing, screening, and coating; and product bagging and/or bulk shipping. Solutions may also be blended for liquid fertilizers. The production of fertilizer grade ammonium nitrate is relatively simple. Ammonia gas is reacted with nitric acid to form a concentrated solution and considerable heat. Prilled fertilizer forms when a drop of concentrated ammonium nitrate solution, 95-99%, falls from a tower and solidifies.

CHALLENGES

Safety is predominantly the key challenge when pumping Ammonium Nitrate. Ammonium nitrate starts to decompose at 425°F (218°C) which makes it very volatile and combustible. Detonation can occur if the fluid within the pump exceeds this temperature for a long enough period. All centrifugal pumps can quickly raise fluid temperature at low flow conditions. Traditional sealing systems, such as compression packing and mechanical seals generate heat in concentrated areas which are not conducive to safe ammonium nitrate handling. In addition, API-style seal flush systems that are associated with friction-based seals, could potentially fail and cause rapid heat build-up. Flushing water in these systems can also degrade/dilute the desired concentration of Ammonium Nitrate.

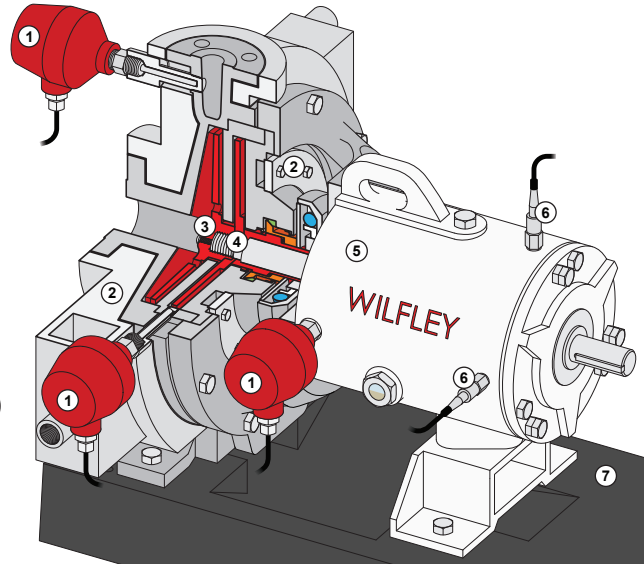
THE SOLUTION

Wilfley A7/A9 safe and heavy duty pumps jump out at the forefront of any other pump in the market. Wilfley pumps can be retrofitted with steam jacketing for casing and seal housing to keep the Ammonium Nitrate at the desired temperature. The desired temperature ceases solidification and accumulation of ammonium nitrate which in return deters a dangerous and unwanted situation. Built-in thermowells with appropriate thermosensors can alert of any temperature rise and avert any potential dangerous situation. The Wilfley Waterless Seal Technology is made by the interaction of a dynamic seal coupled with the Drylock static seal.

AMMONIUM NITRATE

Typical Options for Ammonium Nitrate

- 1** Thermal sensing for case, expeller chamber, and inboard bearing
- 2** Steam jacketing for casing and seal housing
- 3** Locking screw on impeller
- 4** High strength alloy shaft
- 5** Two part epoxy paint on non-alloy surfaces (stainless steel available)
- 6** Condition monitoring
- 7** Non-metallic base plate (stainless steel available)



Our technology eliminates the need for packing, mechanical seals and flush water. Wilfley's sealing technology has proven that Wilfley pumps can operate trouble and maintenance-free as compared to conventional seals saving the customer on downtime, lower maintenance cost, and thousands of dollars of water usage.

THE RESULT

Customers in Australia, Indonesia and other countries have full confidence in the safety and reliability of Wilfley pumps. Many continue to order new pumps with full safety features provided by Wilfley.

Recently most have upgraded older pumps with increase in the number of thermowells (not only on the case discharge, but also the seal area and expeller area as well) to enhance safety. The older Drylock 1 static seal as been upgraded to the newer Drylock 3 to increase longevity of seal and ensure safety. The upgrade has provided for a safe working environment for all as well as top grade product quality (no dilution), another big concern of our customers with pumping systems that use flush for mechanical and compression packing seals from competitors.



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