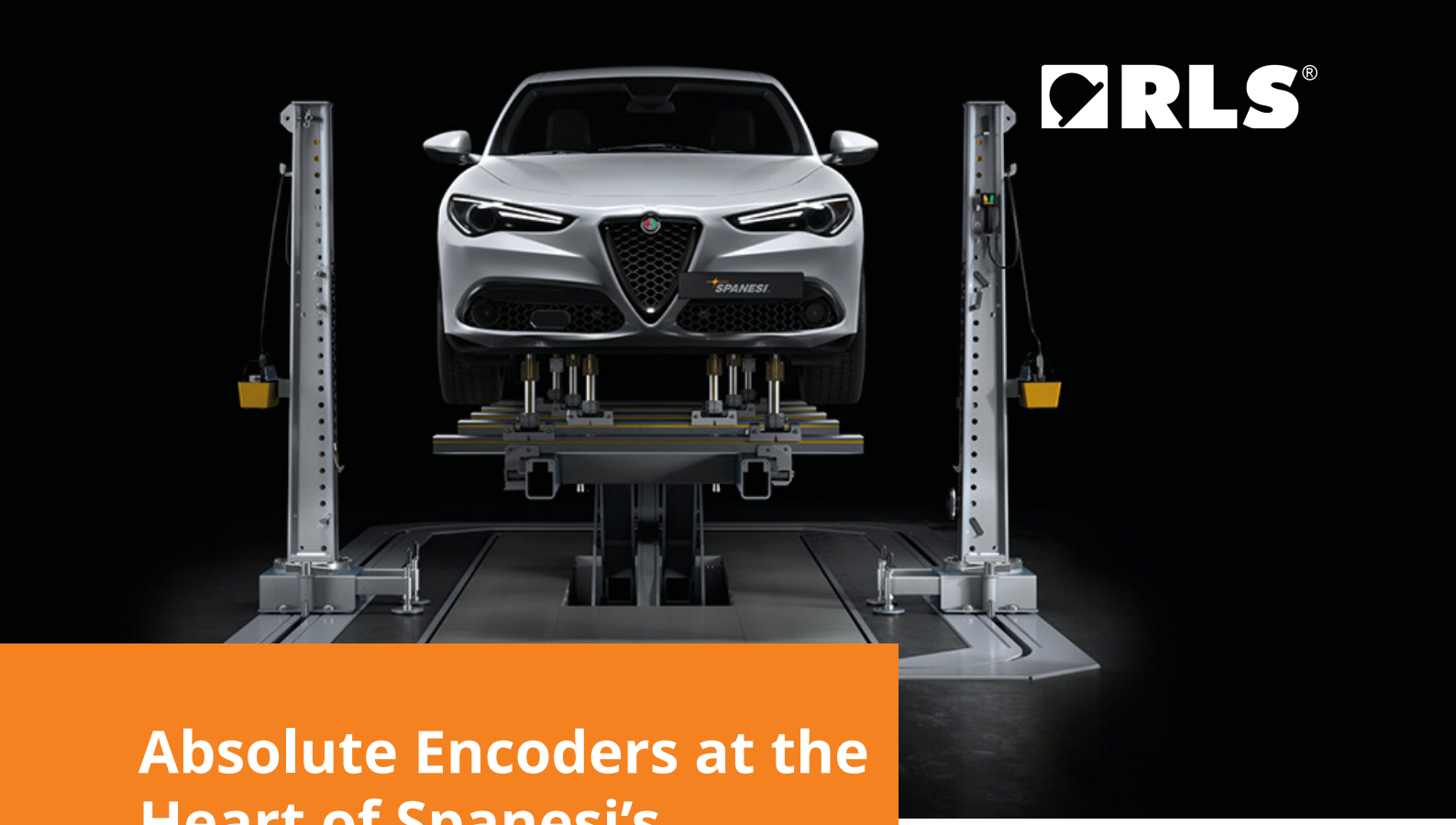


Absolute Encoders at the Heart of Spanesi's Next-Gen Repair Arm

CASE STUDY

Customer:

Spanesi S.p.A., Italy

Industry:

Automotive

Challenge:

Reducing weight and increasing measurement precision in a manually articulated electronic measurement arm.

Solution:

AksIM™ off-axis rotary absolute magnetic encoder

BACKGROUND

Spanesi, a leading Italian manufacturer of automotive body-shop equipment, has built its reputation over the decades by supplying high quality solutions, including spray booths, frame machines, lifts, vacuum systems and electronic measuring instruments.

One of its flagship products is the Touch electronic measuring system, which plays a crucial role in assessing collision damage and verifying proper repair alignment. By accurately identifying both visible and hidden structural problems, the system ensures that technicians can carry out comprehensive repairs.

The Touch system is designed to provide a complete analysis of the vehicle damage and ensure that the repair meets OEM specifications. This gives both technicians and vehicle owners confidence in the quality of the work.

Since its launch in 1999, the system has continued to evolve, incorporating technologies such as USB and Bluetooth to meet the demands of today's repair environment.

Touch automotive repair

CHALLENGE

The intuitive user interface and user-friendly design make Touch the ideal choice for automotive body shops looking for a high-quality system that can be used stand-alone or integrated with a frame machine. With two different models and optional accessories, it can be customised to meet any specific requirements to ensure optimum performance and efficiency.

Touch software

Despite these advances, Spanesi's customers increasingly expressed a desire for a lighter and more ergonomic measuring arm. Although the original Touch arm was precise and durable, it was based on optical encoders and weighed almost 22 kg. To fulfil this feedback, Spanesi initiated a complete redesign of the system. The objectives were clear: to significantly reduce the weight of the arm, improve its measurement precision and modernise its functions for better usability and integration.

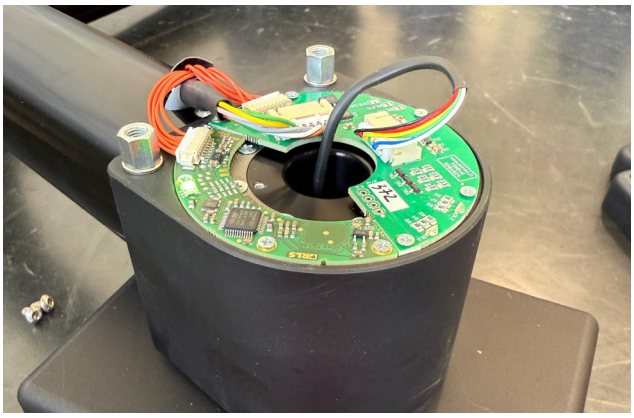
Comparison of Touch's redesign

SOLUTION

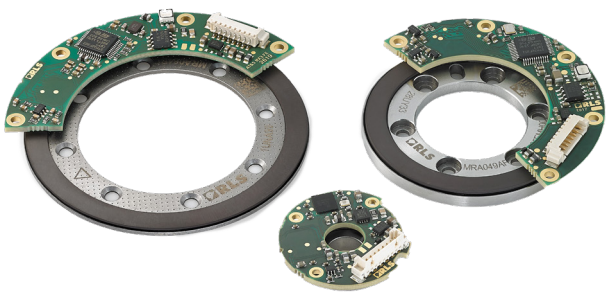
A decisive breakthrough in this new concept was the decision to replace the existing optical encoders with **RLS AksIM absolute magnetic encoders**. This change brought several advantages. The magnetic sensing technology enabled a more compact and non-contact design, which directly contributed to reducing the overall mass of the system.

The AksIM encoder has a through-hole that allows for efficient internal cable routing, which simplifies mechanical mounting and contributes to the arm's slim profile. Unlike relative optical encoders, absolute magnetic encoders do not require resetting upon startup, enabling immediate operational readiness and reducing downtime.

The switch to magnetic encoder technology, along with the use of new materials and a more modern mechanical design, has resulted in a 51 % reduction in the overall weight of the Touch arm. The redesigned system now weighs only 10.7 kg (previously 21.9 kg), which simplifies all touch arm positioning operations. Precision also improved by 10 % ensuring that the Touch remains a trusted instrument for accurate damage assessment and repair verification.



AksIM encoder in the Touch arm's joint



AksIM encoder family

POSITION FEEDBACK BY AKSIM

AksIM is a high performance absolute rotary encoder designed for applications with limited installation space, making it ideal for integration into articulated arms like Spanesi's, where weight reduction and space efficiency are critical. The product range includes various ring and readhead sizes, making it highly adaptable for customization and seamless integration into diverse systems. The AksIM series delivers resolutions of up to 21 bits, ensuring precise and reliable position feedback.

Thanks to its integrated self-monitoring system, the AksIM continuously checks internal parameters and can report errors or status conditions. Error reports, warnings and other status signals are available on all communication interfaces and visualised with the on-board LED. It supports standard serial protocols such as BiSS C, Asynchronous serial (UART), SPI, PWM or SSI communication interfaces making it compatible with a wide range of motion controllers.

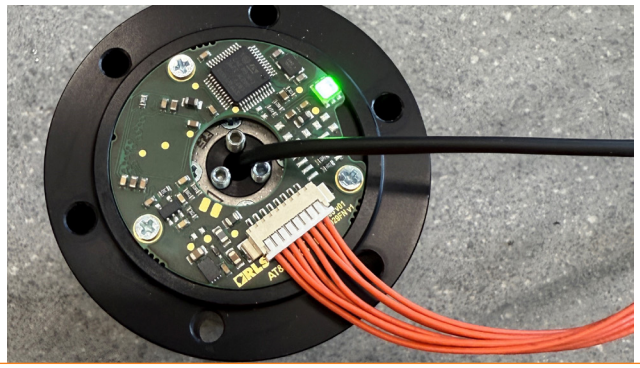
In addition, its immunity to external magnetic fields ensures stable and interference-free operation. It offers system accuracy from ±0.004° to ±0.020° and maxium speed up to 10,000 rpm.

RESULTS

According to Spanesi's engineering team, the support of RLS was critical to the successful implementation of this new encoder system. They reported that the AksIM encoders were reliable during extensive testing and easily integrated with the newly developed hardware platform.

The switch from optical to magnetic encoders enabled a complete redesign of the Touch arm. The result is a tool that is not only lighter and more accurate, but also more user-friendly and customisable. Spanesi's partnership with RLS played a crucial role in transforming the Touch into a next-generation measurement instrument. It demonstrates how the choice of smart components, such as the use of advanced magnetic encoder technology, can have a profound impact on product performance and user experience.

> *RLS provided very good support, especially when we encountered challenges during implementation.*
>
> *Andrea Siviero, Data controller at Spanesi*



FUTURE GOALS

Spanesi continues to lead in automotive repair technology, combining mechanical excellence with electronic intelligence.

ABOUT SPANESI

Spanesi S.p.A., founded in Italy, is a globally recognized innovator in bodyshop equipment. With a long tradition of technological leadership, Spanesi supports repair facilities worldwide with solutions that combine mechanical precision, electronic intelligence, and operator usability.

For more information visit **spanesi.com.**

ABOUT RLS

RLS is a Renishaw associate company. RLS produces a range of robust magnetic rotary and linear motion sensors for applications such as industrial automation, metalworking, textiles, packaging, electronic chip and board production, robotics and more.

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