

## VDI 4707

# Energy Efficiency Label for Elevators



**Schindler**

# Schindler's Approach to Sustainability

## Life Cycle Assessment (LCA)

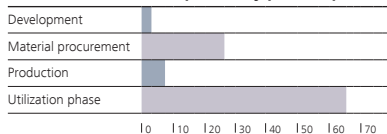
With elevators and escalators accounting for up to 15% (\*Source : CIBSE Guide D) of the building sector's use of energy, green innovations and other energy saving initiatives can offer large reductions in the energy footprint of our built environment. Schindler's **"Life Cycle Approach"** addresses all ecological aspects throughout the entire life cycle of an elevator or escalator i.e. from its development, its energy usage in a building to the day of its modernisation or disposal.

### Life Cycle Assessment

Schindler uses external experts to conduct Life Cycle Assessments following ISO 14004 to 14043 to identify further potential improvements on ecological performance. The LCA assessment demonstrates that power consumption of an elevator during its usage phase over a life cycle of 20 to 30 years is responsible for 80% of the environmental impact.

By far the largest potential for reducing the environmental impact thus lies in the elevator-operation phase, followed by raw material acquisition and disposal (refer to table below).

#### Total environmental impact % by product phase



The energy generated while an elevator is in service (utilization phase) accounts for two-thirds of its environmental impact.

Schindler's policy is that all new products have a better eco-performance than their predecessor models. Owing to intelligent and eco-friendly design, Schindler elevators ensure the highest possible performance and efficiency, thus generating substantial

contribution to minimizing buildings' ecological footprint across their life cycle.

Sustainable urban development is a major challenge for planners and architects in the 21st century, and Schindler supports this with energy-efficient and ecologically sound mobility solutions for commercial and residential buildings.

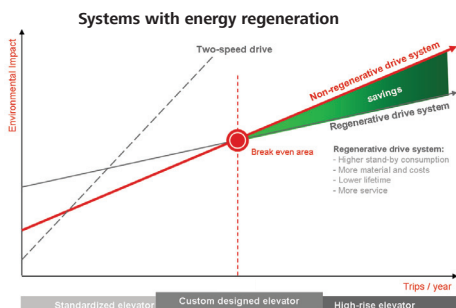
### Regenerative drives

Schindler have developed a line of regenerative drives that provide "best in class power factor 1 technology and THD (total harmonic distortion) of  $\leq 3\%$ ".

The use of regenerative drives for lifts can provide significant benefits to the Building owner through;

- Energy savings through the return of regenerated energy to the power line
- Reduced power demands during peak periods
- A reduction in mains cable requirements

When promoting regenerative drives Schindler takes into account the total life cycle approach. The threshold where regenerative drives are calculated to produce a lower overall environmental impact will vary depending on the type and usage of the lift.



# VDI 4707

## The Elevator Energy Efficiency Benchmark

Schindler assesses its elevators based on the VDI 4707 standard, an elevator energy efficiency classification guideline established by the Association of German Engineers. The VDI 4707 is widely applied in Europe and quickly gaining popularity in other parts of the world.

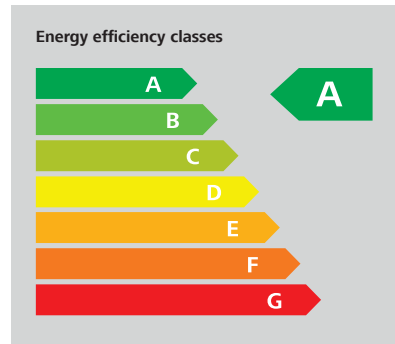
The rating combines measurements of both standby and travel energy. Ratings are also influenced by travel height, speed, load and usage frequency.

The measurements and classification are a guideline for Schindler to further contribute to sustainable building development.

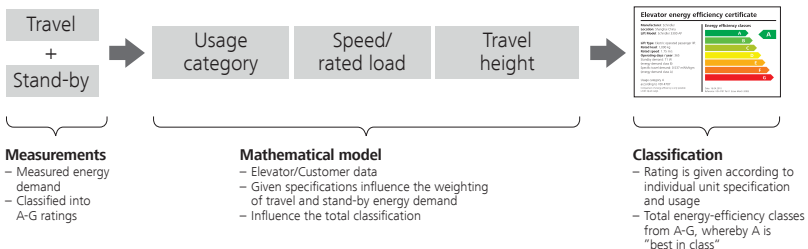
### Energy efficiency classification of VDI 4707

VDI 4707 measures and classifies elevators according to their energy performance. It defines an Energy label and provides a figure for a “yearly nominal energy demand”.

Seven energy efficiency classes provide a transparent and factual overview when rating elevators according to their energy performance. They range from “A” to “G” with “A” being the best-in-class system.




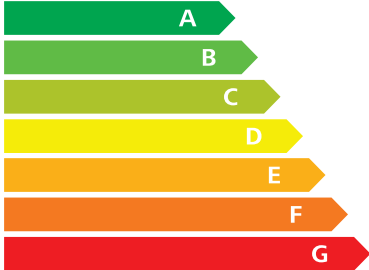


### VDI 4707 elevator energy efficiency classification, established by the Association of German Engineers (Verein Deutscher Ingenieure)



Measurement is carried out on an actual elevator installation. Depending on the usage of the elevator, measurement from both standby and travel classes need to be considered separately to form a common class: the **Energy Efficiency Class** of the elevator.

# Schindler 3300 AP Energy Efficiency Label

Case study: Actual measurement carried out on 16 April 2010. Schindler 3300 AP, low to mid rise elevator achieved the A class energy rating from the VDI 4707, the highest rating under the VDI 4707 classification.

<h2>Elevator energy efficiency certificate</h2>	 <b>Schindler</b>
<p>Manufacturer: Schindler          Location: Shanghai China          Elevator Model: Schindler 3300 AP          Elevator Type: Electric operated passenger elevator</p>	
<h3>Energy efficiency classes</h3> 	
<h3>Energy demand kWh/year</h3>	<p>4,246</p>
<p>Nominal demand per year for nominal values shown.</p>	
<p>Rated load: 1,000 kg          Rated speed: 1.75 m/s          Operating days / year: 365          Standby demand: 71 W          (energy demand class B)          Specific travel demand: 0.537 mWh/kgm          (energy demand class A)</p>	
<p>Usage category 4          according to VDI 4707          Comparison of energy efficiency is only possible          under equal usage.</p>	
<p>Date: 16.04.2010          Reference: VDI 4707 Part 1 (Issue March 2009)</p>	

## Efficient system

The passenger elevator Schindler 3300 AP follows an efficient system approach. Resulting in optimised energy demand, ecological responsible production and material usage, convenient planning, fast installation and trouble-free maintenance.

## Drive

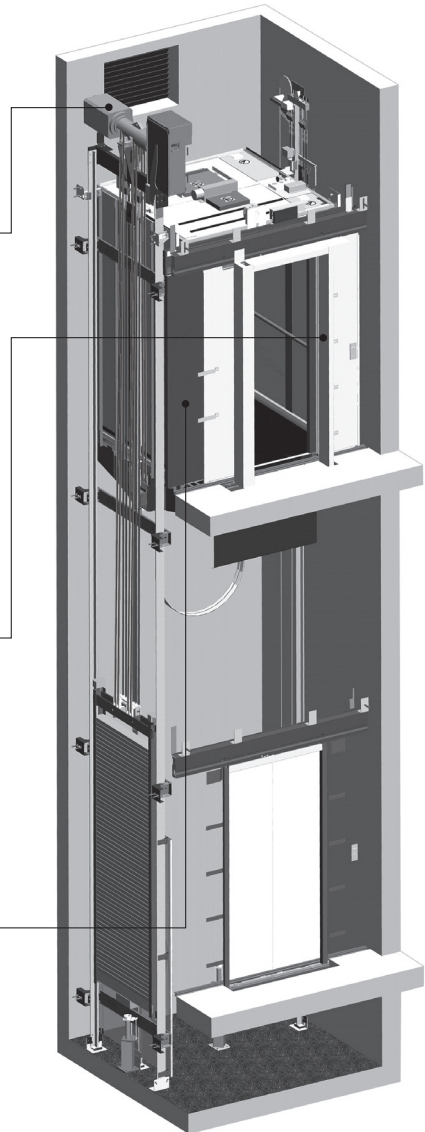
- Green gearless machine for smooth ride quality
- Efficient motor enabling a direct power transfer, avoiding loss of power
- Stable start without high peak current, quickly reaching a low energy consumption level
- Frequency converter equipped with stand-by power mode
- Environmentally friendly as no oil is needed for lubrication
- Compact, light weight, and durable design that optimises material usage

## Control

- System switches car lights and ventilation into stand-by mode when not in use
- Car panel and floor indicators operate with low power LEDs
- Multi-bus control
- Smart operation, down collective and selective collective controls for efficient passenger transportation


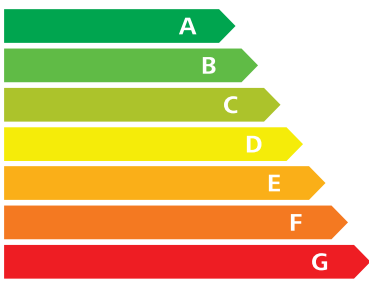


## Car and hoistway

- Car lighting equipped with energy saving lamps
- Central guiding system reduces mechanical friction and energy consumption
- Door drive with stand-by mode for safety and energy conservation
- Machine-room-less and Eco-effective design allows for more space in the same shaft and saves construction resources
- Lead free counterweight



# Schindler 7000 Energy Efficiency Label

Case study : Actual measurement carried out on 13 April 2010. Schindler 7000, high rise elevator achieved the A class energy rating from the VDI 4707, the highest rating under the VDI 4707 classification.

Elevator energy efficiency certificate	
<p>Manufacturer: Schindler                      Location: Shanghai China                      Elevator Model: Schindler 7000                      Elevator Type: Electric operated passenger elevator</p>	 <b>Schindler</b>
<p>Energy efficiency classes</p> 	
<p>Energy demand kWh/year</p> <p>Nominal demand per year for nominal values shown.</p>	<p>25,267</p>
<p>Rated load: 1,600 kg                      Rated speed: 4 m/s                      Operating days / year: 365                      Standby demand: 294 W                      (energy demand class D)                      Specific travel demand: 0.462 mWh/kgm                      (energy demand class A)</p>	
<p>Usage category 5                      according to VDI 4707                      Comparison of energy efficiency is only possible                      under equal usage.</p>	
<p>Date: 13.04.2010                      Reference: VDI 4707 Part 1 (Issue March 2009)</p>	

## Efficient system

The Schindler 7000 high rise elevator follows an efficient system approach, resulting in optimised energy demands, ecologically responsible production and material usage, convenient planning, fast installation and trouble-free maintenance.

### Drive

- Regenerative drive technology, return of regenerated energy to power line
- Synchronous and asynchronous gearless motor technology
- Outstanding ACVF technology
- Best in class Power factor 1 technology and THD (total harmonic distortion) of  $\leq 3\%$
- Top efficiency factors
- Reduction of energy consumption

### Car and hoistway

Car:

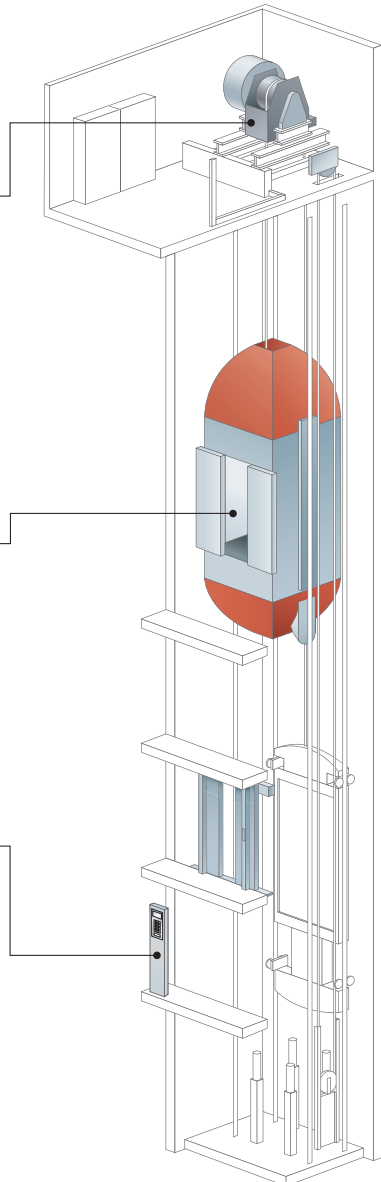
- Automatic switch-off of car lighting if elevators are not in use
- Use of highly efficient roller guide shoe

Door:

- Highly efficient synchronous and asynchronous motor
- Low-friction mechanics

### Control

- Traffic Management System
- Schindler development: Intelligent, energy-saving application thanks to microprocessor technology
- More performance with fewer elevators
- Direct travel with minimum stops
- Faster availability of cars
- Reduction of empty car operation



We don't just talk green,  
we act green.

Corporate citizenship at Schindler:

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