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COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 22.7.2009
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COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

**PROPOSAL FOR A COMMISSION REGULATION
implementing Directive 2005/32/EC with regard to Ecodesign requirements for
circulators**

FULL IMPACT ASSESSMENT – PART 3

**{C(2009) 5677}
{SEC(2009) 1017}**

TABLE OF CONTENTS

ANNEX 6: EEI CALCULATION METHOD – TECHNICAL BACKGROUND TO THE UPDATE.....	3
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ANNEX 6: EEI CALCULATION METHOD – TECHNICAL BACKGROUND TO THE UPDATE

This Annex explains the technical background to the update of the Europump calculation scheme, which was used as the basis for the voluntary energy labelling of circulators.

Definitions



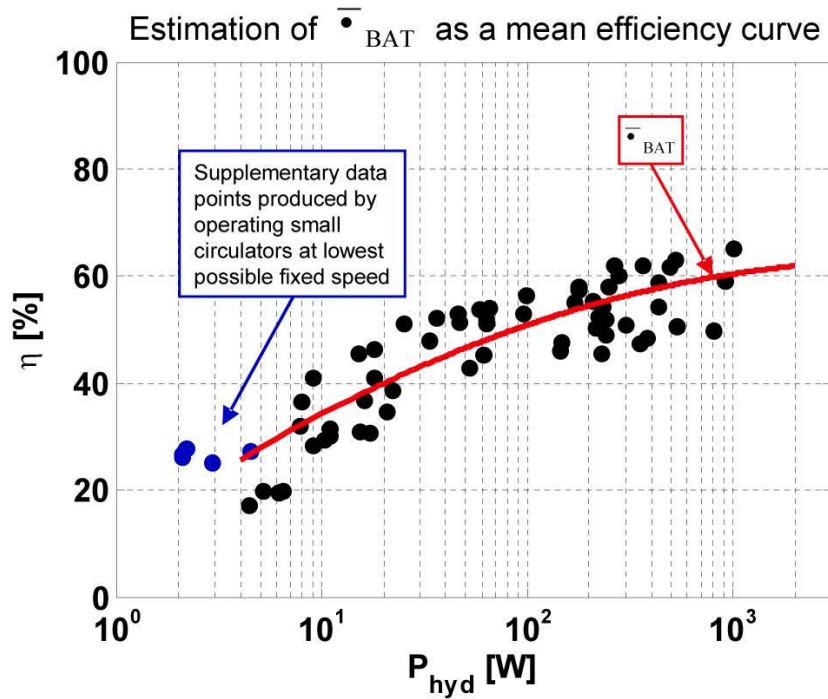
based on:
$$EEI = \frac{P_{avg}}{P_{ref}}$$

with:
$$P_{ref} = f(P_{hyd}, \bar{\rho}_{BAT})$$

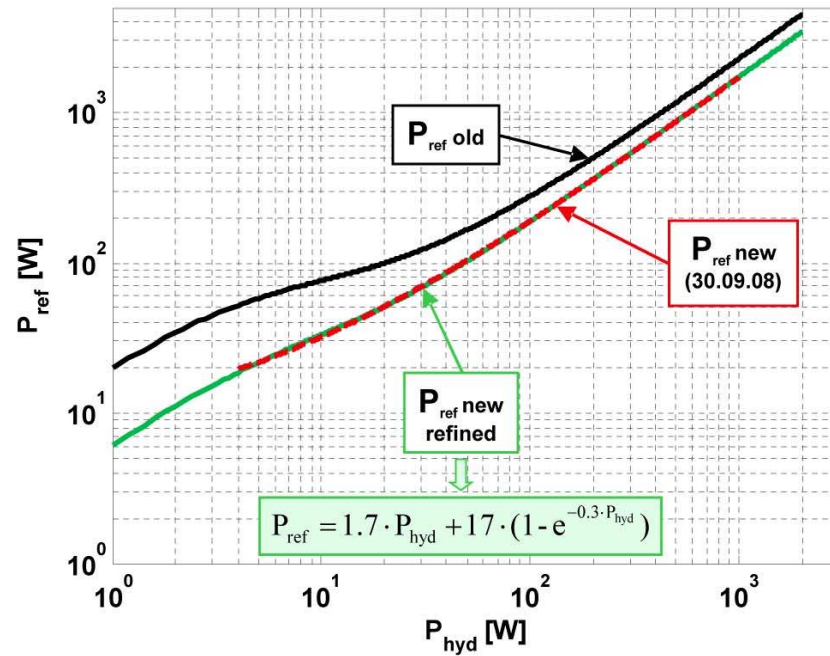
additional factor 'C':
$$EEI = \frac{P_{avg}}{P_{ref}} \cdot C$$

'C' defined by the European commission is necessary as 'scaling factor' to come to an EEI • 0.2 for 20% of circulator types

Efficiency curve based on data received from 8 pump manufacturers (the inquiry was send to 12 companies)



Comparison of $P_{ref\ old}$, $P_{ref\ new}$ and $P_{ref\ new-refined}$



New refined mathematical relationship

P_{ref} as a function of P_{hyd} (100)



$$P_{\text{ref}} = 1.7 \cdot P_{\text{hyd}} + 17 \cdot (1 - e^{-0.3 \cdot P_{\text{hyd}}})$$

The definition above is only valid for
stand-alone circulators for heating systems
and values of hydraulic power

$$P_{\text{hyd}(100)} \geq 1 \text{ W}$$

Comparison of data points with P_{ref} new-refined

