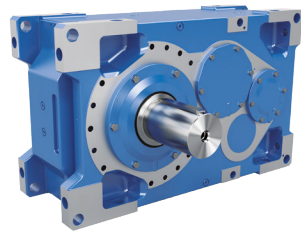


Drive solutions for baggage handling systems

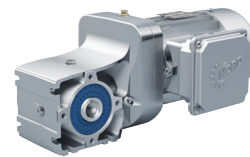
Complete drive systems from a single source



NORD DRIVESYSTEMS Group



Industrial gear units

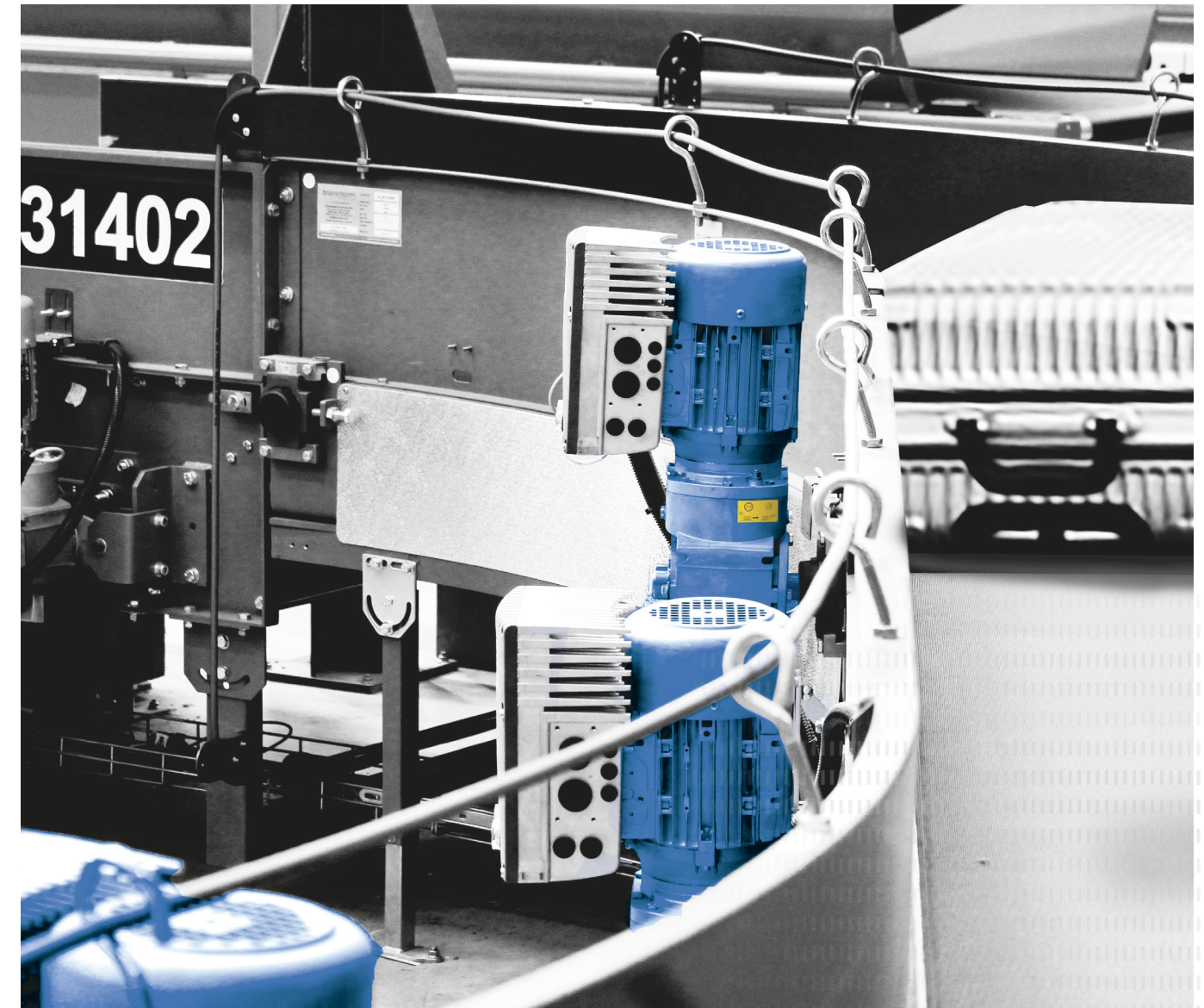


Geared motors



Frequency inverters and motor starters

- ▶ Headquarters and technology centre in Bargteheide, near Hamburg
- ▶ Innovative drive solutions for more than 100 branches of industry
- ▶ 7 production locations with cutting-edge technology produce gear units, motors and drive electronics for complete drive systems from a single source
- ▶ NORD has 48 subsidiaries in 36 countries and further sales partners in more than 50 countries. They provide local stocks, assembly centres, technical support and customer service
- ▶ With more than 4,700 employees worldwide, we create customised solutions



Integrated solutions for the special requirements of baggage handling

- ▶ System solutions specially customised to airport requirements
- ▶ Simple commissioning
- ▶ Global NORD network
- ▶ Plug-and-play systems
- ▶ Easy maintenance/service friendly
- ▶ Lower total costs over product service life
- ▶ Standardisation
- ▶ Innovative and energy-efficient systems
- ▶ Project support



Headquarters in Bargteheide

Motor production

Production and assembly

Motor mounting

Gear unit production

Inverter production

Drive solutions for baggage handling systems

Check-in

The check-in conveyors ensure that baggage is rationally and effectively transported from the check-in counter to the flight operations area.

Lifter

Lifters that dynamically transport baggage are designed to optimise the time between incoming and outgoing delivery to the airlines.

Inclined conveyors

To overcome height differences of up to 20°, drive units with a high overload capacity and brake management are required.

Belt conveyors

Belt conveyors transport baggage items of many different shapes and sizes in all directions.

Vertical diverter

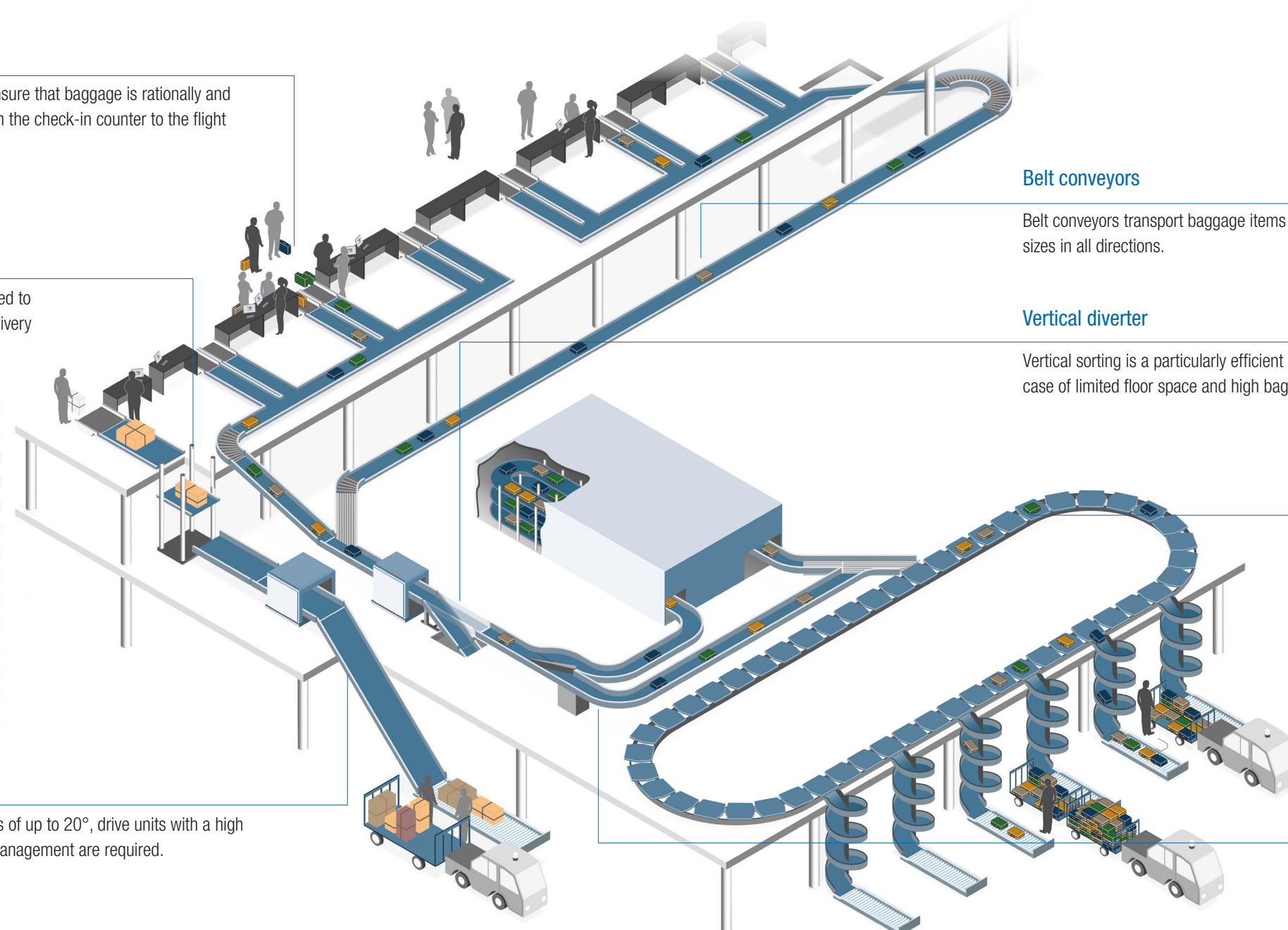
Vertical sorting is a particularly efficient and economical process in case of limited floor space and high baggage volumes.

Sorter

Sorts the baggage item according to their airport of destination

Merger conveyors

Highly dynamic indexer drives place the baggage items on the sorter.



NORD DRIVESYSTEMS is one of the world's leading drive technology companies whose solutions are used in airports on all continents.

Innovative drive solutions from NORD are specifically designed for a wide range of baggage handling applications. We are perfectly familiar with your requirements at airports. Providing reliable technology and top quality service, we do everything we can to improve the public reputation of an airport and thus its success.

We prefer long-term and trusting collaboration with our customers and partners.

NORD DRIVESYSTEMS provides:

- ▶ Extensive application knowledge and technical support
- ▶ Complete drive solutions from a single source
- ▶ Strong global presence and service
- ▶ Thousands of installed drives in the airport industry
- ▶ Wide range of products with high quality standards
- ▶ Great reliability, economy and service life
- ▶ Recognised product quality compliant with international standards

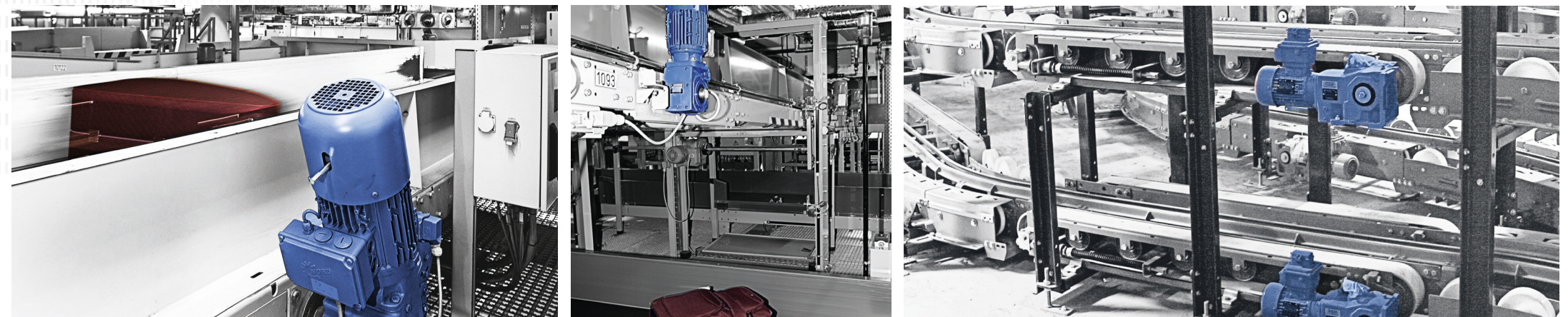
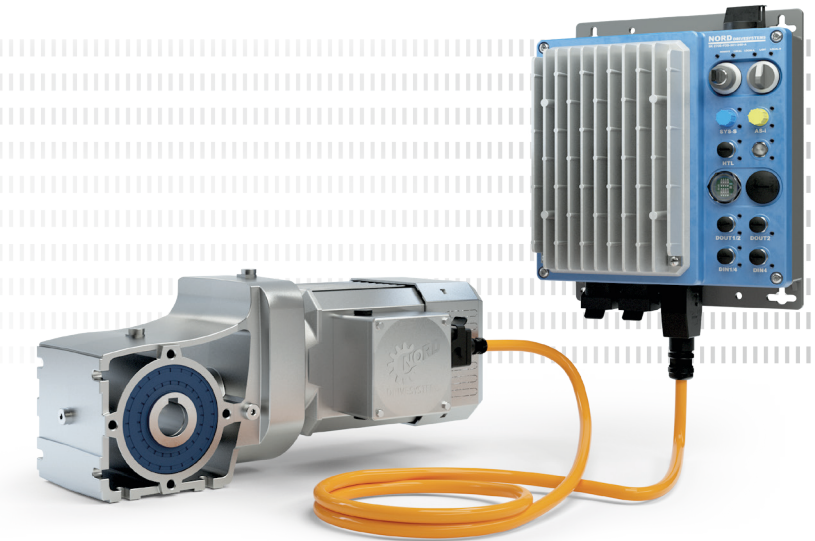
Drive solutions for baggage handling systems



From start to finish

NORD DRIVESYSTEMS develops and manufactures scalable drive solutions for all production areas of baggage handling at national and international airports worldwide – starting with baggage drop-off at check-in with complete handling logistics through to baggage reclaim.

- ▶ Energy efficient and overload capable drives for belt and inclined conveyors, among others.
- ▶ Precise positioned and highly dynamic drives for merging on or diverting, vertical switch point, lifter and sorter.



With its specialised know-how in airport conveyor technology, NORD creates economical drive solutions that meet all current and future requirements - tirelessly keeping the baggage items in motion on continuously running conveyors.

NORD DRIVESYSTEMS is recognised in the airport industry by renowned international consultants and operators.



We support you with the following:

Design

- ▶ myNORD
- ▶ Version reduction
- ▶ Projectdesign/optimisation
- ▶ Drive design
- ▶ Application solutions
- ▶ Green solutions
- ▶ CAD drawings
- ▶ TCO/ROI calculations
- ▶ Efficiency optimisation

Commissioning

- ▶ Plug-and-play
- ▶ Support
- ▶ Training
- ▶ Documentation
- ▶ Smart commissioning

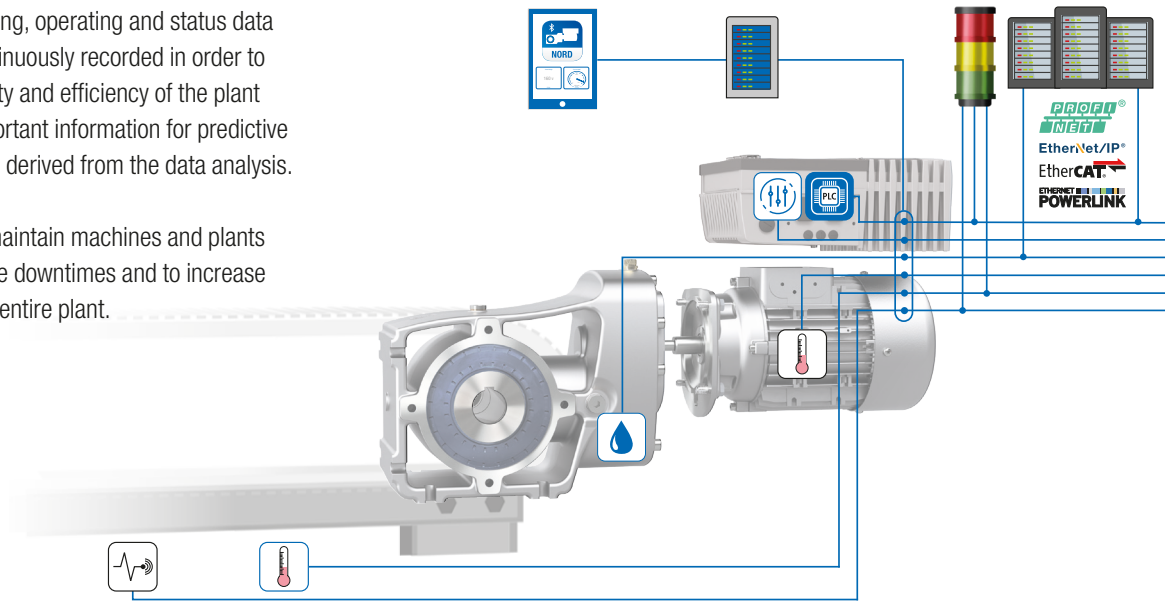
Service

- ▶ Predictive maintenance (PLC function)
- ▶ Spare parts, express shipping
- ▶ Global presence
- ▶ 24/7 Support

Drive solutions for baggage handling systems

In condition monitoring, operating and status data are regularly or continuously recorded in order to optimise the reliability and efficiency of the plant and machinery. Important information for predictive maintenance can be derived from the data analysis.

The objective is to maintain machines and plants proactively, to reduce downtimes and to increase the efficiency of the entire plant.



- System vibration sensor
 - ▶ NORD qualified sensors
 - ▶ Customer-specific sensors can be connected (analogue/digital)
- Temperature sensor
 - ▶ Motor temperature sensor on the basis of PT1000
 - ▶ Ambient or system temperature
- Oil change
 - ▶ Determination of the optimum time for oil change on the basis of the virtual oil temperature
 - ▶ Algorithm is executed in the internal PLC
- Drive parameters
 - ▶ Read-out of the drive parameters of the drive system
 - ▶ Basis for virtual sensors
- Integrated PLC
 - ▶ Pre-processing of drive-specific parameters and drive-related sensors
 - ▶ Evaluation of drive condition
- Signal beacon
 - ▶ Local display of drive condition
 - ▶ Scalable display
- Local data management
 - ▶ Processing of drive data for drive and system analysis
 - ▶ Condition monitoring
- Local dashboard
 - ▶ Display of drive and system data
- Higher level PLC
 - ▶ Processing of condition monitoring information by the customer
 - ▶ Combination of condition monitoring information with process data

The revolutionary DuoDrive with integrated IE5+ motor is especially suitable for reducing the total cost of ownership.

- ▶ Extremely high system efficiency of up to 92%
- ▶ Reduced Total Costs of Ownership (TCO) and faster Return on Investment (ROI)
- ▶ Reduced number of versions through constant motor torque over a wide speed range
- ▶ Very compact wash-down design for optimal installation space utilisation
- ▶ Market-compatible connection dimensions for simple replacement
- ▶ Very low noise emissions thanks to quiet running

Features

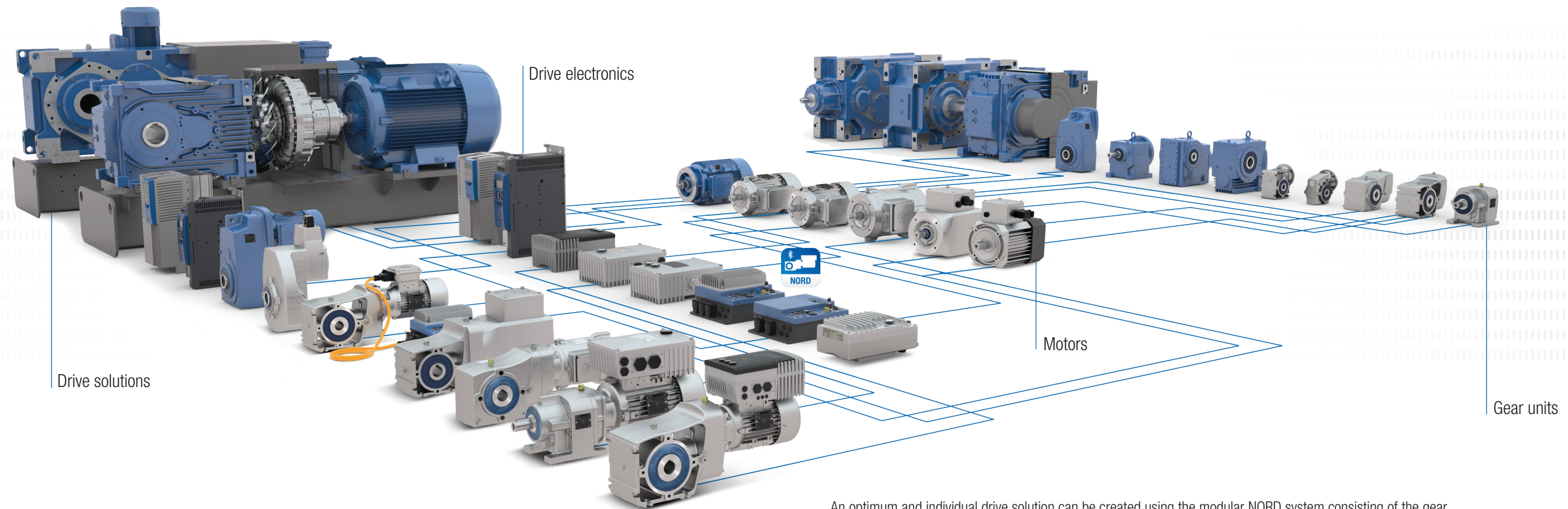
- ▶ Latest generation permanent magnet synchronous motor (PMSM) integrated in a single-stage helical in-line gear unit housing
- ▶ Power range from 0.35 to 1.5 kW in a single size
- ▶ Flexible attachment options:
 - ▶ B5 flange (160 mm diameter)
 - ▶ B14 flange (160 or 200 mm diameter)
 - ▶ Torque arm, shrink disc and GRIPMAXX™
- ▶ Wide variety of motor connection options such as HANQ8 / HAN10E plug connectors, circular connectors or directly wired
- ▶ Various motor options such as holding brake or integrated encoder system

Perfect system solution combined with NORD drive electronics

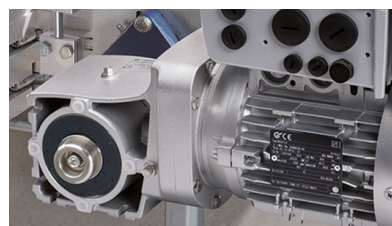
- ▶ NORDAC PRO for control cabinet installations NORDAC LINK, FLEX and ON+ decentralised wall mounting
- ▶ Together with perfectly matched drive electronics, NORD DuoDrive is the perfect solution for high power requirements and outstanding system efficiency
- ▶ Suitable system wiring:
 - ▶ Motor connection
 - ▶ Mains supply
 - ▶ Signal connection



Drive solutions for baggage handling systems



An optimum and individual drive solution can be created using the modular NORD system consisting of the gear unit, motor and drive electronics. Each of the variants combine: the highest product quality, short planning and assembly times, high delivery availability, and a good price/performance ratio.



Reliable gear units with one-piece UNICASE housing can cater for any load.

- ▶ 2-stage, high efficiency bevel gear design
- ▶ High power density
- ▶ Long service life



Powerful motors up to IE5+ keep drive systems in motion in all operating situations.

- ▶ Designed in compliance with international standards
- ▶ High overload capability
- ▶ Ultimate energy efficiency



Intelligent drive electronics provide exactly the control options that you need.

- ▶ Scalable functions
- ▶ Full field bus connection facilities
- ▶ Wide power range
- ▶ Flexible configuration
- ▶ Pluggable, all customary airport options can be configured



Extensive communication options enable access to drives from all levels to enable a wide variety of setting options.

- ▶ All common bus systems
- ▶ Quick and simple commissioning with plug-in control box or using NORDCON software and NORDAC ACCESS BT
- ▶ Optional with airport options



Switches and keys are located directly on the drives and enable direct starting and stopping as well as mode switching.

- ▶ Mains switch
- ▶ Selector switch for local or remote control
- ▶ Start/Stop and Forward/Reverse switch
- ▶ Key switch

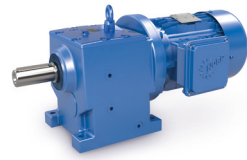


All interfaces are designed for ease of use. Drives can be easily configured and installed.

- ▶ Simple Plug and Play with all common connection plugs
- ▶ Plug-in supply cable and motor output
- ▶ Plug-in sensors and encoders
- ▶ Pre-assembled cables
- ▶ PLC integrated at no extra cost
- ▶ Daisy chaining

Drive solutions for baggage handling systems

UNICASE helical in-line gear units (Catalogue G1000)



- ✓ Foot- or flange-mounted version
- ✓ Long life, low-maintenance
- ✓ Optimum sealing
- ✓ UNICASE housing

Sizes: 11
Power: 0.12 – 160 kW
Torque: 10 – 26,000 Nm
Ratio: 1.35 – 14,340.31:1

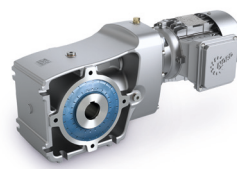
UNICASE parallel shaft gear units (Catalogue G1000)



- ✓ Foot mounted, flange mounted or face mounted
- ✓ Hollow or solid shaft
- ✓ Compact design
- ✓ UNICASE housing

Sizes: 15
Power: 0.12 – 200 kW
Torque: 110 – 100,000 Nm
Ratio: 4.03 – 15,685.03:1

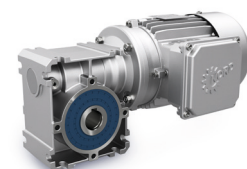
NORDBLOC.1® 2-stage helical gear units (Catalogue G1014)



- ✓ Foot mounted, flange mounted or face mounted
- ✓ Hollow or solid shaft
- ✓ Aluminium housing

Sizes: 6
Power: 0.12 – 9.2 kW
Torque: 50 – 660 Nm
Ratio: 3.03 – 70:1

UNIVERSAL SI worm gear units (Catalogue G1035)



- ✓ Modular
- ✓ Universal mounting
- ✓ Life-long lubrication
- ✓ IEC version

Sizes: 5
Power: 0.12–4.0 kW
Torque: 21 – 427 Nm
Ratio: 5.00 – 3,000:1

Motors (Catalogue M7000)



- ✓ IE3 motors from 0.12 kW (Size 63)
- ✓ IE5+ synchronous and asynchronous motors



International energy efficiency standards

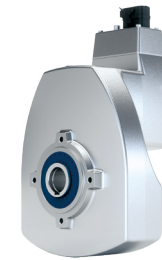
- ▶ EU: IE1 – IE5+ as + per IEC 60034-30
- ▶ US: ee labelling as per EISA 2007 (Dept. of Energy)
- ▶ CA: CSA energy verified as per EER 2010
- ▶ CN: CEL as per GB 18613
- ▶ KR: KEL as per REELS 2010
- ▶ BR: Alto Rendimento as per Decreto nº 4.508
- ▶ AU: MEPS as per AS/NZS 1359.5

NORDAC ACCESS BT



- ✓ Stand-alone parameter memory
- ✓ Bluetooth interface for inverter and NORDCON APP
- ✓ Data transfer to PC via USB
- ✓ Can be plugged in/disconnected during operation

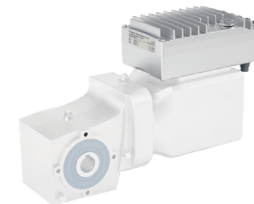
DuoDrive – integrated geared motor concept



- ✓ Highly efficient IE5+ motor
- ✓ System efficiency of 92%
- ✓ Results in a significant reduction of the TCO (Total Cost of Ownership) compared to other drive systems
- ✓ High power density
- ✓ Minimal noise emissions
- ✓ Simple plug-and-play commissioning
- ✓ Hygienic design (wash-down)
- ✓ Design: M1, M4, M5, M6

Sizes: 3
Power: 0.35 – 1.5 kW
Torque: 26 – 78 Nm
Ratio: 3.24 – 16.2:1

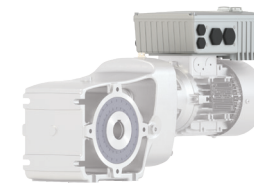
NORDAC ON/ON+ (Catalogue E3000)



- ✓ Optimised by focus
- ✓ Plug-and- Play for fast IBN
- ✓ Very compact design
- ✓ Integrated Ethernet interface

Sizes: 2
Voltage: 3 – 400 V
Power: 0.37 – 0.95 kW

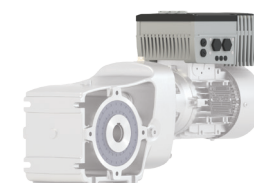
NORDAC START SK 135E motor starter (Catalogue E3000)



- ✓ Integrated electronic brake rectifier
- ✓ Consistent parameter structure
- ✓ Reversing starter with soft start function

Sizes: 2
Voltage: 3 ~ 200 – 240 V, 3 ~ 380 – 500 V
Power: 0.12 – 3 kW or up to 7.5 kW

NORDAC FLEX SK 200E frequency inverter (Catalogue E3000)



- ✓ Energy-saving function
- ✓ Integrated POSICON positioning control
- ✓ Integrated PLC

Sizes: 4
Voltage: 1 ~ 110 – 120 V, 1 ~ 200 – 240 V, 3 ~ 200 – 240 V, 3 ~ 380 – 500 V
Power: 0.25 – 22 kW

NORDAC LINK SK 250E field distribution system *LogiDrive*® (Catalogue E3000)



- ✓ Frequency inverter or motor starter
- ✓ All connections in plug-in version for easy commissioning and maintenance
- ✓ PLC functionality for drive-related functions

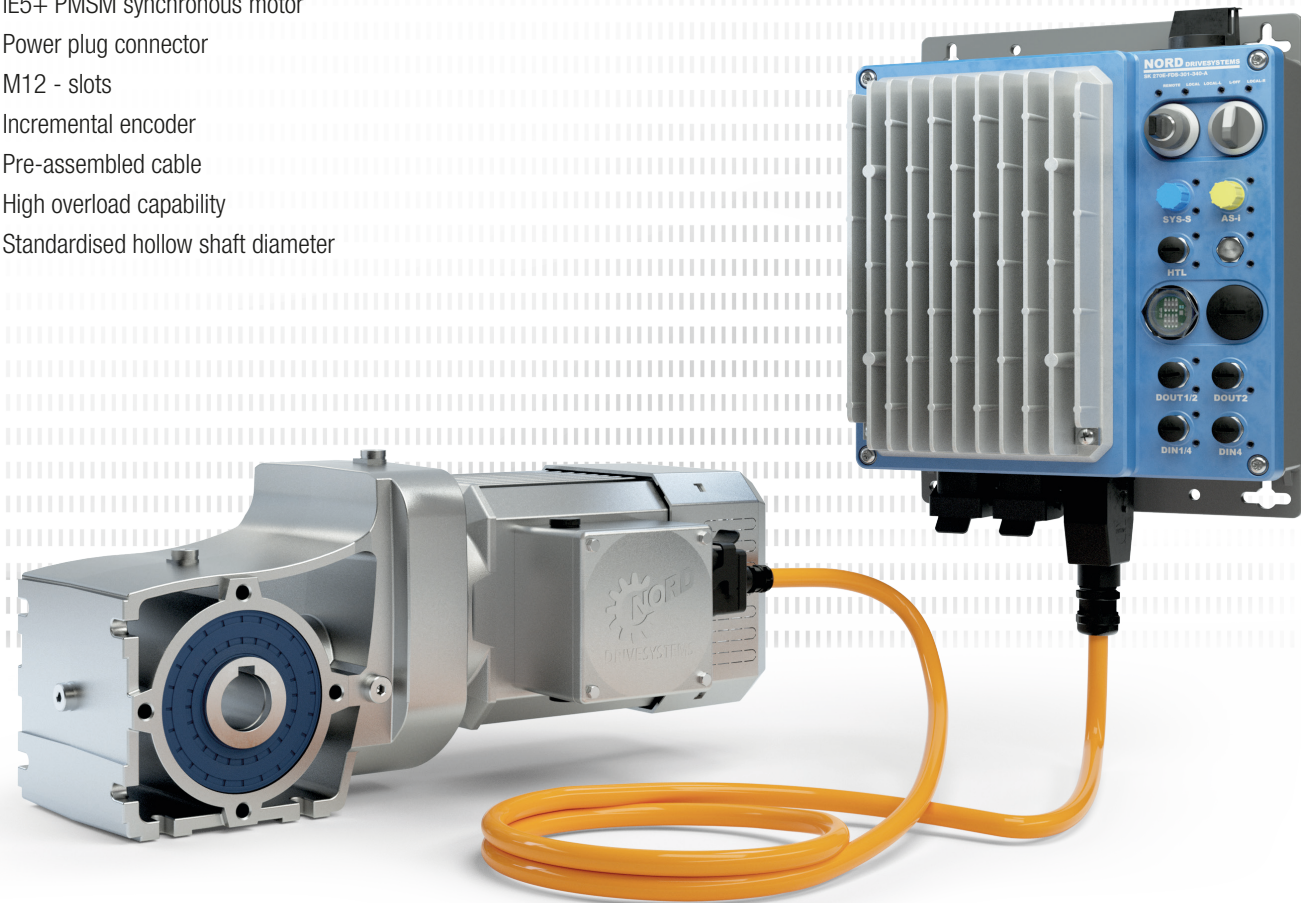
Sizes: 3
Voltage: 3 – 380 – 500 V
Power: Frequency inverter 0.37 – 7.5 kW, motor starter 0.12 – 3 kW

Drive solutions for baggage handling systems

LogiDrive®

The ideal solution for logistics applications

- ▶ High efficiency 2-stage bevel gear unit
- ▶ IE5+ PMSM synchronous motor
- ▶ Power plug connector
- ▶ M12 - slots
- ▶ Incremental encoder
- ▶ Pre-assembled cable
- ▶ High overload capability
- ▶ Standardised hollow shaft diameter



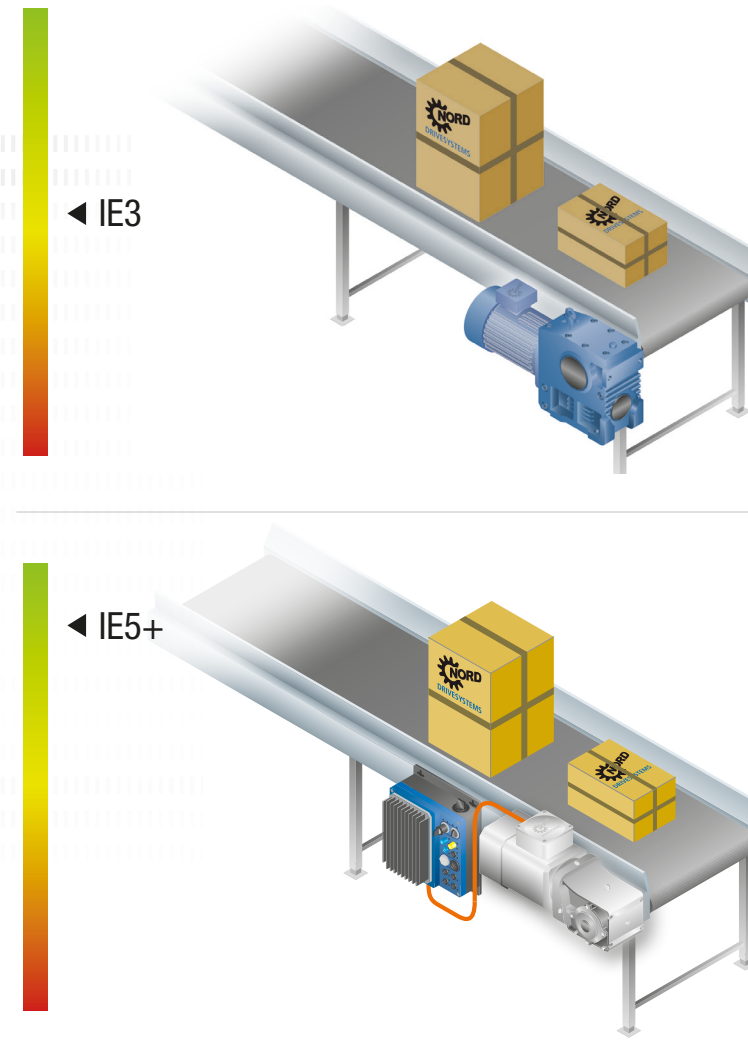
The LogiDrive solution from NORD DRIVESYSTEMS reduces planning and commissioning effort

- ▶ NORD inverters for intralogistics and airport applications can control both synchronous and asynchronous motors.
- ▶ Simple planning with identical housing dimensions for synchronous and asynchronous motors

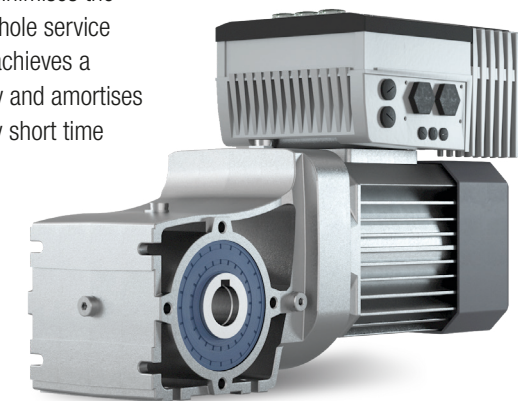
Comparison

Motor sizes	IE3 asynchronous	IE5+
Size 71	0.25 - 0.37 kW	0.5 - 2.2 kW
Size 80	0.55 - 0.75 kW	
Size 90	1.1 - 15 kW	1.5 - 3.7 kW
Size 100	2.2 - 3.0 kW	

Efficiency under partial load and at partial speed

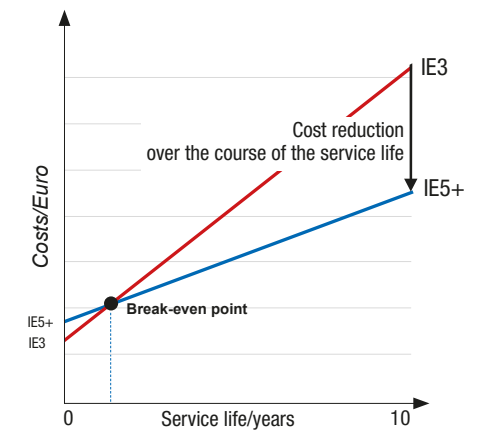


The use of IE5+ synchronous motors with possible version reduction minimises the costs over the span of the whole service life. The NORD-IE5+ motor achieves a significantly higher efficiency and amortises its acquisition costs in a very short time (ROI).



Total Cost of Ownership (TCO)

IE5 synchronous motors reveal their full potential in applications with a partial load range and low speed ranges. By using IE5 synchronous motors, airports can achieve significant cost reductions.



IE5 synchronous motors achieve high cost reductions over their entire service life and a quick break-even point with just a small additional investment.

IE5+ means energy efficiency

- ▶ By meeting the highest efficiency standards
- ▶ Significantly reduces the TCO
- ▶ High efficiency even in partial and low speed ranges due to PMSM technology



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