

EUP PREPARATORY STUDY LOT 11
MOTORS (SUB-STUDY)
MINUTES FOURTH STAKEHOLDER MEETING

Venue: EC, Brussels
Thursday 25 October 2007

List of Participants (Stakeholders and Project Team):
Please see list at the end of this document

European Commission Officers:
Ismo Gronroos-Saikkala,
Kerstin Lichtenvort

These minutes record the main issues and outcomes discussed at this fourth stakeholder meeting. The agenda of this meeting was posted on the study web-site in advance of this meeting, and an e-mail sent to all registered stakeholders to alert them to these web-site updates. The discussion and questions raised were based on the contents of the fourth report also posted on this web-site in advance of the meeting.

http://www.ecomotors.org/files/Lot11_Motors1-7_DraftFinalReport.pdf

Presentation and Discussion

A presentation was made with the key developments of the results achieved so far. This presentation can be downloaded from the web site:

http://www.ecomotors.org/files/MotorsPresentation_Oct07.pdf

After the presentation there was discussion with the stakeholders, from which the main issues are reported in the following text.

The Secretary General from CEMEP mentioned his concerns about the use of IE3 efficiency levels as BAT, due to the lack of availability of such models in the EU market. Because of the lower frequency (50 Versus 60 Hz) and because of the smaller frame sizes, there are technical challenges to achieve IE3 efficiency levels in the low frame sizes. These constraints led to an earlier decision in previous stakeholder meetings to analyse as BAT both IE2 and IE3 motors.

One motor manufacturer, Baldor, mentioned that they were already marketing IE3 50Hz motors from 7.5kW upwards. Conrad Brunner mentioned that in the Swiss market IE3 50Hz motors can be bought from 4 kW upwards.

Action

An investigation will be carried out about the most recent developments in the motor Premium market regarding availability at different power levels. In any case analysis was already carried out for both efficiency levels.

The energy savings as a function of the number of poles was questioned. There may be differences between 2,4 and 6 pole motors. In the 1st meeting it was agreed that 4 pole motors would be considered for ecodesign analysis, because of dominant share of the market.

Action

Based on the estimated share of the market, and on the efficiency levels defined by the standard IEC - 60034-30, an assessment of the impact of the number of poles on the energy savings will be carried out.

The amount of energy savings provided copper rotors in the draft report was questioned. In the report both the limited savings introduced by just upgrading the rotor material, as well as the much larger overall improvement of an optimized motor are presented.

Action

Copper rotors may be used where the manufacturer wants to improve efficiency and/or power density (to avoid to change frame size). This section will be more clearly explained.

The potential problems of connecting VSDs to motors were raised. The insulation collapse was indeed as problem when VSDs were installed on older motors. Fast switching of the power electronics creates fast transients, which may be further amplified by reflection on long cables, leading to voltage spikes causing a sharp stress on the motor insulation. Motor manufacturers now use better insulation materials which can withstand those voltage spikes. The integrated drives, mitigate this problem due to the short connection between the motor and the VSD, avoiding amplifying the transients.

The Secretary General from CEMEP thanked the investigations being made in VSDs, not initially foreseen. However, the opinion was made that separated VSDs should not be discriminated, in relation to integrated VSDs.

Action

The report does not discriminate, but the separated VSDs are formally out of the scope of the study, because it is different product.

A discussion was made on the issue of retrofitting existing operating motors. In Page 59 – in 3.1.9 – economical factors “Generally it does not economically make sense to replace existing operating motors”. The golden opportunities are in new

installations and in the replacement of the motor when it fails. However some grossly oversized motors, operating a large number of hours may be replaced with properly sized energy-efficient motors

Action

This issue will be more clearly explained.

In Section 3.2 the sentence -“Testing errors. Round-robin tests with that same motors performed in different laboratories, using direct test methods (e.g. IEEE 112-B), lead to maximum errors of near 10%.” is not clear

Action

This issue will be clarified, meaning 10% of the losses.

In Section 3.6 the sentence “High efficiency motors, because of lower rotor slip, normally have a higher rotating speed than standard efficiency motors. In retrofit applications, when driving loads such as centrifugal pumps or fans, the power consumption of the high efficiency motor may be higher...” was questioned.

Action

This issue will be clarified. In some cases the replacement motor can be downsized, avoiding that potential problem.

In Page 64, 3 different motor sizes and 3 different levels of efficiency are used. However, it was mentioned that the CEMEP agreement only goes up to 90 kW.

Action

It was explained that IEC standard efficiency levels are used to defined the equivalent EFF1 and EFF2 levels at 110 kW. This issue will be clarified.

In the EcoDesign analysis the use of the 60% value for the motor load factor was questioned - where does this come from?

Action

It was explained that this figure comes from the SAVE project “Improving the efficiency of electric motors and drives”, coordinated by Anibal De Almeida, which looked more than 6000 motors.

This report is reference (1) in Bibliography in page 100.