



Energy efficiency for lifts The challenge for components manufacturers



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Number of electrical motors installed in Italy

✓ Industry:	14,4 million
✓ Agriculture:	0,09 million
✓ Tertiary:	4,8 million

Total number of motors installed in Italy

19,1 Million
(12,5 million < 90kW)



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Italian Industry

Electrical consumption
of the Italian industry:
155,7 TWh / year



... **20%** is “waisted” because of old
technologies...



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Italian Industry

Electrical motors
132 TWh / year



... **20%** is “waisted” because of old technologies...



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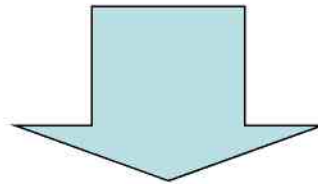
Italian Industry

...If a better technology already available could be used in Italy...

...it should be possible to save

25 TWh / year

(annual consumption of Ireland)



... CO₂ emission reduction of more than **12 Mton / year**



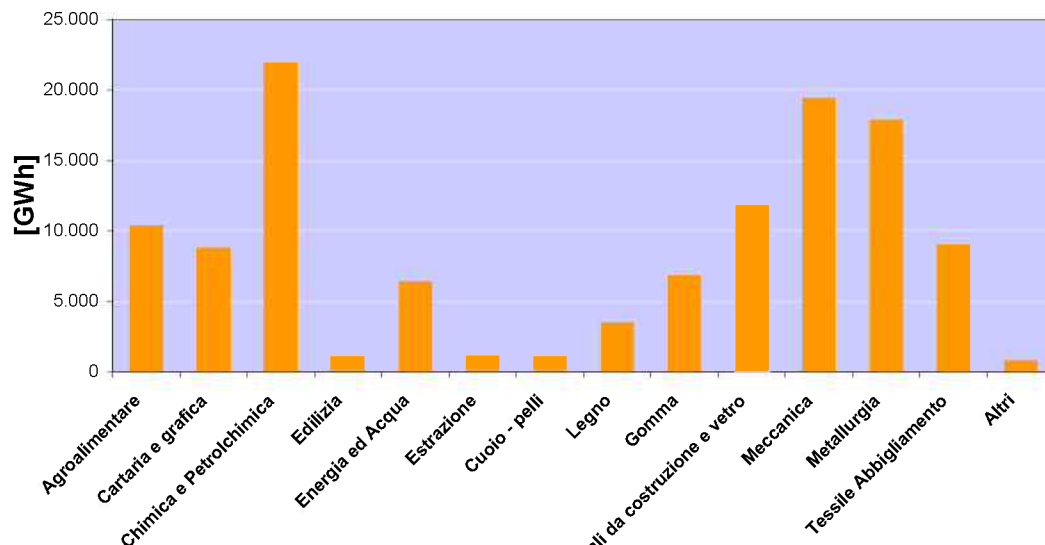
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Sector with more energy consumption

- Chemicals ... in the oldest and less efficient installations
- Steel and metal
- Water, food & beverage, rubber and plastic
- Paper: (high efficiency)

Consumo motori divisi per settore industriale



Settore	$\Delta 2000/2010$
Agroalimentare	29%
Cartaria e grafica	27%
Chimica e Petrochimica	19%
edilizia	15%
Energia ed Acqua	23%
Estrazione	16%
cuoio - pelli	17%
legno	31%
Gomma	36%
Materiali da costruzione e vetro	25%
Meccanica	31%
Metallurgia	9%
Tessile Abbigliamento	13%
altri	37%



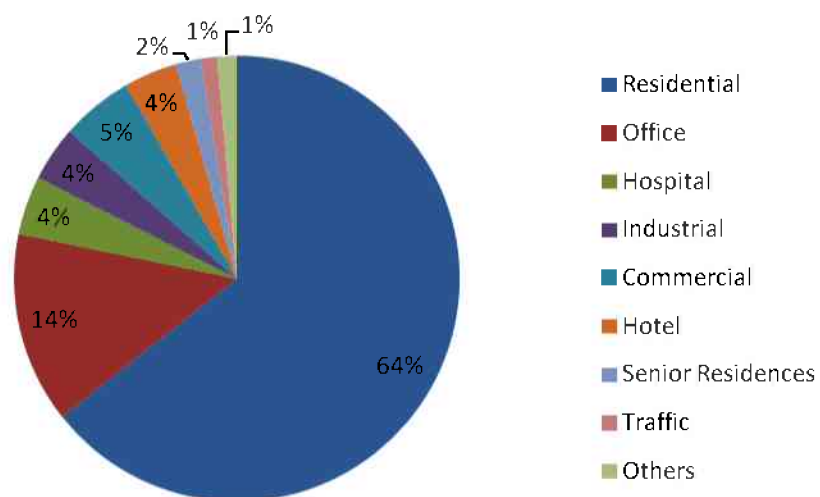
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[Source: ANIE/CESI/Assoutility]

Lifts and escalators in Europe

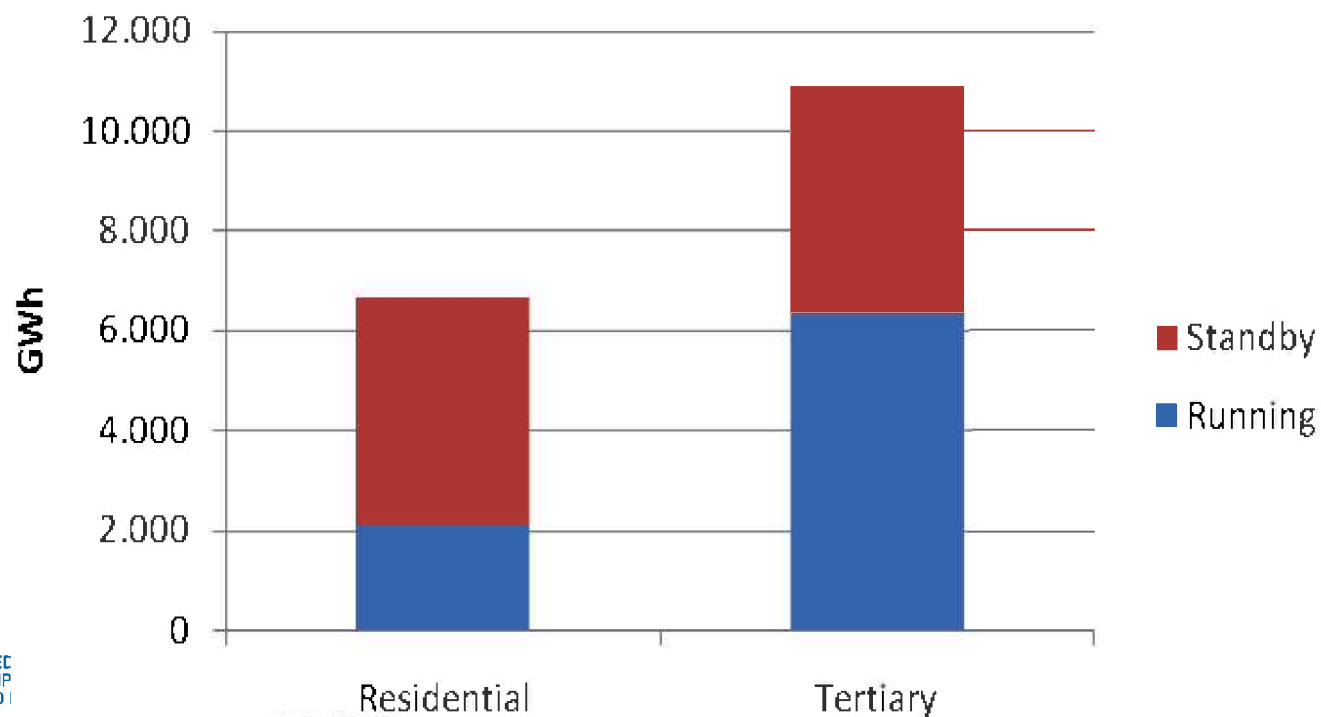
In 2009, there were about 5 million lifts and 75,000 escalators installed in Europe (source ENEA)



Every year, the new installations are of about 125,000 lifts and 5,000 escalators (source ENEA)

Lifts and escalators in Europe

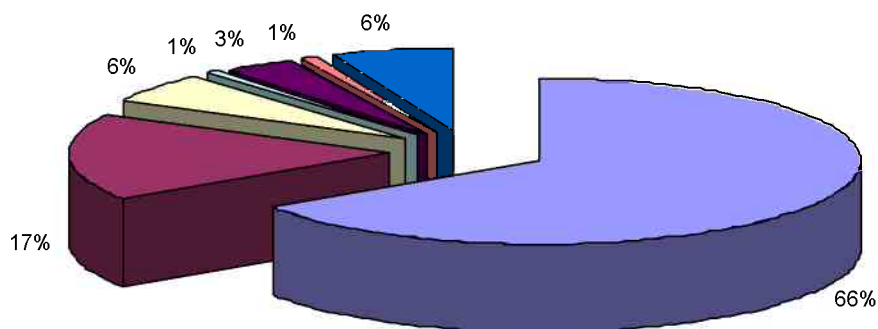
The electric consumption of the lifts installed in Europe is about 18TWh/year (source ENEA)



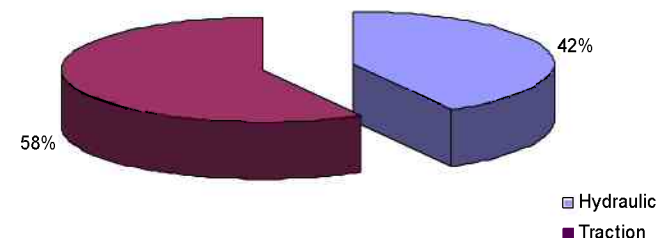
Lifts and escalators in Italy

In Italy, about 900,000 lifts are installed

(Source ANIE/AssoAscensori)



- Residential
- Commercial
- Other
- Industrial/Office
- Hotel
- Hospital
- Public transportation



(Source ANIE/AssoAscensori)

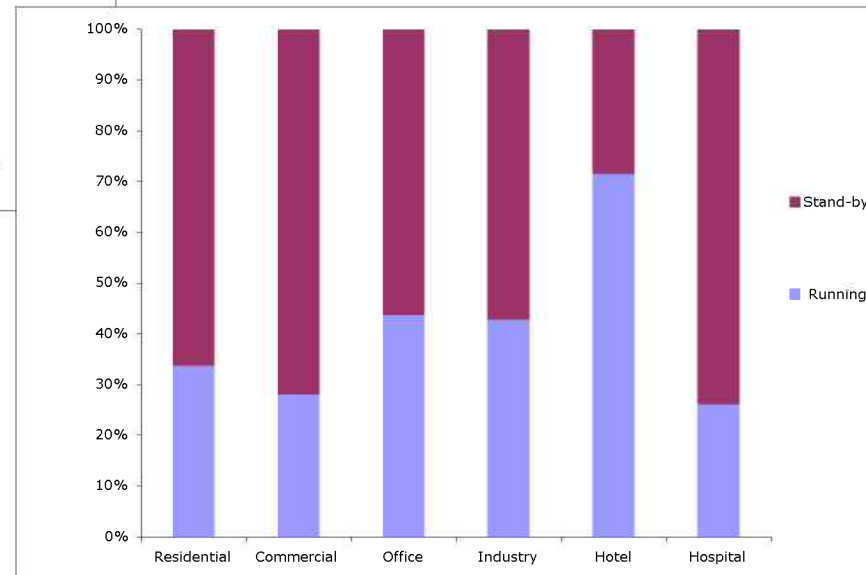
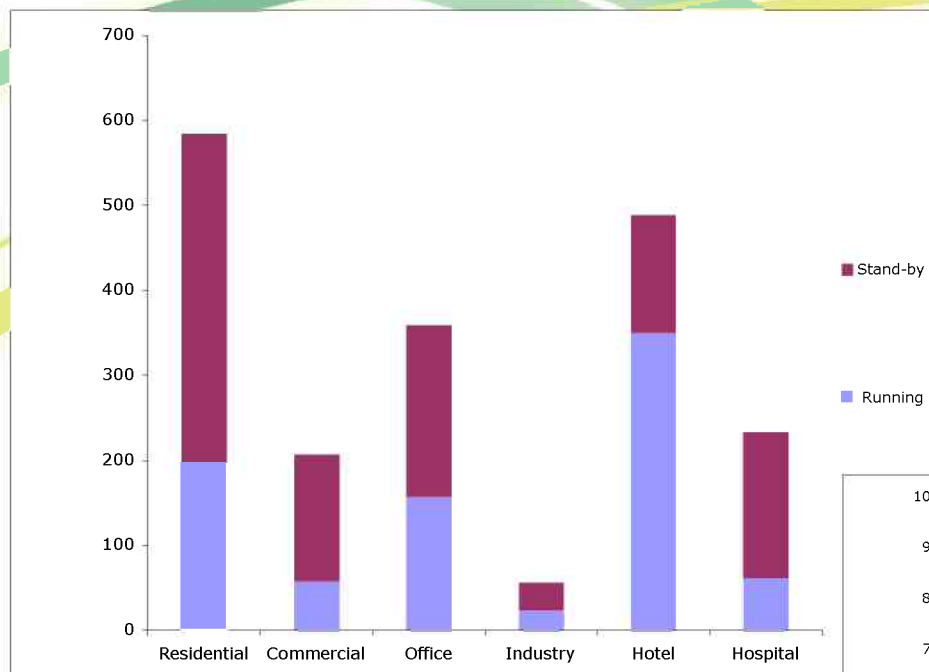
Total consumption in Italy: about 1950 GWh Source: ENEA



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Lifts and escalators in Italy



Source: ENEA



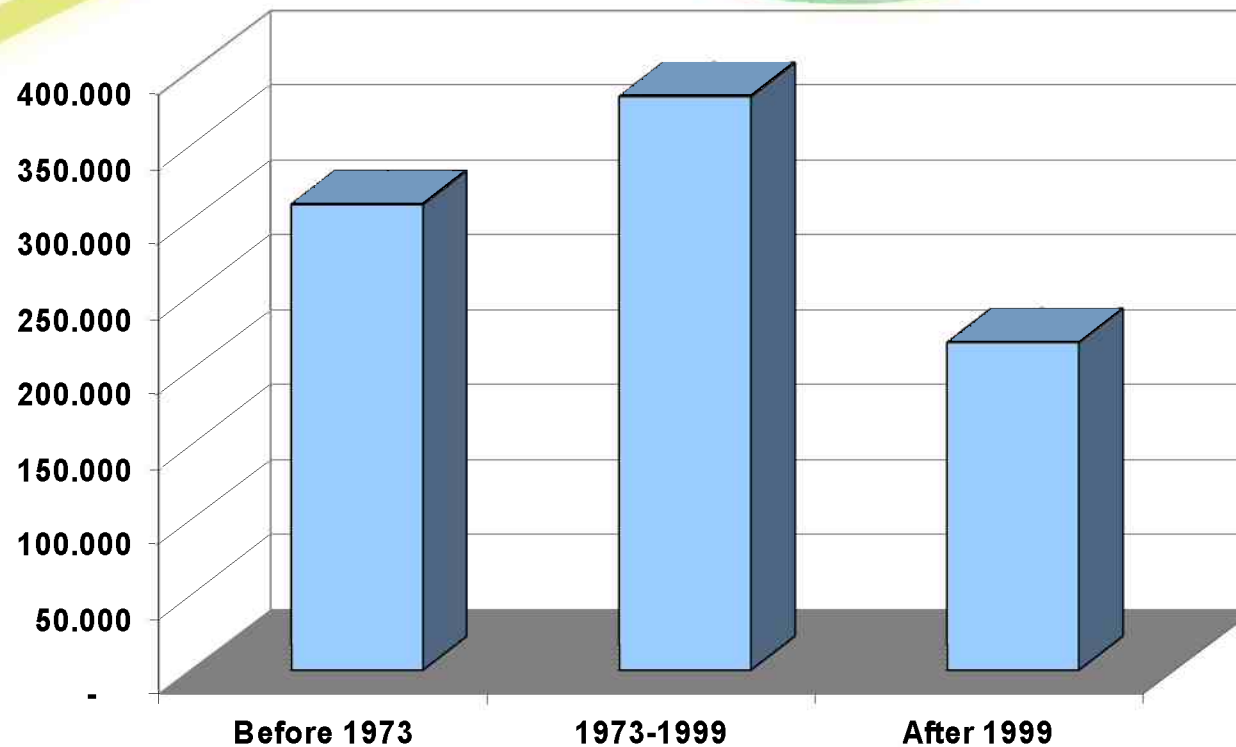
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Lifts and escalators in Italy

	<i>Technology</i>	<i>Drive system</i>
Before 1973	Electromechanical	Geared traction / 1 speed
From 1973 to 1999	Electromechanical	Hydraulic Geared traction / 1 speed
After 1999	Electronic	Gearless Inverter

Lifts and escalators in Italy



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(Source ANIE/AssoAscensori)

How to improve the energy efficiency

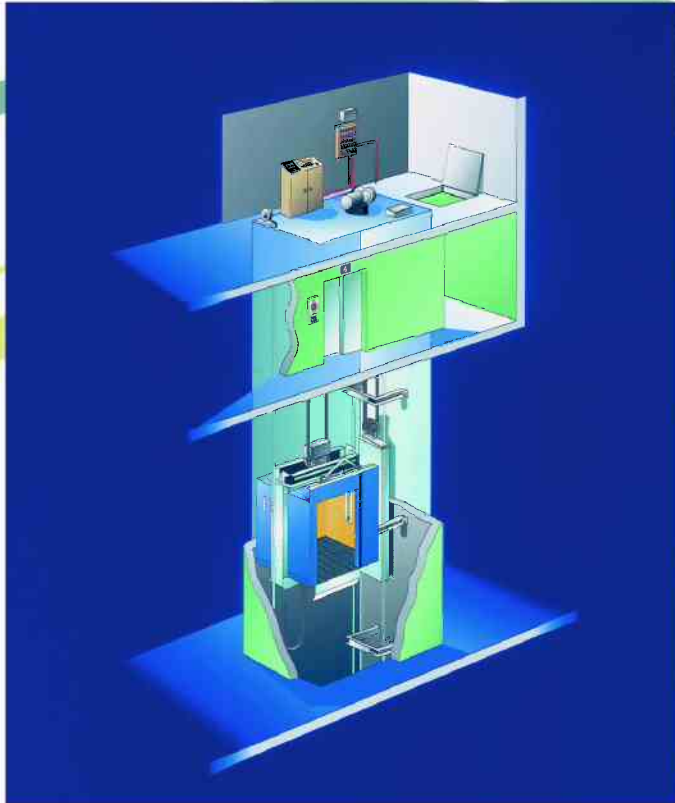
- Correct sizing of the car, load and speed
- High efficiency motors properly sized
- Use of an inverter to drive the motors
- Use regeneration systems



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Example - Inverter used to control a motor for a lift



2 speed lift with geared conventional motor

- 8 floor building
- Lift speed: 0,6 m/s
- 22 apartments for a total of 54 people
- 650 starts per day
- Energy consumption in 2007 = €1.350

Solution with a direct drive motor driven by an inverter

- Power: 5,5 kW
- Estimation of energy consumption in 2008 = 410 €
- Plant cost: 1400 €

Payback in less than 2 years!

Example - Inverter used to control a motor for a lift

2 speed lift with geared conventional motor

Energy saved in 5 years

€ 3.240

Thanks to the installation of a direct drive motor with the inverter!

2008 = 410 €

■ Plant cost: 1400 €

Payback in less than 2 years!



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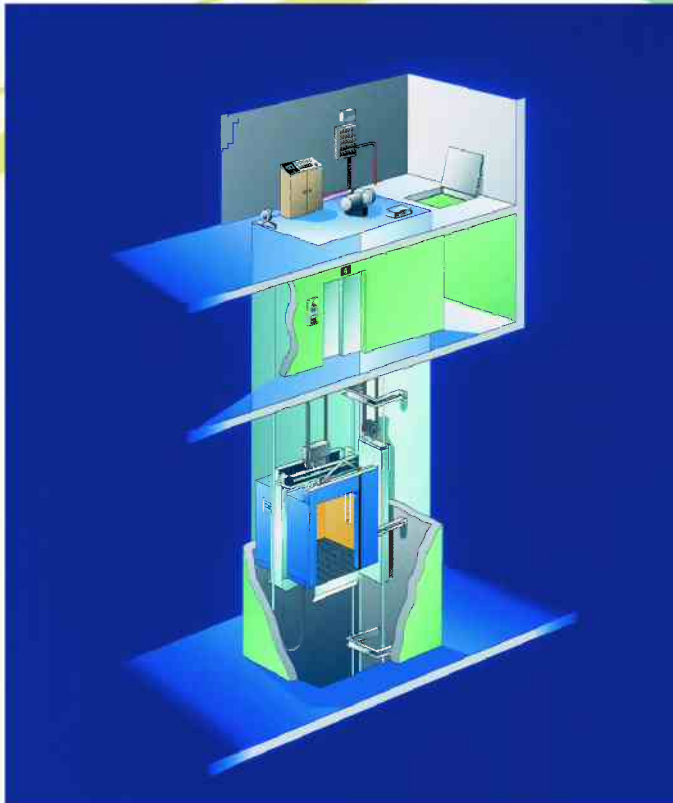


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Example 2 - Inverter used to control a motor for a lift

4 lifts with geared conventional motors installed in an hotel with regenerative inverter

- 8 floor building
- Lift speed: 1,6 m/s
- 1,000,000 starts per year
- Use of the inverter for motor driving
- Measurement of saved energy:
 - 0,04kWh saved to move from the 1 floor to the 8 floor (without people) for one lift
 - In total, about 40,000kWh saved per lift and per year
 - In total, about €4,000 saved per lift and per year
 - **For the 4 lifts, about €16,000 saved per year**





THANK YOU VERY MUCH



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