THE SOLUTION FOR LIFTS
DRIVES AND MOTION
Over fifty years of experience, an organisation highly focused on the customer’s needs and constant technological innovation make Gefran a benchmark in the design and production of sensors and components for industrial process automation and control.

Expertise, flexibility and process quality are the factors that distinguish Gefran in the production of integrated tools and systems for specific applications in various industrial fields, with consolidated know-how in the plastics, mobile hydraulics, heating and lift sectors. Technology, innovation and versatility represent the catalogue’s added value in addition to the ability to create specific application solutions in association with the world’s leading machine manufacturers.
SPECIFIC DRIVES FOR MODERN LIFTS

With over 50 years of experience in designing and building electric drives, Gefran has reached the third generation of inverters to control traction lift motors. They are specifically designed for this type of application, with mechanics and software functions that reduce costs and installation space, and guarantee high performance of the entire system. The 700,000 drives installed in systems around the world are proof of our expertise in designing and building quality products. Thanks to a complete range of certified products for the sector, Gefran offers solutions for the main geared or gearless applications, whether, and can propose advanced regenerative systems where demanded by specific conditions.

SAFE, COMFORTABLE, RELIABLE LIFTS

Gefran solutions satisfy all of the requisites for civil lift drives:

> SAFETY
- Safety Certification for operation with single output contactor in accordance with EN81-20, EN81-50
- Safety Certification for operation in CONTACTORLESS mode in accordance with EN81-20, EN81-50
- Safety Torque Off (STO) EN61800-5-2:2007 SIL3
- Floor return in case of black-out with external emergency power supplies.

> COMFORT
- Compact size and low noise for MRL installations
- Perfect landing at floor for safe entrance into / exit from the car
- Approach to floor controlled directly or with slowdown
- Pre-torque function for more gradual start and specific jerks.

> COST EFFECTIVE
- Flexible configuration
- Low installation costs
- Small controller
- Contactless configuration.

> RELIABILITY
- State-of-the-art design and technology
- Specific testing and inspection of every drive.
APPLICATIONS

<table>
<thead>
<tr>
<th>Profile</th>
<th>HIGH RISE</th>
<th>MID RISE</th>
<th>LOW RISE</th>
<th>HOME LIFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height: 90+ m</td>
<td>Height: 18...90 m</td>
<td>Height: 12...18 m</td>
<td>Height: 4...8 m</td>
<td></td>
</tr>
<tr>
<td>Floors: 30+</td>
<td>Floors: 6...30</td>
<td>Floors: 3...6</td>
<td>Floors: 1...2</td>
<td></td>
</tr>
<tr>
<td>Speed Range: 2.5...5 m/s</td>
<td>Speed Range: 0.8...2.5 m/s</td>
<td>Speed Range: 0.6...0.8 m/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- High Speed</td>
<td>- Cost Saving</td>
<td>- Cost Saving</td>
<td></td>
<td></td>
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<tr>
<td>- Reliability</td>
<td>- Space Saving</td>
<td>- Space Saving (MRL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Smooth Acceleration and Ride comfort</td>
<td>- Low Energy Consumption</td>
<td>- Low Energy Consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Limited passengers’ waiting and travel time</td>
<td>- Smooth Acceleration and Ride comfort</td>
<td>- Easy Commissioning</td>
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<td></td>
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<tr>
<td>- Regenerative Solution</td>
<td>- Regenerative Solution</td>
<td>- Regenerative Solution</td>
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</tbody>
</table>

Specific functions:
- Premium components and design
- Pre-torque and precise landing at floor
- Door pre-opening
- AFE regenerative units.
- Optimized hardware solutions
- Pre-torque and precise landing at floor
- Contactor-less
- External +24VDC power supply for stand-by control
- Regenerative units.
- Optimized hardware solutions
- Contactor-less
- External +24VDC power supply for stand-by control
- Rapid commissioning

GUIDE TO SELECTION

Different applications require specific products for both regenerative and traditional solutions. The product-solution match is not binding. The following table gives a number of examples based on systems already installed.
**THE ADVANTAGES OF REGENERATION**

**LOWER OPERATING COSTS**
Regenerative units in lift systems provide significant benefits in terms of Building Automation and Energy Efficiency. Where justified by traffic profiles, a system with regenerative units provides both economic and technical advantages. The operating principle is simple: when the empty car goes up or the full car goes down, the mechanical system generates potential energy that the electric motor, “pulled” by the car load, converts into electrical energy.

**CLEAN ENERGY**
The regenerative unit transforms the electrical energy generated by the motor into clean energy, namely with reduced harmonic distortion (THD <4%), making it reusable by other electrical equipment in the building.

**MORE EFFICIENT BUILDINGS**
In addition to reducing installation space (because braking resistors are no longer needed), this solution reduces the building’s energy consumption, most of which is attributable to air conditioning systems, refrigeration, pump systems, and lifts. Regenerative systems can be used with external Active Front End (AFE) solutions (coupled with the ADL300 series), as well as with the AVRy series (which integrates the regenerative unit in the inverter).
FIELDS OF APPLICATION

TRAFFIC PROFILES

Although an application may be defined initially in terms of floor number and car speed, the various traffic profiles are another essential factor for its better definition.

Buildings used for offices, apartments, businesses or public services require an adequate analysis of their traffic profile in order to choose the best system and all of its components.

The number of people, direction of movement, and specific time bands determine different traffic profiles, characterized by:

- people entering or leaving the loading lobby;
- inter-floor traffic;
- traffic on specific floors;
- peak hours;
- average car load.

Each type of building will have different traffic profiles to be managed by the lift system.

OFFICE BUILDINGS

These have two peak periods: up-peak in the morning and down-peak in the evening, with inter-floor traffic limited to specific floors (restaurants, car parks, and common areas).

The system must be designed to reduce waiting times for people entering the loading lobby in the morning, to efficiently receive calls from people leaving in the evening, and to manage full loads at peak hours.

Homing functions are typically used, in which the car automatically goes to the floor in specific time bands.

Functions such as door pre-opening and express arrival (available in the ADL300 family) reduce waiting times and increase the traffic handled.

Functions such as pre-torque increase comfort regardless of the number of people in the car.
**HOTELS**

There is a peak in the morning to the restaurant floor for breakfast and to the exit, whereas incoming traffic has no specific peaks. Inter-floor traffic mainly regards the hotel staff or specific floors (leisure, catering). The entire system is improved by functions that reduce waiting times and that best manage full cars. The ADL300 provides functions such as pre-torque and door pre-opening to improve system performance.

**HOSPITALS**

Peak hours are during visiting hours (if concentrated in specific time bands). Hospitals have heavy inter-floor traffic due to patients moving from one ward to another and to movements of personnel. Hospitals can greatly reduce energy costs by using regenerative solutions, even in Low and Mid Rise applications. Regardless of height, comfort and landing speed are critical for handling emergencies and for moving people with physical limitations. Functions such as precise landing at the floor and comfort when running and starting/arriving are requirements that cannot be entrusted to general purpose drives. The ADL300, designed for civil lift applications, is the best answer.

**RESIDENTIAL BUILDINGS**

Residential buildings have no peak traffic hours, although traffic in the morning and in the evening is higher than the daily average. There is practically no inter-floor traffic. Because of the progressively aging population, system down-time must be reduced to an absolute minimum, and all components must be selected on the basis of quality and reliability.
The ADL300 series, designed for new installations and modernizations, provides maximum safety, comfort, and reliability for all types of civil lift systems and offers customers lower installation and operating costs.

It is also available in an Integrated version, which combines the drive and control card in a single solution.

The modern software, developed for both geared systems (including in open loop) and gearless systems in closed loop with absolute or incremental encoder, provides outstanding control. Precise landing at the floor, with both direct landing and creeping, and load compensation at start give passengers an extremely comfortable ride.

The ADL300’s compact size and operation in contactor or contactorless mode make it perfect for Machine Room-Less (MRL) applications.

**SAFETY CERTIFICATION**

Safety” inputs for use with a single output contactor or in contactorless mode

Single output contactor

The ADL300 is certified for the use of a single output contactor, in accordance with **EN81-20**, **EN81-50**.

Safety Certification for a CONTACTORLESS operations

ADL300 is CERTIFIED as **EN81-20**, **EN81-50**, SIL3 according to **EN61800-5-2:2007**

Monitoring function of the correct lifting or dropping of the machine brake according to 5.6.7.3 of **EN 81-20:2014** and 5.8 of **EN 81-50:2014**.

**FEATURES**

- Control in Speed
- Control in Position
- Short Floor Management
- Off-floor detection
- Emergency single-phase power supply for floor return
- Flexible ramps management
- DCP3 & DCP4 Protocol
- CANopen Protocol
- CANopen Cia® 417 Protocol
- Integrated Breaking Unit
- External +24Vdc power supply
- CE Marked
- cULus (UL508C)

**POWER SUPPLY**

- Version ADL300-4: 3ph 230 – 400 – 480Vac (-15% / +10%) @ 50/60Hz (±5%)
- Version ADL300-2T: 3ph 200 – 230Vac (+10%) @ 50/60Hz (±2%)
- Version ADL300-2M: 1ph 200Vac (+10%), 1ph 230Vac (-15% / +10%) @ 50/60Hz (±2%)

**MOTOR RATINGS**

- Version ADL300-4: 4kW (5Hp) ... 75kW (100Hp)
- Version ADL300-2T: 4kW (5Hp) ... 37kW (40Hp)
- Version ADL300-2M: 1.1kW (1Hp) ... 5.5kW (7.5Hp)

**DIMENSIONS AND WEIGHTS**

<table>
<thead>
<tr>
<th>Sizes ADL300</th>
<th>Dimensions: Width x Height x Depth</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(mm)</td>
<td>(inches)</td>
</tr>
<tr>
<td>ADL300.-1...</td>
<td>162 x 343 x 159</td>
<td>6.38 x 13.50 x 6.26</td>
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<tr>
<td>ADL300.-2...</td>
<td>162 x 396 x 159</td>
<td>6.38 x 15.59 x 6.26</td>
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<tr>
<td>ADL300.-3...</td>
<td>235 x 401 x 179.4</td>
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<tr>
<td>ADL300.-4...</td>
<td>247.6 x 616 x 276</td>
<td>10.53 x 24.25 x 10.87</td>
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<tr>
<td>ADL300.-5...</td>
<td>311 x 747 x 331.4</td>
<td>12 x 30.2 x 13.05</td>
</tr>
</tbody>
</table>
The Lift drive with built-in power recovery

The AVRy series inverter offers the latest technology to meet the high demands of today’s civil lift engineering sector. A single solution that integrates synchronous motor control and a “clean power” regeneration system. Reduced harmonic distortion (THD <4%), a unity power factor and cutting-edge technology all guarantee significant savings in terms of operating costs and enhanced performance in terms of dynamics and comfort.

FEATURES

• Ramp generation
• Landing control
• Unit cosphi operation
• Low harmonic distortion of input current < 4%
• Self-tuning of motor parameters
• Integrated programming keypad
• PROFIBUS-DP, CANopen or DeviceNet
• CE Marked

POWER SUPPLY

• 3 ph 400 – 480 Vac (-15% / +10%) @ 50 Hz (-2%) / 60 Hz (+2%)

MOTOR RATINGS

• 11 kW, 20 kW, 27 kW (High Voltage Motor)
• 7.5 kW, 14 kW, 17 kW (Standard Motor)

DIMENSIONS AND WEIGHTS

<table>
<thead>
<tr>
<th>Sizes</th>
<th>Dimensions: Width x Height x Depth (mm)</th>
<th>Weight (kg)</th>
<th>Weight (lbs)</th>
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<tbody>
<tr>
<td>AVRy11425</td>
<td>350 x 670 x 150.3</td>
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<tr>
<td>AVRy12545</td>
<td>350 x 670 x 150.3</td>
<td>32</td>
<td>70.55</td>
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<tr>
<td>AVRy23360</td>
<td>420 x 788 x 180</td>
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</table>
The VDL200 drive series is designed for low and medium rise geared applications in both open and closed loop with asynchronous motors. High-performance control algorithms allow installation in sensorless configuration while maintaining the comfort level provided by high-range inverters. Simple installation and configuration make the VDL200 ideal for modernizing obsolete systems as well as for new installations.

**MAIN FEATURES**
- Multispeed control
- Short floor management
- Emergency single-phase power supply for floor return with low energy optimization
- Flexible ramp management
- Integrated braking unit
- Communication with control board via I/O
- Management of TTL incremental digital encoders
- Integrated EMI filter for versions (VDL200...-F)
- 200% overload for 10 seconds
- The drive complies with the monitoring requirements of the correct lifting or dropping of the machine brake according to 5.6.7.3 of EN 81-20:2014 and 5.8 of EN 81-50:2014.
- CE mark.

**POWER SUPPLY**
- 3 ph 230 – 400 Vac (-15% / +10%) @ 50 Hz (±5%)

**MOTOR RATINGS**
- 4kW (5Hp) ... 22kW (30Hp)

**DIMENSIONS AND WEIGHTS**

<table>
<thead>
<tr>
<th>Sizes</th>
<th>Dimensions: Width x Height x Depth [mm]</th>
<th>Dimensions: Width x Height x Depth [inches]</th>
<th>Weight [kg]</th>
<th>Weight [lbs]</th>
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</thead>
<tbody>
<tr>
<td>VDL200-1...</td>
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<td>6.38 x 13.50 x 6.26</td>
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<tr>
<td>VDL200-2...</td>
<td>162 x 396 x 159</td>
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<tr>
<td>VDL200-3...</td>
<td>235 x 456.5 x 180</td>
<td>9.25 x 17.97 x 7.08</td>
<td>10.5</td>
<td>23.5</td>
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</table>
The AGL50 EV drive, available in a single mechanical size, is ideal for modernizations or new geared low rise installations controlled in open loop, that do not require highly sophisticated control and fieldbus communication with the control card. Easy to install and configure, the drive is a cost effective solution that ensures maximum reliability and technological quality.

**FEATURES**
- Control in Speed
- 16 Multispeed
- 4 multiramps (linear, S-shaped with independent jerk settings)
- Short Floor Management
- Management of space calculated by the drive
- Integrated Breaking Unit
- Integrated Key-pad
- Self-tuning of motor parameters
- CE Marked

**POWER SUPPLY**
- 3 x 400 – 480Vac (-15% / +10%) @ 50Hz (-2%) / 60Hz (+2%)

**MOTOR RATINGS**
- 4kW (5Hp)
- 5.5kW (7.5Hp)
- 7.5kW (10Hp)

**DIMENSIONS AND WEIGHTS**

<table>
<thead>
<tr>
<th>Sizes AGL50 EV</th>
<th>Dimensions: Width x Height x Depth</th>
<th>Weight</th>
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<tbody>
<tr>
<td></td>
<td>[mm]</td>
<td>[inches]</td>
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<tr>
<td>AGL 2040</td>
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