Braking Systems for Flat-Top and Luffing Cranes
STROMAG PROVIDES COMPLETE BRAKING SYSTEMS FOR FLAT-TOP AND LUFFING TOWER CRANES

Stromag offers standard or fully customized braking system solutions to meet the safety requirements of the hoisting cranes.
Stromag develops and provides a large range of technically advanced brakes, hydraulic power packs, controls and sensors to ensure safety of modern concept cranes as flat-top cranes and luffing-jib tower cranes.

Tower cranes are configured in a wide variety of ways to perfectly adapt to the needs of each application such as building or offshore. Configurability and versatility of Stromag products provide braking system solutions adapted to each tower crane whatever their capacity or working conditions:

- Robustness and reliability of our brakes systems enable very low maintenance costs.
- For specific applications as offshore cranes, the crane driver can pilot different braking modes through the remote-control panel of the installation: the Stromag CSH Hydraulic Power Packs allow modular braking force application and can be delivered with an electrical control unit specifically adapted to the customer request.
- Stromag offers turnkey braking systems:
  - Service brakes: NFF brakes directly mounted on the motor shaft
  - Emergency brakes: SHD9 or SHD5A brakes mounted on the rope drum(s) for hoisting and boom controls
  - Hydraulic Power Packs: CSH HPP associated to SHD calipers, with electrical control unit on request
  - Gear Cam Limit Switches: Light Cam® to control the lifting positions.

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STROMAG BRAKING SOLUTIONS FOR FLAT-TOP AND LUFFING TOWER CRANES

Calipers Type SHD
SIME Brakes calipers type SHD are fail-safe Disc Brakes with spring application and hydraulic release. SHD9 and SHD5A calipers, associated with a Hydraulic Power Pack type CSH, are an appreciated answer to the technological challenge imposed by lifting equipments.

Their robust construction and simplicity of operation bring high reliability to these calipers. Their compact and light weight design allows an easy mounting in a restricted space. A large braking force range enables the installation of these calipers on multiple equipments:

- **SHD5A**: Dynamic braking force from 15 to 56 kN - Weight: 108 kg
- **SHD9**: Dynamic braking force from 43 to 100 kN - Weight: 148 kg

CSH Hydraulic Power Packs
The CSH Hydraulic Power Packs are designed in different configurations to meet the installation requirements, they enable:

- Soft Braking for lifting and lowering the load: adjustable and progressive application of the braking force with non-application of the full braking force at the beginning of the braking.
- Full Braking for boom or hoisting movements with the possibility to open manually the caliper in case of mains failure.
- Manual Overload Protection System for offshore cranes.

NFF Brakes
Stromag NFF Brakes are Shaft holding and working Brakes. These electromagnetic brakes are fail-safe by spring application and electrically released.

- Comprehensive range 20 - 10,000 Nm
- Simple assembly to motor, no dismantling of brake required
- No setting is required over maximum lining wear
- Sealed inspection holes for air gap and lining wear
- Positive feel hand release mechanism

Light Cam®
Stromag Light Cam® series geared cam limit switches are universal mechanical switching devices which present a large number of input shaft revolutions on the rotation angle of one single revolution of the cam discs.

- Combined worm/spur gears for high gear reductions requiring less mounting space; different, precisely graduated gear reduction
- Cam discs with precise adjustment
- Available with 4 or 8 contacts
- Utilisation of switching contacts for switching voltages of 250 VAC, gold contacts on request
- Installation of potentiometer, incremental or absolute encoders possible.
Flat-top cranes are designed in a large range of heights and capacities. The lack of hammerhead make them a better choice for sites with height restrictions as airports or congested sites where cranes need to overlap.

Stromag Braking systems modularity provides complete solutions for each crane configuration:
- **SHD5A** and **SHD9** calipers offer a large range of braking force
- **SHD** calipers and **CSH** Hydraulic Power Packs can be mounted on a common support adapted to the configuration of the installation.

For offshore applications, the Stromag emergency brakes can be used for Manual Overload Protection System which can be activated in all normal working conditions, accordingly to the standard NF EN 13852.
STROMAG BRAKING SYSTEMS FOR LUFFING TOWER CRANES

Luffing tower cranes are used in building projects where space is limited. A luffing crane can raises or lowers its boom while the hook is positioned on the proper location. Moving the boom pulls the hook up and down or inwards and outwards.

This type of tower cranes is equipped with 2 winches to control hoisting and boom movements: Stromag provide Braking systems and Limit Switches to ensure the safety of the crane operation.

Each winch is fitted with a specific braking system composed of a NFF service brake, a SHD emergency disc brake, a CSH Hydraulic Power Pack and a Light Cam® Limit Switch.

- For the hoisting movement, the emergency braking system allows a smooth braking force application with non-application of the full braking force at the beginning of the braking.
- For the boom movement, the emergency braking system allows application of the full braking force.
STROMAG BRAKING SYSTEMS
FOR MANUAL OVERLOAD PROTECTION SYSTEM

Stromag braking systems bring solutions for Manual Overload Protection (MOPS) operations according to the standard NF EN 13852 with emergency braking solutions. Environmental conditions can lead to driving loads on the crane endangering the installation. The crane driver must be able to activate an emergency system to avoid these overload situations.

- Overload on the crane
- Risk of crashing the crane
- Activation of MOPS system by the crane driver
- Quick response in any operation mode of the crane
- Application of 10 to 20% of the maximum load capacity
- Crane Safety - Maintain of a constant tension on the hoisting wire

Crane Safety - Maintain of a constant tension on the hoisting wire
STROMAG BRAKING SYSTEMS
FOR SOFT AND PROGRESSIVE BRAKING

During hoisting operations (lowering or raising of the load), the Stromag braking systems enable the adjustable and progressive application of the braking force to reduce the dynamic amplification rate of the loads with non-application of the full braking force at the beginning of the braking. Stromag electrical control units offer tailor-made solutions including the control of 3 different modes (MOPS, soft-braking, full braking).

- Risk of loads dynamic amplification during emergency braking
- Hydraulic activation of the soft-braking
- Application of a progressive and smooth braking force
- Application of the full braking force at the end of braking
- Safety of the hoisting operation
  Protection of the crane structure
The Brands of Altra Motion

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