INTELLIGENT DRIVE SYSTEMS, WORLDWIDE SERVICES

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DRIVE SOLUTIONS FOR
BAGGAGE HANDLING SYSTEMS
NORD DRIVESYSTEMS Group

Headquarters and Technology Centre
near Hamburg

Innovative drive solutions
for more than 100 industrial sectors

7 production locations
with cutting edge technology
produce gear units, motors, inverters, etc. for complete drive solutions from a single source

Subsidiaries and sales partners in 89 countries on 5 continents
Provide local component stocks, assembly centres, technical support and customer service.

More than 3,300 employees throughout the world create customised solutions.
NORD DRIVESYSTEMS is one of the world’s leading drive technology companies and provides solutions used in airports all over the world. NORD provides:

- Extensive knowledge of applications 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

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.
With its expertise in airport conveyor technology, NORD creates economical drive solutions that meet all current and future requirements. They tirelessly keep the baggage items in motion on continuously running conveyors.

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

NORD supports you with:

**DESIGN**
- myNORD
- Reduced number of variants
- Project design/optimisation
- Drive system design
- Application solutions
- Green solutions
- CAD drawings

**COMMISSIONING**
- Plug-and-Play
- Support
- Training
- Documentation
- Smart commissioning

**SERVICE**
- Predictive maintenance (PLC function)
- Spare parts, express shipping
- Global presence
- 24/7 support

With subsidiaries and sales partners in 89 countries on 5 continents, NORD is your worldwide project partner.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Check-In</strong></td>
<td><strong>Belt conveyors</strong></td>
</tr>
<tr>
<td>The check-in conveyors ensure that baggage is rationally and effectively transported from the check-in counter to the flight operations area.</td>
<td>Belt conveyors transport baggage items of many different shapes in all directions.</td>
</tr>
<tr>
<td></td>
<td>Easy to service and maintain</td>
</tr>
<tr>
<td></td>
<td>Reduced number of variants</td>
</tr>
<tr>
<td></td>
<td>Energy-efficient</td>
</tr>
<tr>
<td></td>
<td>High overload capacity</td>
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</tbody>
</table>

| **Vertical switch point** | **Inward transfer conveyors** |
| Vertical sorting is an extremely efficient and economical procedure in situations where little floor space is available and the baggage volume is high. | Transferring into and out of other belt conveyors makes it possible to index the baggage. |
|   | Precise positioning |
|   | With integrated PLC function |
|   | Highly dynamic |
|   | High overload capacity |

| **Lift** | **Inclined conveyors** |
| Lifts that dynamically transport baggage are designed to optimise the time between incoming and outgoing delivery to the airlines. | In order to deal with height differences, drive units with a high degree of overloading capability, brake management and positioning control are required. |
|   | Easy to service and maintain |
|   | Reduced number of variants |
|   | Energy-efficient |
|   | Precise positioning |
Efficient

NORD drive solutions are environmentally friendly and help minimise CO₂ emissions.

- Extremely efficient helical and bevel gear units reach efficiencies up to 97%.
- NORD motors with low mass inertia are designed for inverter operation and comply with the latest international energy requirements.
- NORD frequency inverters ensure efficient operation, improved process control, and optimised motor performance.
- Easy to service and maintain, NORD drives reduce standstill times and thus contribute to an increased efficiency and availability of the entire system.

Reliable

It is vital to prevent breakdowns of baggage handling systems. For this reason, reliability is our main focus when developing drive solutions. All of our system components are precisely matched to each other and ensure smooth operation.

- Unicase gear units ensure precise positioning of bearings and shafts.
- Autovent ensures a leak free design.
- Precisely machined gear wheels with minimum wear are used.
- The gear units are extraordinarily robust, run very quietly and have a particularly long service life.
- NORD inverters electronically protect the drive system and can visualise the operating data.

Tried-and-tested

The reliability and cost-effectiveness of electronically controlled NORD conveyor drives have proven themselves at airports throughout the world. The systems combine high flexibility and tiered functional equipment with convenient operability. NORD drives ensure particularly high conveyance speeds that are more and more often required due to increased safety measures.

- The mechatronic NORD drive systems are based on 2-stage bevel gear motors featuring low weights and high efficiencies.
- In combination with wall-mounted or motor-mounted frequency inverters, they form efficient drive systems. NORD also supplies the required cable connectors and interfaces to a variety of bus systems as well as the respective software.
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
- Energy savings
- Project support
COMPLETE DRIVE SOLUTIONS FROM A SINGLE SOURCE

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 IE4 keep the drive systems moving in any operating situation.
- Designed in compliance with international standards
- High overload capacity
- Energy-efficient

Intelligent drive electronics provide exactly the control facilities you need.
- Scalable functions
- Full field bus connection facilities
- Wide power range
- PLC integrated at no extra cost
From the three components - gearbox, motor and drive electronics - the NORD product package provides an optimal and individual drive solution. Each of the variants combines: the highest product quality, short planning and assembly times, high delivery availability, and a good price/ performance ratio.

Extensive communication options enable access to the drive units from all levels, providing a wide range of adjustments.
- All common bus systems
- Quick and simple commissioning with plug-in control box or using NORDCON software
- Convenient handheld console for local operation
- Optionally with intralogistics options

Switches and buttons are located directly on the drive units and enable direct starting, stopping or mode changes.
- Mains switch
- Selector switch for local or remote control
- Start/Stop and Forward/Reverse switch
- Energy-efficient

All interfaces designed for ease of operation. The drives can be easily configured and installed.
- Simple Plug & Play with all common quick connection plugs
- Plug-in supply cable and motor output
- Plug-in sensors and encoders
- Pre-assembled cables
- PLC integrated at no extra cost
# NORD DRIVE SOLUTIONS
## FOR THE AIRPORT INDUSTRY

<table>
<thead>
<tr>
<th>Product</th>
<th>Model</th>
<th>Features</th>
<th>Voltages</th>
<th>Performance</th>
</tr>
</thead>
</table>
| NORDAC START motor starter SK 135E | F3015 | ✓ Integrated electronic brake rectifier  
✓ Consistent parameter structure  
✓ Reversing starter with soft start function | 3-phase 200 … 500 V | 0.25 – 7.5 kW |
| NORDAC BASE frequency inverter SK 180E | F3018 | ✓ Stand-alone operation  
✓ 4 parameter sets  
✓ Sensorless current vector control  
(ISD control)  
✓ Integrated PLC | 1-phase 110…120 V ± 10%  
1-phase 200…240 V ± 10%  
3-phase 200…240 V ± 10%  
3-phase 380…500 V -20%/+10% | 0.25 – 2.2 kW |
| NORDAC FLEX frequency inverter SK 200E | F3020 | ✓ Energy-saving function  
✓ Integrated “Posicon” positioning control  
✓ Integrated PLC | 1-phase 110…120 V ± 10%  
1-phase 200…240 V ± 10%  
3-phase 200…240 V ± 10%  
3-phase 380…500 V -20%/+10% | 0.25 – 22 kW |
| NORDAC LINK field distributor SK 250E | F3025 | ✓ Frequency inverter or motor starter  
✓ All connections in plug-in version for easy commissioning and maintenance  
✓ PLC functionality for drive-integrated functions | Frequency inverter (FI)  
380…500 V -20 % +10 %  
Motor starter (MS)  
380…500 V -20 % +10 % | FU 0.55 – 7.5 kW  
MS 0.55 – 3.0 kW |
### Helical geared motors (Catalogue G1000)
- Foot or flange-mounted
- Long life, low maintenance
- Optimum sealing
- Unicase housing

<table>
<thead>
<tr>
<th>Performance</th>
<th>0.12 – 160 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque range</td>
<td>10 – 26 000 Nm</td>
</tr>
<tr>
<td>Ratio</td>
<td>1.35:1 – 14,340.31:1</td>
</tr>
</tbody>
</table>

### Parallel shaft geared motors (Catalogue G1000)
- Foot mounted, flange mounted or hollow shaft mounted
- Hollow or solid shaft
- Compact design
- Unicase housing

<table>
<thead>
<tr>
<th>Performance</th>
<th>0.12 – 200 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque range</td>
<td>110 – 100 000 Nm</td>
</tr>
<tr>
<td>Ratio</td>
<td>4.03:1 – 6,616.79:1</td>
</tr>
</tbody>
</table>

### Bevel geared motors (Catalogue G1000)
- Up to 97 % efficiency
- Foot, flange or shaft mounted
- Hollow or solid shaft
- Unicase cast-iron housing

<table>
<thead>
<tr>
<th>Performance</th>
<th>0.12 – 9.2 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque range</td>
<td>50 – 660 Nm</td>
</tr>
<tr>
<td>Ratio</td>
<td>3.58:1 - 70:1</td>
</tr>
</tbody>
</table>

### SI worm gear motors (Catalogue G1035)
- Modular
- Universal mounting options
- Life-long lubrication

<table>
<thead>
<tr>
<th>Performance</th>
<th>0.12 – 4.0 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque range</td>
<td>21 – 427 Nm</td>
</tr>
<tr>
<td>Ratio</td>
<td>5.00:1 – 3,000.00:1</td>
</tr>
</tbody>
</table>

### Motors

| IE3 motors from 0.12 kW (size 63) | IE4 synchronous and asynchronous motors |

**International energy efficiency standards**
- **EU**: IE1 – IE4 as per IEC 60034-30
- **US**: ee labeling 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

In combination with motor and motor control system in accordance with Ecodesign directive EN50598
THE SOLUTION FOR
AIRPORT BAGGAGE HANDLING

High-efficiency 2-stage bevel gear unit
IE4 PMSM synchronous motor
Power plug connector

Signal connector
Incremental encoders
Pre-assembled cables
High potential overload capacity

Reduced number of versions with the NORD modular system

<table>
<thead>
<tr>
<th>Size</th>
<th>LDB1100</th>
<th>LDB1500</th>
<th>LDB2200</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>1.1 kW</td>
<td>1.5 kW</td>
<td>2.2 kW</td>
</tr>
<tr>
<td>n_{2N}</td>
<td>0 – 565 rpm</td>
<td>0 – 482 rpm</td>
<td>0 – 482 rpm</td>
</tr>
<tr>
<td>M_{2N}</td>
<td>20 – 130 Nm</td>
<td>30 – 230 Nm</td>
<td>45 – 260 Nm</td>
</tr>
<tr>
<td>Gear unit</td>
<td>92372.1A</td>
<td>92672.1A</td>
<td>92672.1A</td>
</tr>
<tr>
<td>Motor</td>
<td>80T1/4</td>
<td>90T1/4</td>
<td>90T3/4</td>
</tr>
<tr>
<td>Frequency inverter</td>
<td>NORDAC LINK SK250E-151.340-A</td>
<td>NORDAC LINK SK250E-221.340-A</td>
<td>NORDAC LINK SK250E-301.340-A</td>
</tr>
</tbody>
</table>

Available hollow shaft diameters: Ø 30 mm or Ø 35 mm

With the NORD modular system, the number of versions can be reduced. Fewer variants result in TCO savings for the operator.
High-efficiency IE4 motors
The IEC 60034-30 standard defines the efficiency requirements for IE4 motors by means of efficiency levels. Such high efficiency levels are provided by NORD DRIVESYSTEMS synchronous motors, which are based on permanent magnet technology. NORD supplies synchronous motors with frame heights from 80 to 100 mm and power ratings up to 5.5 kW.

Use of IE4 synchronous motors minimises overall costs during service life. NORD IE4 motors achieve considerably greater efficiency and a fast return on investment (ROI).

IE3 asynchronous motor

IE4 synchronous motor

Total Cost of Ownership (TCO)
IE4 synchronous motors reveal their full potential in applications with a partial load range and low speed ranges. By using IE4 synchronous motors, airports can achieve significant cost reductions.

<table>
<thead>
<tr>
<th>Efficiency [%]</th>
<th>Load [%]</th>
<th>Output speed [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>90</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>85</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

IE4 synchronous motors achieve high cost reductions over their entire service life and a quick break-even point with just a small additional investment.

IE4 stands for energy efficiency:
- By compliance with the most stringent efficiency regulations
- By a considerable reduction of TCO
- High efficiency, even in partial load ranges and at low speeds thanks to PMSM technology

3D chart: Efficiency over load and speed
Baggage handling, boarding bridges, moving walkways, or large hangar gates: NORD DRIVESYSTEMS offer the ideal drive solution for every application.