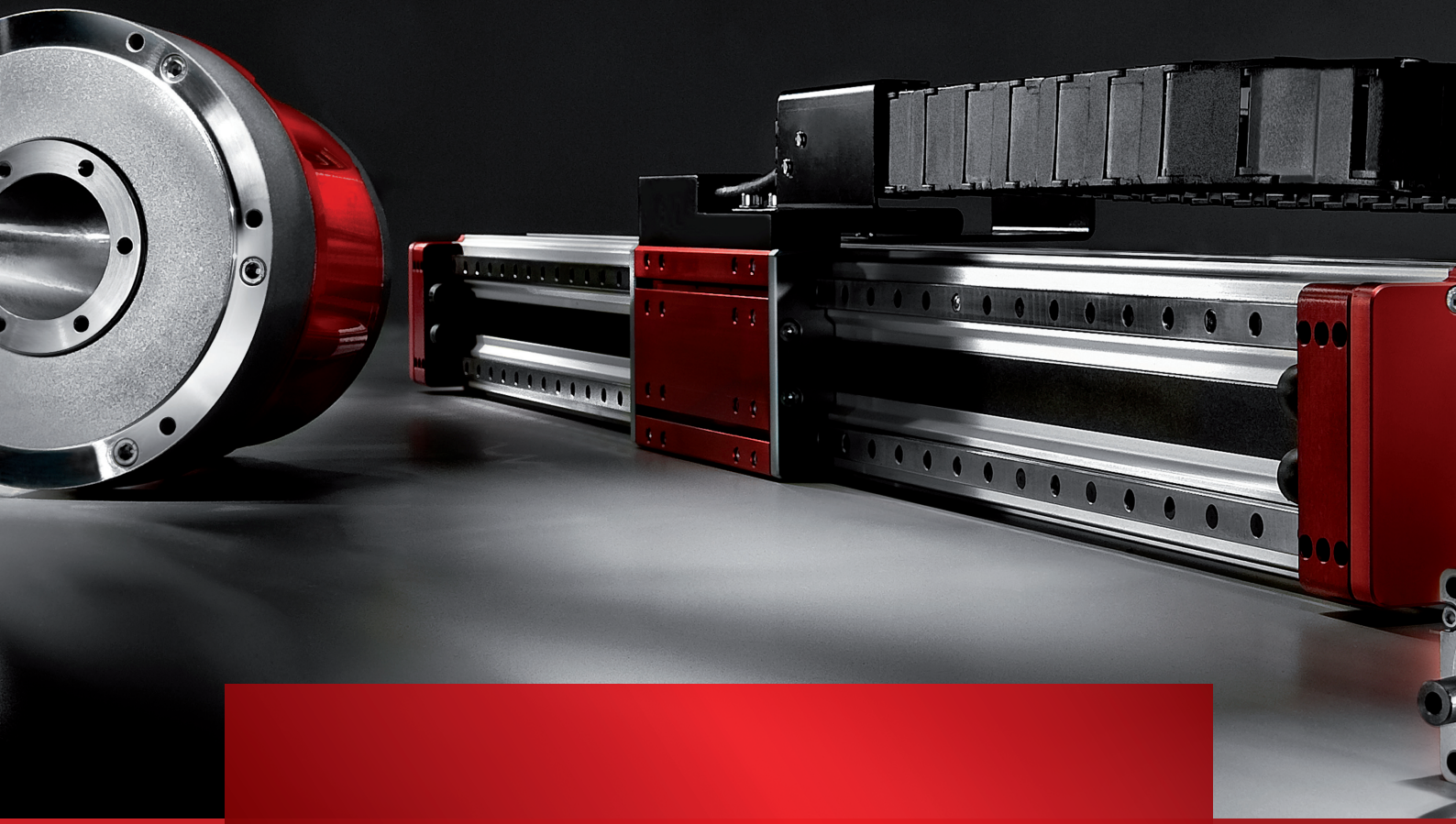


MECHATRONICS



MECHATRONICS

INTRODUCING THE FUTURE OF MOTION TECHNOLOGY

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SEE IT BEFORE IT HAPPENS

**MOTOR
POWER**
COMPANY

**WELCOME TO
MOTOR POWER COMPANY**

The complete technological innovation in movement; solution accomplished with mechatronic skills aimed to the full resolution application: **Material Handling, Material Processing, Measuring and Testing.** The mechatronics division brings decades of experience in solving complex problems at intersection of mechanics, electronics and computers. By combining this depth of creative experience with the latest technology in direct drive motors, CPUs and increasingly fast field buses, we have consistently been able to offer integrated, highly innovative results.



Mechatronics solution are based on **Md² Technology**, an innovative approach to the concept of motion.

Elimination of the usual kinematic chains in favour of direct drive products capable of better performance and greater precision. The results: enhanced efficiency of the production system, greater reliability and proven energy saving.



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ABOUT US. ABOUT YOU.

Motor Power Company's approach to the market to our customers, by way of our know-how and experience is simple: we identify a need and implement a solution. Our long-term investments in the study of motion have created a deep well of knowledge in all aspects of motion technology. The result is an innate ability to come up with original ideas that distinguishes Motor Power Company and allows the design and final performance of our products to stand out in the market.

DIRECT ROBOT

Direct Robot is a ready-to-install-and-program robot, based on direct drive standard linear modules of the series SKA Compact. Direct Robot is the effective solution for high dynamics, high precision applications with relevant load.

RANGE OF APPLICATIONS

MATERIAL HANDLING

- > PICK AND PLACE
- > ORDER PICKING
- > PALLETIZING
- > SORTING
- > PRODUCT STREAM DIVIDING AND GROUPING

MATERIAL PROCESSING

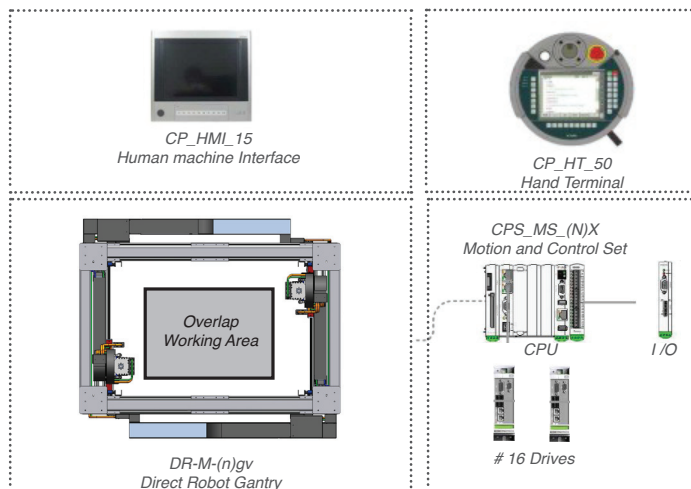
- > ASSEMBLING
- > LASER CUTTING
- > PRINTING
- > DISPENSING

TEST & MEASUREMENT

- > PROBE CARRIER
- > VISUAL INSPECTION

Direct Robot is a full embedded mechatronic device totally enclosed in its mechanical structure and provided with a motion package, including control, cabling and motion libraries. This configuration is specially designed to be integrated directly on the core of the machine or inside the manufacturing line. Direct Robot is available in two main configurations: gantry and slide bar, both featuring main axis X and Y direct drive motion.

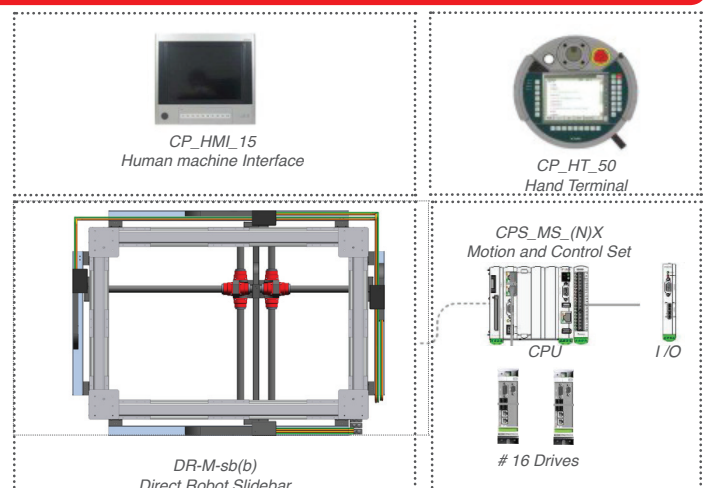
DIRECT ROBOT GANTRY



- > READY TO INSTALL GANTRY ROBOT
- > READY TO PROGRAM CONTROL/MOTION SET
- > CONTROL UP TO 16 SYNCHRONIZED AXIS
- > DOUBLE Y AXIS OPERATION
- > PAYLOAD WITHOUT VERTICAL AXIS 25KG
- > PAYLOAD WITH VERTICAL AXIS 7KG
- > OVERLAP WORKING AREA
- > SUPPLIED WITH USER CABLE

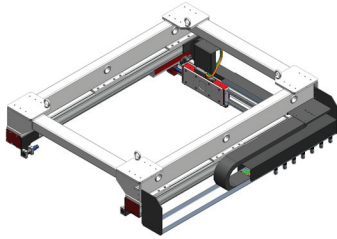
DIRECT ROBOT SLIDEBAR

- > READY TO INSTALL SLIDE BAR ROBOT
- > X AND Y BARS ARE JOINT TOGETHER THROUGH A TECHNOPOLIMER CROSS SLIDING SYSTEM (CROSS MEMBER) WHICH THE END EFFECTOR IS APPLIED TO. THIS ALLOWS UTMOST REDUCTION OF MASSES IN MOTION AND PERMITS HIGH DYNAMICS
- > READY TO PROGRAM CONTROL/MOTION SET
- > CONTROL UP TO 16 SYNCHRONIZED AXIS
- > SUPPLIED WITH USER CABLE
- > PAYLOAD 10KG



DR-M-g

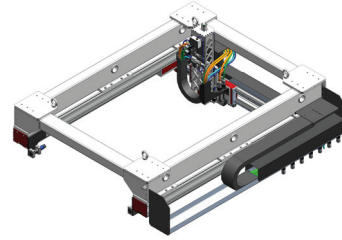
DIRECT ROBOT GANTRY SINGLE Y



> NUMBER OF AXES	3
> MAXIMUM PAYLOAD HANGING DOWN	KG 25
> MAXIMUM DRUGGED PAYLOAD	KG 35
> MAXIMUM STROKE X AXIS	mm 4000
> MAXIMUM STROKE Y AXIS	mm 800

DR-M-gv

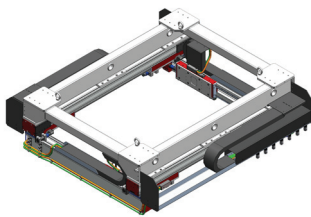
DIRECT ROBOT GANTRY SINGLE Y-Z



> NUMBER OF AXES	4
> MAXIMUM PAYLOAD HANGING DOWN	KG 7
> MAXIMUM DRUGGED PAYLOAD	KG 35
> MAXIMUM STROKE X AXIS	mm 4000
> MAXIMUM STROKE Y AXIS	mm 800
> MAXIMUM STROKE Z AXIS	mm 250

DR-M-2g

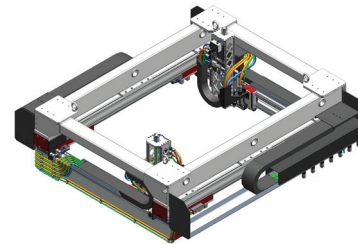
DIRECT ROBOT GANTRY DOUBLE Y



> NUMBER OF AXES	6
> MAXIMUM PAYLOAD HANGING DOWN	KG 25 + KG 25
> MAXIMUM DRUGGED PAYLOAD	KG 35 + KG 35
> MAXIMUM STROKE X AXIS	mm 4000
> MAXIMUM STROKE Y AXIS	mm 800

DR-M-2gv

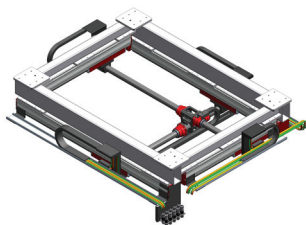
DIRECT ROBOT GANTRY DOUBLE Y-Z



> NUMBER OF AXES	8
> MAXIMUM PAYLOAD HANGING DOWN	KG 7 + KG 7
> MAXIMUM DRUGGED PAYLOAD	KG 35 + KG 35
> MAXIMUM STROKE X AXIS	mm 4000
> MAXIMUM STROKE Y AXIS	mm 800
> MAXIMUM STROKE Z AXIS	mm 250

DR-M-sb

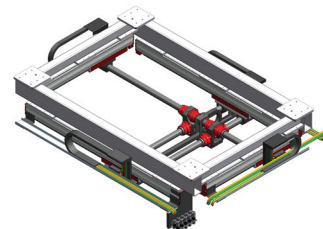
DIRECT ROBOT SLIDE BAR



> NUMBER OF AXES	4
> MAXIMUM PAYLOAD HANGING DOWN	KG 6
> MAXIMUM DRUGGED PAYLOAD	KG 20
> MAXIMUM STROKE X AXIS	mm 1200
> MAXIMUM STROKE Y AXIS	mm 1200

DR-M-sbb

DIRECT ROBOT DOUBLE SLIDE BAR



> NUMBER OF AXES	4
> MAXIMUM PAYLOAD HANGING DOWN	KG 12
> MAXIMUM DRUGGED PAYLOAD	KG 35
> MAXIMUM STROKE X AXIS	mm 1200
> MAXIMUM STROKE Y AXIS	mm 1200

> Direct Robot customized solutions according to specific needs

> Special gripper engineering

SEE IT BEFORE IT HAPPENS

KEY FEATURES

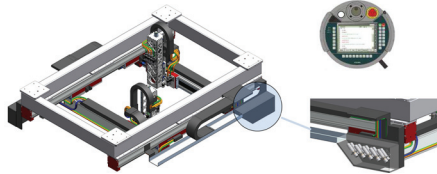


MD² Technology (Mechatronic Direct Drive)

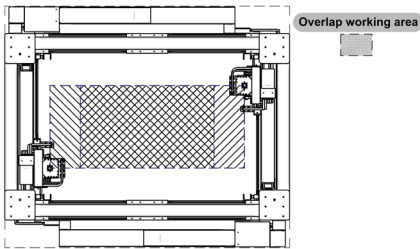
Direct Robot is based on Direct Drive Technology. Mechatronic Direct Drive features real integration of mechanics, electronics, direct drive, control and motion software. The main axis are based on direct drive and are operated through robotic libraries properly set up to exploit the best of the SKA Compact axis performances, by providing a smooth and high dynamic motion.

Ready to install module

Gantry and Slide bar modules are set up and installed on appropriate frame to allow trouble-free shipment and installation on field. Dynamic laying and static laying cables are interfaced through a connector set (IP65) fitted on the frame; this makes cables replacement and maintenance trouble-free.



Hand terminal allows the user to make a fast configuration and movement of the robot axes. The robot configuration will be interfaced later with PLC layer to complete the whole application.

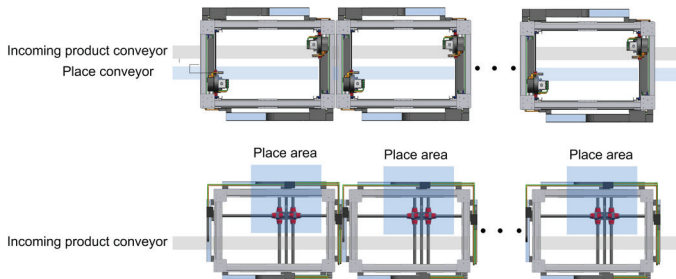
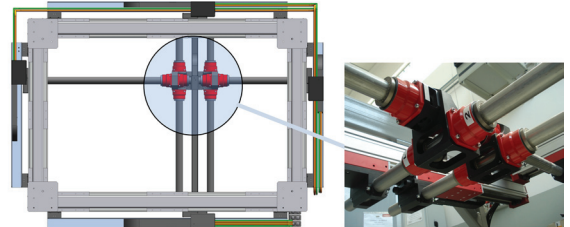


Overlap working area

On “2g” and “2gv” version, end effectors and/or Z axis share the same working area in independent mode to increase throughput still inside a reduced footprint. The motion control set CP-MS-(n)x features inside existing libraries the management of overlapping areas.

Sliding bar architecture

This architecture conceived as parallel kinematic chain, allows main X-Y axis to move directly the payload through the slide bar. It is possible to fit on the sliding assembly any gripper or Z axis. This configuration suits particularly the motion of high payloads in working areas up to 1200x1200mm, with repeatability of 0,5mm.



Modularity

Both Direct Robot versions, Gantry and Sliding Bar, are arranged for modular combination either mechanically then on motion control architecture. Matrix and serial modularity.

Performance

> Gantry reference performances

Model: DR-M-2gv, axis X-Y-Z, nominal load 6,5 kg

Path: X=600mm Y=400mm Z=100mm

50 cycles/minute

>> Conveyor tracking performance

Conveyor speed: 1200mm/s Repeatability: 0,2mm

> Slide bar reference performances

Model: DR-M-sbb, axis X-Y, nominal hanging load 35 kg

Path: X=60mm Y=60mm

222 cycles/minute

>> Conveyor tracking performance

Conveyor speed: 615mm/s Repeatability: 0,5mm

Remark: these specifications are measured on real application. Data might change depending on specific application conditions.

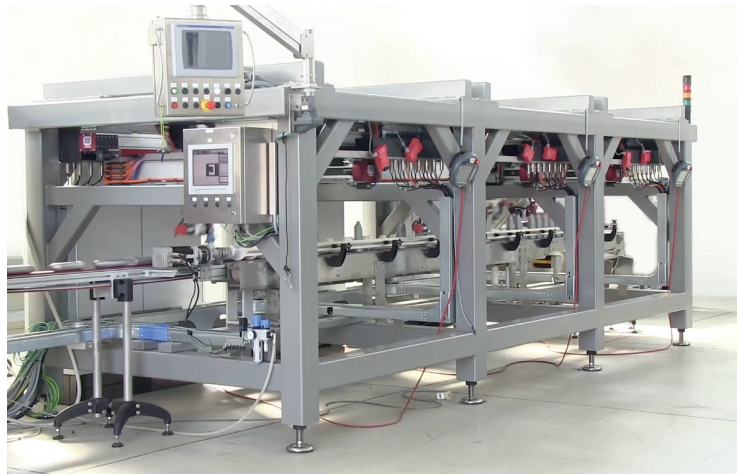
APPLICATION EXAMPLES

UNSCRAMBLING

Direct Robot is applied as unscrambling function for symmetrical and asymmetrical bottles (h:100-350mm)

Feature:

- >> Production up to 3000 ppm
- >> Fast size change through software
- >> Vision system
- >> Modularity
- >> Electrical actuators
- >> Reduced maintenance
- >> Small foot print
- >> Working versatility
- >> X axis maximum acceleration: 20 m/s²
- >> Y axis maximum acceleration: 30 m/s²
- >> Z axis nominal force: 950N @ 1.2 m/s



Strengths:

Performance, modularity and exceptional high flexibility give to Direct Robot all features to be the most advantageous choice to fulfill the application requirements of unscrambling systems.

- >> A special gripper has been specifically realized for the unscrambling system
- >> Smart actuator with 2 axes for the contemporary handling of each end effector
- >> Brushless electrical actuators (Tetra Compact)
- >> Synchronization with vision system for product orientation
- >> Stand up function and bottling rotation for the positioning of all products in all possible configurations, without the using of particular pre-orientation systems

Absolute Z axis:

- >> Worm screw vertical axis
- >> Integrated brake
- >> Brushless electrical actuators (Tetra Compact)
- >> Absolute encoder feedback

GLASS PROCESSING

Direct Robot is applied as gantry single Y configuration in flat glass cutting machines.

Feature:

- >> Fast size change
- >> Modularity
- >> Reduced maintenance
- >> High working speed
- >> X1, X2, Y axes speed: 3 m/s
- >> X1, X2 axes acceleration: 0,7 g
- >> Y axis acceleration: 1,3 g
- >> X1, X2 axis stroke: 6250mm
- >> Y axis stroke: 3700mm
- >> Glass sheet dimensions: 2750 x 3700mm



SKA ARC CIRCLE LINEAR MOTORS

SKA ARC employs the iron core direct drive technology to accomplish round movements on a settled arc, up to 360° complete rotations. The SKA ARC movement can be moving coil, coil in motion and fixed magnetic base, or moving magnets, generally used in systems with rotation higher than 360° .

The modular design of each SKA ARC element enables to employ more units on a single magnetic track, and also to obtain a final torque directly proportional to the number of added modules.

SKA ARC motors replace all transmission mechanical components (as gearboxes, ball screws, racks, belts and pulleys)

- > bypass the limits given by backlash, friction and inertia
- > enhance manufactured throughput and reliability
- > improve motion linearity and precision
- > decrease noise levels
- > distribute power and motion control intelligence in the machine
- > simplify and accelerate the design and assembly of the machine
- > save energy in machine operation
- > reduce costs.

The direct drive technology, used in the SKA ARC curve profile, allows to reach high torque values with reduced encumbrances. Thanks to the system modularity, even by coupling electrically more moving coils, i.e. multiplying the final torque, the motor can utilize a single drive and transducer.

SKA ARC allows:

- > Complete mechanical integration inside the arc
- > Essential and compact design
- > Higher dynamics
- > High accuracy
- > System MTBF increase
- > Quietness
- > Easy Retrofitting

SKA ARC main application fields

- > Robotic
- > Rotary table
- > Tool machines
- > Material Handling
- > Packing machines
- > Carousels
- > Packaging
- > Beverage
- > Pointing systems
- > Telecommunications
- > Radar
- > Defence
- > Inertial platforms
- > Accelerometers



FEATURES

Three models

Work diameter 820 mm

Stall torque from 675 to 1624 Nm

Peak torque from 2030 to 4870 Nm

Angular speed 50 rpm

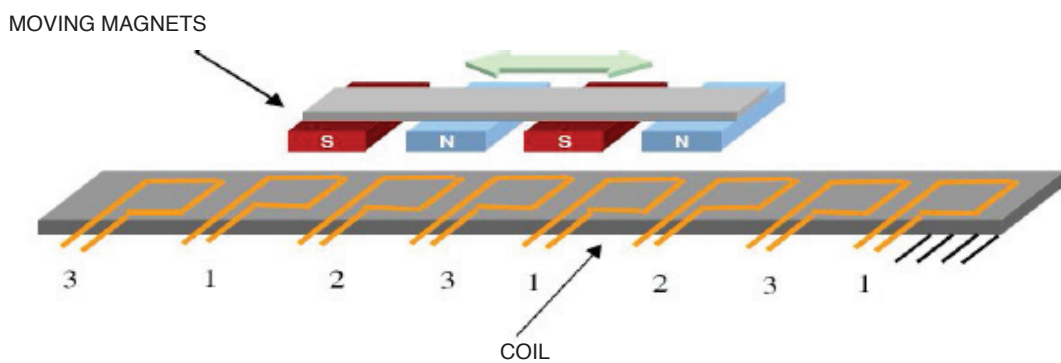
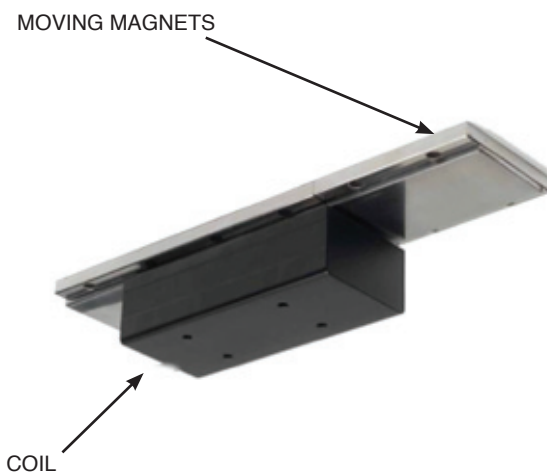
Torque ratings are referred to contemporary run of the three or six external coils mounted outside the magnetic track

LSM LINEAR SYNCHRONOUS MOTORS

LSM is a traction system for sorting machines based on SKA synchronous linear motor. Magnetic tracks are applied under each carrier (moving parts) and they are powered by coils (SKA) distributed along the machine loop.

The sorter traction system allows many advantages:

- > No maintenance
- > High energy saving
- > Drastic noise reduction
- > Accurate velocity control for high precision parcel/luggage loading and unloading
- > Simplified start-up
- > Quick stop
- > Sorter encoder integrate on the LSM equipment (accuracy 8mm)



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MOTORS

MOTION CONTROL

MECHATRONICS

**MOTOR
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