

Safety starts **with control**

Functional safety certified encoders

LEINE  LINDE

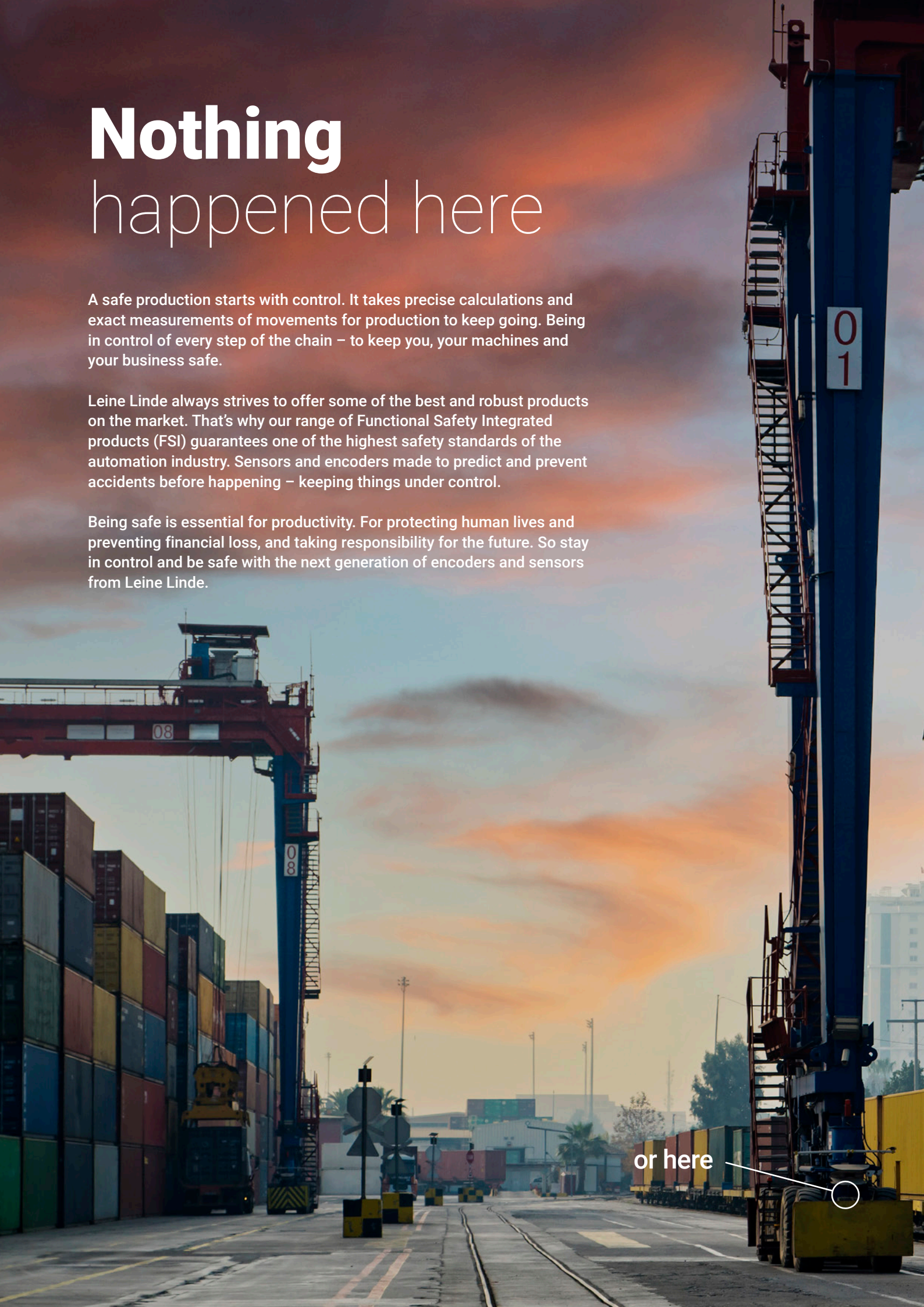
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A safe production starts with control. It takes precise calculations and exact measurements of movements for production to keep going. Being in control of every step of the chain – to keep you, your machines and your business safe.

Leine Linde always strives to offer some of the best and robust products on the market. That's why our range of Functional Safety Integrated products (FSI) guarantees one of the highest safety standards of the automation industry. Sensors and encoders made to predict and prevent accidents before happening – keeping things under control.

Being safe is essential for productivity. For protecting human lives and preventing financial loss, and taking responsibility for the future. So stay in control and be safe with the next generation of encoders and sensors from Leine Linde.

or here





or here



We are Leine Linde

– your experts in functional safety certified encoders

Safety is our priority

At Leine Linde, we are the experts in functional safety encoders. The best encoders are those you never have to think about. Those that simply do their job – year after year. We develop and manufacture customized encoder solutions for demanding environments, advanced measuring systems for accurate feedback of speed and position.

Rigorous testing

All our safety products undergo rigorous testing at every step of the design and production process. This thorough approach ensures that our products meet the highest safety regulations and standards. From initial design to final assembly, each component is carefully checked to guarantee reliability and performance in the most demanding environments.

Certification standards – SIL and PL

There is a growing awareness of the standards regarding safety, and most companies are using standards ISO 13849-1 and/or IEC 62061. ISO focuses mainly on mechanical engineering and the value is called PL. IEC focuses more on electronics and electronic systems and the safety level is called SIL.



A reliable partner

Leine Linde is a robust and reliable safety partner, guaranteeing:

- High quality
- Delivery excellence
- Customized solutions
- From 24h delivery

Our FSI offer

– features & benefits

In our FSI range, functional safety is built into the product. The products are designed and manufactured to meet the highest demands, where precision and safety are essential. The FSI series offers a wide range of features and functions – along with many valuable benefits.

High-quality components

Built with durable materials, such as anodized aluminium and stainless steel, our FSI products ensure reliability in tough industrial environments. This reduces the risk of failures that could affect safety.

Precision and accuracy

Achieve precise control and monitoring of values and equipment. This minimises errors, helps prevent accidents, and ensures machinery runs within safe limits.



FSI 608 – safety for automation

This is the FSI 608 – one of our absolute multiturn inductive FSI encoders – with PROFIsafe communication. It fulfils the latest safety requirements and is certified up to SIL3/PLe.



FSI 600 SERIES
Safety for automation



FSI 800 SERIES
Safety for motors
and drives



FSI 900 SERIES
Independent
safety system



FSI 900 YAWMO
Independent
safety system

Safe communication with PROFIsafe

Supports most communication protocols. This allows secure and reliable transmission of safety-critical information between machines and systems.



Compliance with safety standards

Designed to meet international safety regulations, such as IEC 61800-5-3. This standard defines requirements for functional safety encoders and ensures safe, reliable operation.

Redundant scanning technique

A reinforced scanning system with several independent layers in the same encoder provides backup. This increases reliability in position and motion feedback.

The FSI product range – specifications

Learn more about our range of FSI encoders below. These solutions are well-known for their outstanding durability and precision, making them the ideal choice for functional safety systems.



FSI 600 SERIES: Safety for automation

Safety starts with control and with the FSI 600 series we give the industrial automation values for position, speed, acceleration and standstill for a machine in a safe environment.

TECHNICAL DATA

Shaft	Solid shafts with key Blind hollow-shafts w. keyway
Functional safety level	SIL3/PLe, Category 4
Possible measured values	Position, speed, acceleration, standstill
Supported safety functions	Safe switch-off: STO, SBC Safe standstill: SS1, SS2, SOS Safe motion: SLS, SSR, SDI, SLA, SAR Safe monitoring: SSM Safe positioning: SLI, SLP, SCA, SAP, SSV, SAV
Process feedback	PROFIsafe (PROFINET)
Free scalable resolution	Yes
Safe absolute resolution	31 bit (19 bit ST + 12 bit MT)
Safe absolute accuracy	± 0.89°



FSI 800 SERIES: Safety for motors and drives

Mounted on motors for speed measurement and connected to a frequency drive. The encoder square wave signal is monitored and enters a safe state if any faults appear.

TECHNICAL DATA

Shaft	Solid shafts with key Blind hollow-shafts w. keyway
Functional safety level	SIL2/PLd, Category 3
Possible measured values	Speed, acceleration, standstill
Supported safety functions	Safe switch-off: STO, SBC Safe standstill: SS1, SS2, SOS Safe motion: SLS, SSR, SDI, SLA, SAR Safe monitoring: SSM Safe positioning: SLI
Process feedback	HC-HTL 6channels (9-30 Vdc supply and output) (HC - High current HTL for long transmission)
Safe incremental resolution	500 - 5000 ppr

Want to know more? Scan the QR code to explore our full range of safety products



leinelinde.com/safety



FSI 900 SERIES: Independent safety system

Used for defining and monitoring the machine to keep within safe position, speed, acceleration or if the machine slip from the standstill position. FSI 98x has integrated encoder, controller, communication and safe relay outputs, an all-in-one solution that makes it easy to create a safe environment in and around machines.

TECHNICAL DATA

Shaft	Solid shafts with key Blind hollow-shafts w. keyway
Functional safety level	SIL2/PLd, Category 3
Possible measured values	Position, speed, acceleration, standstill
Safe accuracy	Position: $\pm 0.89^\circ$ Speed: $\pm 1\%$ (± 1 rpm < 60 rpm) Acceleration: ± 0.2 rad/s ² Standstill: Configured in FSI Monitor
Supported safety functions	Safe switch-off: STO, SBC Safe standstill: SS1, SS2, SOS Safe motion: SLS, SSR, SDI, SLA, SAR Safe monitoring: SSM Safe positioning: SLI, SLP, SCA
Process feedback	PROFINET LL.EnDat for gateway communication RS-422 (18-30 V / 5 V) HTL (18-30 V / 18-30 V)
Absolute resolution	31 bit (19 bit ST + 12 bit MT)
Incremental resolution	1 - 16384 ppr



FSI 900 YAWMO: Independent safety system

Used for defining and monitoring the machine to keep within safe position, speed, acceleration or if the machine slip from the standstill position. FSI 98x YAWMO has integrated encoder, controller, communication and safe relay outputs, an all-in-one solution that makes it easy to create a safe environment in and around machines.

TECHNICAL DATA

Shaft	Pinion wheel
Functional safety level	SIL2/PLd, Category 3
Possible measured values	Position, speed (max 100 rpm), acceleration, standstill
Safe accuracy	Position: $\pm 0.89^\circ$ Speed: $\pm 1\%$ (± 1 rpm < 60 rpm) Acceleration: ± 0.2 rad/s ² Standstill: Configured in FSI Monitor
Supported safety functions	Safe switch-off: STO, SBC Safe standstill: SS1, SS2, SOS Safe motion: SLS, SSR, SDI, SLA, SAR Safe monitoring: SSM Safe positioning: SLI, SLP, SCA
Process feedback	PROFINET LL.EnDat for gateway communication RS-422 (18-30 V / 5 V) HTL (18-30 V / 18-30 V)
Safe absolute resolution	31 bit (19 bit ST + 12 bit MT)
Safe incremental resolution	1 - 16384 ppr

We're here to help!

At Leine Linde, we take great pride in giving personal support.
For further information regarding our encoders and functional safety,
please contact your nearest distributor or call us at +46-(0)152-265 00.

The wide range of encoder variations is always available at
www.leinelinde.com

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