



# **GEARD CAM LIMIT SWITCHES**

FOR WIND TURBINES





PRODUCT CATALOG

# **Stromag**

# DECADES OF EXPERIENCE

**Across Industries and Applications** 



Founded in 1932, Stromag<sup>™</sup> has grown to become a globally recognized leader in the development and manufacture of innovative power transmission components for industrial drivetrain applications.

Stromag engineers utilize the latest design technologies and materials to provide creative, energy-efficient solutions that meet their customer's most challenging requirements.

Stromag's extensive product range includes flexible couplings, disc brakes, limit switches, an array of hydraulically, pneumatically, and electrically actuated brakes, and a complete line of electric, hydraulic and pneumatic clutches.

Stromag engineered solutions improve drivetrain performance in a variety of key markets including energy, off-highway, metals, marine, transportation, printing, textiles, and material handling on applications such as wind turbines, conveyor systems, rolling mills, agriculture and construction machinery, municipal vehicles, forklifts, cranes, presses, deck winches, diesel engines, gensets and stage machinery.

VISIT US ON THE WEB AT STROMAG.COM



**Product overview** 

#### CONTROLS & SENSORS FOR PITCH AND YAW DRIVES IN WIND TURBINES

#### SAFE - PRECISE - RELIABLE

For decades, the Stromag has been a soughtafter partner in the mechanical drive engineering sector. Attractive, tailor-made and cost-effective solutions combined with products of a high standard of quality guarantee optimum customer benefits.

Stromag has been producing gear-type and spindle operated limit switches for over 50 years and has been active in this market globally since the introduction of wind power technology.

With a wide range of different types of gear systems, switching contacts and metal and polycarbonate housings, Stromag offers customized solutions for every application and is an indispensable partner for geared cam limit switches in the wind turbine market.

The various combinations of geartype limit switches with analogue or digital position feedback systems are integrated into flexible housing constructions for precise operation of PITCH and YAW drives.

#### SAFETY FOR EVERY APPLICATION

Assembly at wind turbine manufacturers must be highly effective and efficient and the employed sequences must be uncomplicated and fast. For this purpose, compact, preadjusted components are used as far as possible which can be assembled quickly and easily.

Stromag geared cam limit switches are especially designed to meet these requirements. These mechanical switches for reliable travel limitation and highly precise position feedback systems for exacting position control of the blades or nacelle are integrated in one housing. Supplying pre-adjusted components ensures that mechanical assembly is reduced to a few screws and electrical connection is quick and uses easy identification for plug connection.

The mechanical mounting options and electrical connections are developed and optimised in close co-operation with the design departments of wind turbine manufacturers.

Service-friendly pre-set configured switch-off points by adjustable pinion wheels



#### **Product overview**

STROMAG GEARED CAM LIMIT SWITCHES FOR YAW DRIVES ARE ESPECIALLY DESIGNED TO STOP THE ROTARY MOTION OF WIND TURBINES SAFELY



#### LIMIT SWITCHES FOR YAW DRIVES

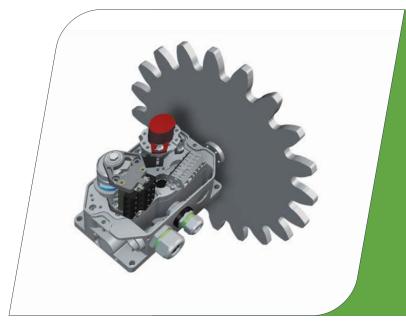
The mechanical switching contacts for stopping the rotary motion of the nacelle by means of predefined end positions in form of cable anti-twist protection and diverse position feedback systems with analogue (e.g. potentiometers, shaft encoders or similar) or digital (e.g. absolute encoders, incremental encoders or similar) sensors for YAW drives are integrated in one housing. Customized pluggable solutions ensure quick and easy installation. We are happy to develop together with our customers special cam configurations for Gray code binary systems, for example.

We support our customers in every stage of development with modern 3D design techniques in order to offer the benefit of our extensive expertise in the applications of our geared cam limit switches for wind turbines at an early stage. This also extends to making recommendations for possible mounting variants or supporting bracket solutions or to include them in our scope of supply.

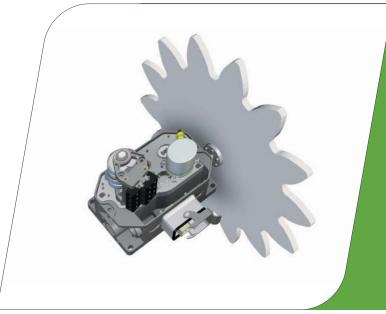
#### **BENEFIT INCLUDES**

- Quick and safe integration of encoder elements for positioning detection
- Housing with high degree of protection up to IP66
- Analogue signal with potentiometer (0-10V DC or 4-20mA), rotating synchronous with cam discs
- Incremental encoder solutions (pure count signal with channels A B, 0, as well as inverted channels) 1:1 via bevel gear stage from switch input shaft
- High-end solution with directly driven absolute encoders, integrated in housing or mounted externally on extended shaft
- Customized cam disc angle (e.g. detection of rotation direction, Gray code system, software limit switches for normal switch off and hardware switches for EMERGENCY shutdown)
- Up to 8 switching contacts in one housing
- Increased safety with positive opening NC contacts
- 3D design support for customized mounting solutions

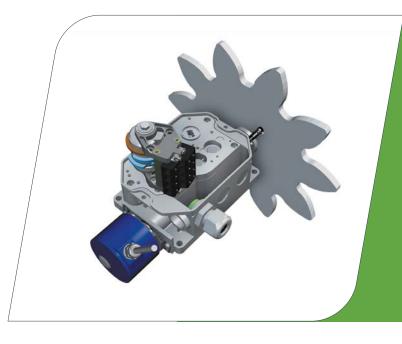
### **Product overview**



Stromag Light Cam<sup>®</sup> with integrated potentiometer



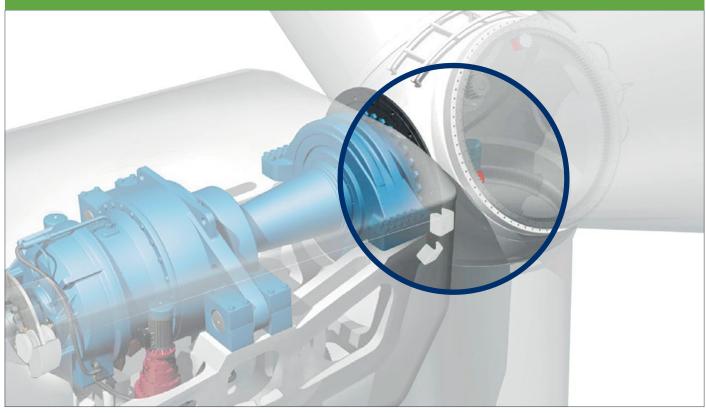
Stromag Light Cam<sup>®</sup> with directly driven incremental encoder and easy identification for plug connection



Stromag Light Cam<sup>®</sup> with directly externally driven absolute encoder

#### **Product overview**

STROMAG GEARED CAM LIMIT SWITCHES FOR YAW DRIVES ARE ESPECIALLY DESIGNED TO STOP THE ROTARY MOTION OF WIND TURBINES SAFELY



#### LIMIT SWITCHES FOR PITCH DRIVES

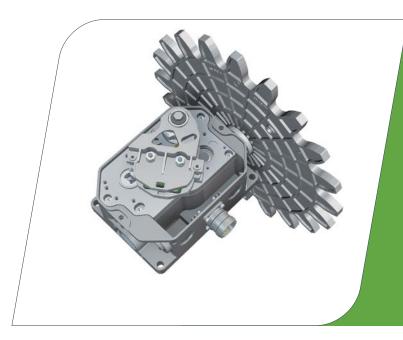
The mechanical switching contacts and high-precision single-turn or multi-turn absolute encoders for pitch drives are integrated in one housing. In addition to safe switch-off in the limit positions, the absolute blade position in wind operation is signalled to the control via 1:1 driven encoders. The use of pretensioned, also in combination with Wheel adjustments, ensures a backlash-free rotary motion from the ball joint to the input shaft of the encoder. Customized easy to use plug solutions can also be provided for pitch switches for quick and easy installation.

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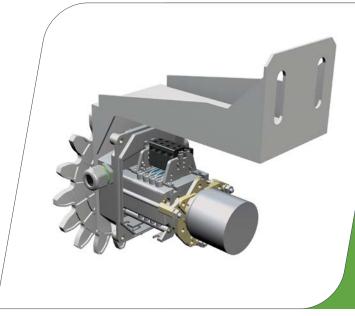
#### **BENEFIT INCLUDES**

- Service-friendly, cost-optimised and safe installation
- Preconfigured plug and run connections
- Preadjustable configured switch off points in conjunction with pinion wheels with the option of precise switching point gear adjustment available on request
- Repeatable switching points
- Maximum precision with easy and safe adjustment
- Easy, backlash-free integration of directly driven encoders
- Excellent ergonomics and easy handling on mounting and commissioning
- Easy alignment during installation
- Use of pre-tensioned pinion wheels for backlash-free drive of absolute encoders
- Housing with high degree of protection up to IP66

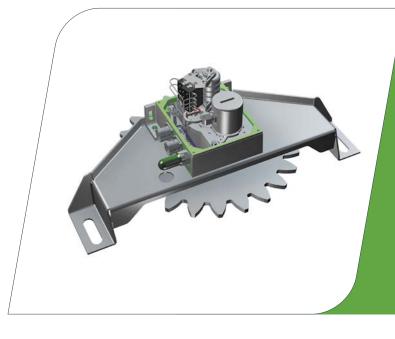
# **Product overview**



Stromag Light Cam<sup>®</sup> with one switching contact for safe stopping



51 series with directly driven absolute encoder alternatively as MT or ST solution



WKA with absolute encoders and LED signalling



# **Stromag**

stromag.com

Germany Hansatraße 120 59425 Unna - Germany +49 2303 102 - 0

regalrexnord.com

The proper selection and application of products and components, including assuring that the product is safe for its intended use, are the responsibility of the customer. To view our Application Considerations, please visit <a href="https://www.regalrexnord.com/Application-Considerations">https://www.regalrexnord.com/Application-Considerations</a>.

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