OVER LONG DISTANCES
SMART AIR INJECTION
**LONG DISTANCE PUMPING.**

Conveying highly viscous media, such as dewatered sewage sludge, over long distances is difficult due to its weak flow properties. Low flowability causes considerable friction loss in the pipeline, which can only be overcome by using high pressure displacement pumps or other conveying technologies. These pumps expend a large amount of energy and the high pressure load increases wear, resulting in high maintenance costs.

Conveying solutions using several drives (e.g., belt, screw, or chain conveyors) require high energy and maintenance. Some of these solutions are in an open-air design, meaning odors, nuisance noises and re-dilution of the media. Additionally there are limitations in the vertical height that can be overcome, which increases the conveyor complexity and maintenance requirements. Smart Air Injection overcomes all these issues.

**SMART AIR INJECTION**

Smart Air Injection (SAI), a customized system solution from SEEPEX, is particularly well-suited for environmental applications to convey sludge with a dry solids content of 20-40% over long distances up to 1,000 meters. Conventional conveying systems cannot typically convey dewatered sludge this distance, but SAI’s long distance transfer capabilities open up new possibilities for the process design of sewage treatment plants.

With the patent pending SAI, the development team at SEEPEX has introduced a technology to the market that combines the innovative features of progressive cavity pumps with a pneumatic conveying system.

**CONVEYING SOLUTION**

The media is pre-processed with the help of a dewatered open hopper into pre-compacted sludge plugs. These plugs are conveyed via a compression casing into the pipeline. Air is injected, the timing of the air injection is specially designed to achieve an energy-efficient application.

Additionally, the plug is coated with a lubricant. The liquid film reduces friction loss and further enhances the energy efficiency of the system.

**PACKAGE UNIT**

SAI is an automated subsystem, in which all machines, sensors and actuators are controlled and monitored using the SAI controller. The SAI controller can be easily integrated into existing control systems using a field bus. In combination with SEEPEX Digital Solutions, comprehensive monitoring can be achieved.

**FEATURES**

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Smart Air Injection offers unprecedented benefits when conveying highly viscous media, such as sewage sludge, over long distances. With this innovative combination of various conveying and control technologies, the pressure level in the pipeline can be reduced by up to 90%.

**BENEFITS**

- Total energy consumption reduced by up to 72%
- Reduced discharge pressure increases durability of all conveying components
- Operating costs considerably reduced: up to 72% for energy and 88% for maintenance
- Investment costs reduced up to 90% due to the use of thin-walled pipelines and valves (PN10)
- Transport routes up to 1,000 m and significant height differences can be easily negotiated
- Open hopper pumps with Smart Conveying Technology allow for less maintenance downtime without dismantling the discharge pipework
- Fully automatic subsystem for easy integration into existing control technology
- Closed system without odor nuisance or pollution along the transport route

**KEY FACTS**

- Conveying capacity: 0.5–20 m³/h
- Pressure: up to 4 bar
- Pipework length: up to 1,000 m
- Dry solids content: 20–40%
- Speed: 60–100 rpm