

Innovation
Hannover 2013
SWISS Pavilion Hall 4

ReEnergy

ECC™: Super Premium Efficiency EC-motor with Variable Speed
COMPARISON with AC-motor and AC-drive



**AC-motors consume 40%
of the industrial electrical energy,
ECC™ provides 15% ... 40% energy-savings.**

AC-Motor

ECC™ Motor

Motor + Converter

[Compatible
Dimensions]

[Not
Compatible
Dimensions]



low price 100%
Standard Efficiency
Weight 100%
No Speed Variation

low price 150%
High Efficiency IE2-IE3
Low Weight 120%
Full Speed Variation

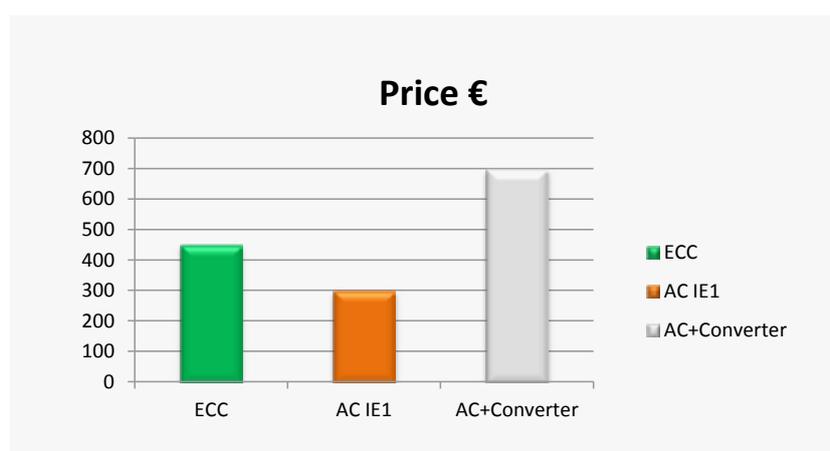
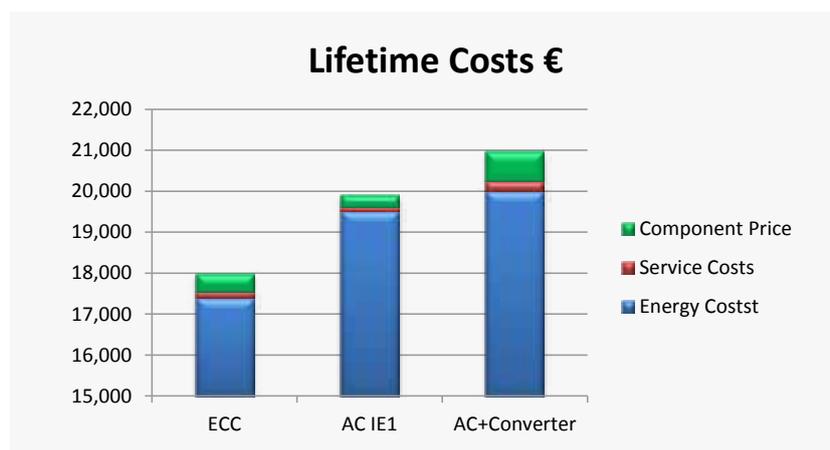
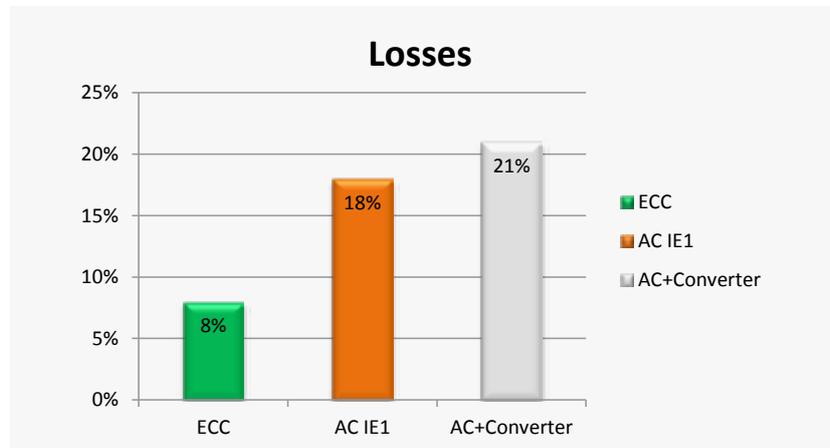
high price 250%
Low Efficiency 82%
High Weight 150%-200%
Full Speed Variation

The ECC-Motor with the same mechanically dimensions as the equivalent AC Motor

- it's about 10% lighter as the AC-Motor,
- it has the highest efficiency: super premium efficiency,
- it's less expensive and more efficient as an AC-Motor + Converter.

I. ECC™ is the solution with the lowest lifetime costs

ECC™: Electrical Commutated (EC) Motor with variable speed;
 AC IE1: AC-motor standard efficiency IE1;
 AC+Converter: AC-Motor IE1 plus IGBT-Converter (AC-Drive).



The calculation of the lifetime-cost is based on 4 kW motor IE1 with 40`000 hr lifetime and 10 ct. per kWhr. The 4 kW ACC cost 200€ more as an AC motor and saves 20`0000 kWhr or 2000€ during his lifetime; the payback time is 4000 hr or one year of operation. The value of the saved energy is four times higher as the ACC-sales price.

II. Energy Savings by using of the ECC™-Motor

The ECC-Motor reduces significant the energy consumption, based on tree effects:

- 2.1 The ECC-Motor uses a premium-efficiency motor and saves up to 15% of the energy of the IE1 Motor, because of the better efficiency, the savings are not depending from the application;
- 2.2 The ECC-Motor provides variable speed; the power can be adapted to the process. ECC-Motor saves additionally up to 40% of the energy, depending from the application.

III. Short payback time of the ECC™-investments

The ECC-Motor reduces significant the energy consumption and the ECC-price is lower as the price of AC-motor and separate converter. The payback time for the price-difference between an AC-Motor and the ECC-Motor depends from the application and varies between 0.5 - 2 years. The value of the saved energy during the life-time of the ECC-Motor is 3-4 times higher as the sales-price of the ECC-motor.

IV. ECC™: low weight, less material, minimal space, compatible dimensions, simple installation

- 4.1 The ECC-Motor uses motors with low weight and without any rear earth materials. The weight of the ECC-Motor is usually 30% less as the weight of the equivalent AC-Motor. The weight of the ECC-Motor is significant lower as the weight of the equivalent AC-motor with separate converter;
- 4.2 The dimensions of the ECC-Motor are similar or equal to the dimensions of the equivalent AC-motors and much smaller as the space necessary for the equivalent AC-motor with separate converter;
- 4.3 The installation of the ECC- motor can be reduced to the connection with the grid, also similar to the installation of an AC-motor and much simple as the installation of a converter with separate motor.

V. ECC™ allows product standardisation and automaton

- 5.1 The Speed and Power of the ECC-motor don't depend from the local line - frequency and line-voltage (50/60 Hz etc.), otherwise as the speed and power of the AC-motor. It's possible to export worldwide products including ECC without any changes
- 5.2 The ECC-motor can be easy integrated in automation systems, because of the integrated serial interface, references, fault detections and feedbacks.

FAZIT: the ECC™ motor is the product with the lowest lifetime-costs, the best technically performance and shortest payback time