

# Energy Efficiency of Lifts

## Up to 80% stand-by consumption!



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[www.energy-efficiency.ch](http://www.energy-efficiency.ch)

Lifts are considerable electricity consumers in buildings – especially commercial.

In a Swiss research project (2005) energy consumption (kWh) and division into drive and stand-by energy have been investigated. 33 lifts of different types and manufacturers were measured and analysed. A projection of energy consumption by a standard usage was calculated.

Final report > [www.electricity-research.ch](http://www.electricity-research.ch)



[www.swiss-energy.ch](http://www.swiss-energy.ch)

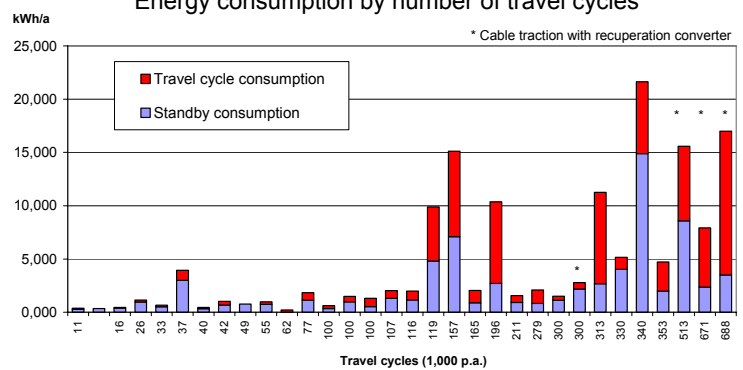
### Energy consumption figures

Total electricity consumption of the approx. 150,000 lifts in Switzerland was projected as 280 GWh p.a. or 0.5% of the country consumption. In certain buildings, lifts may account for up to 10% of the electricity consumption.

Energy consumption of typical rope lifts:

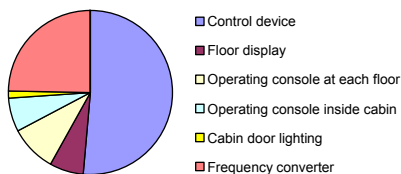
Type of building	Capacity kg	No. of stops	No. of cycles p.a.	Total kWh p.a.	% stand-by
Small apartments	630	6	40,000	950	83%
Office block/ medium size apartment block	1,000	8	200,000	4,350	40%
Hospital, large office block	2,000	12	700,000	17,700	25%

### Energy consumption by number of travel cycles

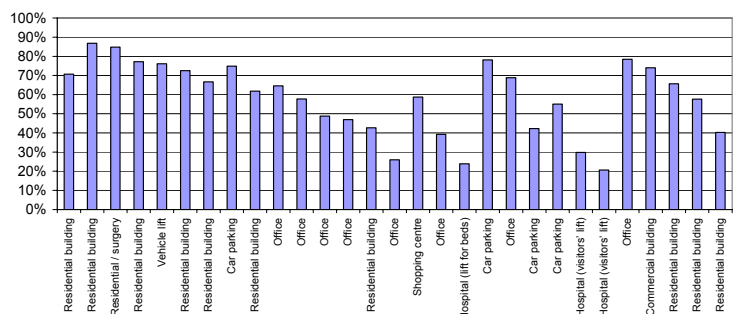


### Composition of stand-by consumption

Typical shares of the different components to stand-by consumption – example with switch-off of cabin lighting facility:



### % of stand-by consumption, by type of building



### Energy saving measures

#### Technology

- Reduce stand-by power, develop sleep mode
- No lights on or doors under power when not in use
- No hydraulic drive unless with counterweight or energy storage
- Efficient drives: adjustable speed drive, frequency converter, PM-motor, gearless drive, recuperation converter
- Optimisation of counterweight: 20% instead of 40...50% of nominal load, according to average load
- Efficient lighting: FL & CFL instead of halogen lamps

#### Planning and dimensioning

- A minimal number of lifts in a building reduces cost, required space and power/energy needs
- Lower travel speed needs less power: 0.63 metres per second is sufficient for up to 6 and more storeys
- Lift control: collective instead of taxi operation saves travel cycles
- Lift system architecture: suspension type and guide elements influence friction losses

### Typical power input while travelling down - up (rope lift, empty)

