

DigiForte, A new development in slice lip control efficiency

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INTRODUCTION:

In the paper industry, precision and cost-efficiency are essential for maintaining quality and productivity. Profiling actuators are critical components in slice control systems of a headbox, directly impacting paper quality and production output. While upgrading from manual adjustment to automated slice control is already an effective way to enhance basis weight uniformity, there remains a need to further optimize costs while improving processes to achieve peak performance.

DigiForte, a recent addition from Tasowheel, represents an effort to address this challenge. Building on the established Forte (slice control) actuator series, DigiForte integrates practical design updates and new features while maintaining affordability. Its development responds to the industry's demand for tools that improve performance with a fast return of investment.

Addressing Industry Needs

The development of DigiForte was guided by the need for actuators that strike a balance between performance and cost. While traditional actuators are often effective, accurate and durable their pricing can limit accessibility for cost-sensitive applications.

"We aimed to reduce production costs while preserving reliability," explains Joakim Stenius, Senior Product Manager at Tasowheel. This approach influenced both the design and manufacturing processes, resulting in a product tailored to practical industry requirements.

Enhancements in Functionality

DigiForte introduces several notable features, including a digital display that replaces the traditional mechanical dial gauge used to show piston position. This display provides both the relative and absolute positions of the actuator, offering more comprehensive operational data.

"The first goal was to replace the mechanical device with a digital one while maintaining the same compact enclosure," says Stenius. The digital display also incorporates a magnetic field sensor, enabling operators to easily reset the relative position using a handheld magnet holder. This enhancement improves usability by reducing the need for physical adjustments.

The display design prioritizes user convenience, featuring a screen positioned at a 45-degree angle for optimal visibility in challenging operational environments. "We focused on making the actuator as user-friendly as possible, particularly in terms of readability and zeroing," notes Design Engineer Teemu Niskanen.

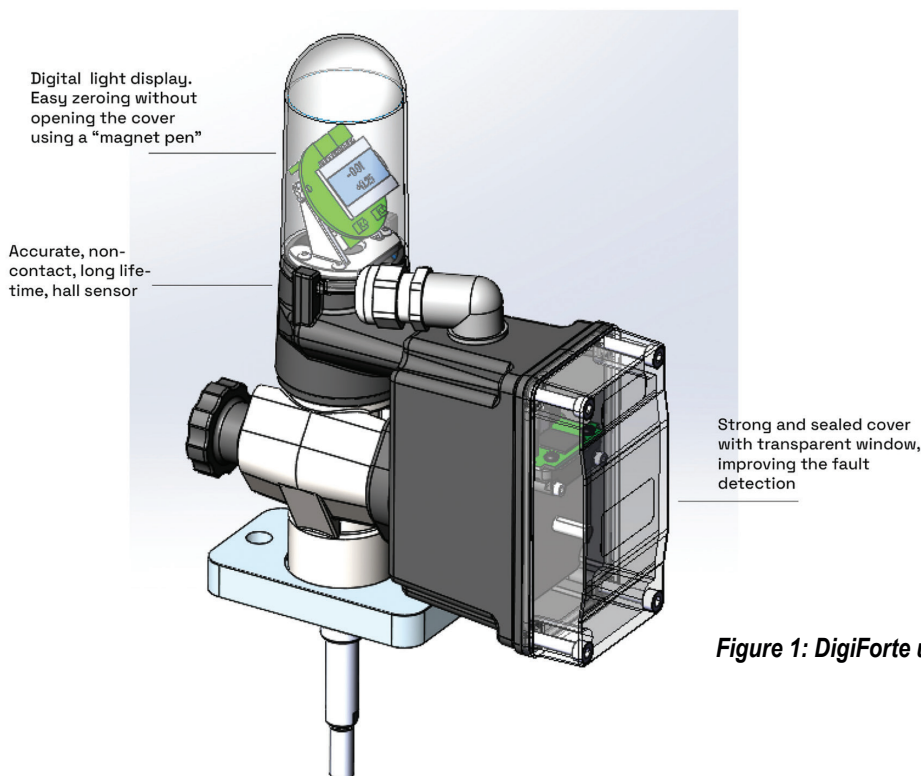


Figure 1: DigiForte user benefits.

Durable and Compact Design

DigiForte's housing reflects advancements in material selection and design. Manufactured using engineering-grade thermoplastic reinforced with glass fibers, the enclosure offers high stiffness, dimensional stability, and resistance to environmental factors like chemicals and moisture, while reducing overall weight. These properties make it suitable for demanding industrial settings, such as paper mills.

"This material is commonly used in automotive and marine industries," says Niskanen. "The enclosure cover features an integrated gasket, providing durable sealing against external elements."

Future possibilities

Future developments for DigiForte include plans for IoT compatibility, enabling integration with modern communication protocols like Ethernet and NFC. These updates could allow operators to perform diagnostics, adjustments, and maintenance tasks through smartphones or other smart devices. Additionally, the next step is to integrate the display into the actuator to minimize the height, further enhancing its compactness and versatility.

"Looking ahead, we see DigiForte as the start of a new wave of actuator design," says Stenius. "By embracing modern tools, we're not just improving performance but also simplifying installation, servicing, and repair."

Practical Solutions for Evolving Needs

DigiForte combines features that enhance usability, durability, and cost-efficiency. With its compact design, advanced display functionality, and future adaptability, it offers a practical solution for addressing the evolving demands of the paper industry.

By focusing on incremental, meaningful improvements rather than complex transformations, DigiForte exemplifies how thoughtful engineering can address industry challenges effectively and sustainably.

Tasowheel Oy

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Figure 2: DigiForte actuators installed side by side.

