

# DESIGNED FOR DURABILITY

A new generation of dewatering pumps will achieve completely new standards in terms of durability. A new hydraulic design permits longer periods of maintenance-free operation, even under the most demanding conditions.

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The back vanes (top) and spiral groove (bottom) ensure that only the finest particles reach the impeller neck, thus reducing wear and tear.

**P**umps at a construction site or in a mine play a crucial albeit somewhat low-profile role: Their task is to remove water from the workplace, thus allowing work to continue, but should require no attention or monitoring.

ITT Flygt is launching a new series of dewatering pumps focusing on these requirements. The ambition is to reduce the need for maintenance and to increase the pumps' durability and reliability. Following several years of work and innumerable tests, both in the lab and in the field, a solution has taken shape.

Dura-Spin is the new patented design that substantially reduces the risk of

solid particles reaching the gap between the pump wheel and the pump housing, thereby avoiding wear. This is achieved with a closed pump impeller with a specially designed vane with back-swept leading edges and a spiral relief groove on the opposite surface of the pump housing. This improvement considerably increases the durability of the pump in normal operation and also prolongs the lifetime of the pump many times over in the event of dry running, when there is insufficient water to pump.

"We began by looking at how we could use the rotation of the water and the different flows that arise within the pump to eject the particles, preventing them from reaching the impeller neck," says Martin Lindskog, who led development efforts at ITT Flygt. "We discovered that a modified closed impeller and spiral groove combine to generate forces that reduce the accumulation of material. This is the principle behind Dura-Spin."

**Initial tests** – 100 hours of operation with 40 percent solid particles – show that the new design with a closed pump impeller and a spiral groove doubled durability under normal operating conditions. When the pump runs dry, the new design can increase the operational lifetime of the pump by as much as 500 percent.

"When there is not enough water to pump, stones and other material causing wear gather in the immediate vicinity of the pump impeller. There is insufficient water to lead the material away from the housing and the stones churn around inside, transforming the equipment into a grinder. Wear increases dramatically and, in the end, this affects the perform-

ance of the pump," says Lindskog.

"If we consider how often dewatering pumps run dry, it is obvious that the new design has a great impact on the lifetime of the pump," he says.

The goal of optimum durability, which has characterised development efforts for the new pump series, has resulted in further improvements. For example, in the new pumps, water is redirected in its onward flow from the



Martin Lindskog has led the development of ITT Flygt's new series of dewatering pumps.

pump housing in such a way that its impact on the casing is minimised. A rubber guide vane directs the flow of water, sparing the internal walls of the pump.

"We have taken a holistic view of durability. We cannot base our solutions on passing the problem along. The new pumps will be more durable throughout the whole pump," says Lindskog. 