# ANNEX C: Draft Guide Proposals – Energy Saving Estimates: Metal-Working MT, Stone & Ceramics Working MT: Policy Option 2, Ecodesign Mandatory "Points" Implementing Measure

The table below gives suggested energy savings by measure, but as already discussed in relation to Policy Option 2, the energy savings from multiple measures cannot simply be added together in a linear way.

| **Measure** | **EuP estimate** | **CECIMO estimate** | **Suggested machine energy saving to be ascribed to measure (%)[[1]](#footnote-2)** | **Comments** |
| --- | --- | --- | --- | --- |
| **Design for instant machining without warm-up** | 1.0% |  | 3 | Definition requires additional information to allow clear assessment |
| **Work piece clamping and tool clamping** | 1% |  | 3 | Definition requires additional information to allow clear assessment |
| **Multi spindle-/ multi work pieces machining** | *5%* |  | *4* | No clear definition provided |
| **Complete machining all sides** | *1%* |  | *3* | No clear definition provided |
| **Combination of various technologies (turning + milling + laser + grinding etc.)** | 5% |  | 4 | This is a measureable action |
| **Axis clamping** |  |  | 2 | Not part of the EuP study - similar technology to work piece clamping |
| **Drive Units** |  |  |  |  |
| **Regenerative feedback of inverter system (e.g. servo motor/spindle)** | 0.5% | 10% | 3 | CECIMO estimate for component improvement and not the whole MT |
| **Use of energy efficient motors for auxiliary units** | 1.0% | 12% | 2 | CECIMO estimate for component improvement and not the whole MT |
| **Use of energy efficient motors for intelligent magnetic flux control** |  |  | **2** | Not part of the EuP study - no clear definition provided |
| **Mass free compensation of load for vertical axes** | **1.0%** |  | **2** |  |
| **Use of break for non-moving axes** | **0.5%** | **3%** | **2** |  |
| **Inverter system with high efficient power device** |  |  | **3** | Not part of the EuP study |
| **Higher voltage inverter systems (e.g. 400V) to substitute 200V systems (where applicable)** | 1.0% | 15% | **2** | CECIMO estimate for component improvement and not the whole MT. Requires infrastructure change beyond product |
| **Hydraulic System** |  |  |  |  |
| **Discontinuous operating pumps** | 1.0% |  | **2** | Not part of ISO standard, but is an auditable action |
| **Speed controlled pumps** | 1.0% |  | **2** | Not part of ISO standard, but is an auditable action |
| **Fixed orifice blades to control the system pressure** | 0.5% |  | **1** | Not part of ISO standard, but is an auditable action |
| **Pneumatic systems** |  |  |  |  |
| **Selection of optimal drive subsystem (motor-pump - Different function sequences create the need for pump  system)** |  |  | **3** | Not part of the EuP study, and the definition is not clear |
| **- Single master switch-off** | 1% |  | **2** | Is an auditable action |
| **- Individual switch-off capability for specific modules** | 1% |  | **3** | Is an auditable action |
| **- Intelligent shut down procedures** | 3% |  | **4** | Is an auditable action |
| **- Leak indicator, on demand monitoring** | 1% |  | **3** | Is an auditable action |
| **Directed switch off of not needed branches** |  |  | **2** | Not part of the EuP study, but is an auditable action |
| **Directed switch off** |  |  | **2** | Not part of the EuP study, but is an auditable action |
| **ISO 4414 shall be applied** |  |  | **1** | Not part of the EuP study, but is an auditable action |
| **Electric systems** |  |  |  |  |
| **Converter with power factor correction** | 1% |  | **2** | Is an auditable action |
| **Thermal management regarding control cabinet** |  |  | **2** | Not part of the EuP study, but is an auditable action |
| **Cooling lubrication system** |  |  |  |  |
| **Discontinuous operating pumps** | 0.5% |  | **2** |  |
| **Minimal quantity lubrication (MQL) when advantage** | 0.5% |  | **2** |  |
| **Adjustable pressure for cooling lubrication** | 0.5% |  | **1** | Not part of the ISO standard, but is an auditable action and could potentially be included |
| **Controlled flow rate** | 1.0% |  | **1** | Not part of the ISO standard, but is an auditable action and could potentially be included |
| **Inverter controlled motors for lubrication system** | 0.5% |  | **1** | Not part of the ISO standard, but is an auditable action and could potentially be included |
| **Cooling system** |  |  |  |  |
| **Demand dependent cooling** |  |  | **3** | Not part of the EuP study, but is an auditable action |
| **Power electronics** |  |  |  |  |
| **Avoidance of transformers by use of voltage-proof converter** | 0.5% |  | **2** | Not part of the ISO standard, but is an auditable action and could potentially be included |
| **High efficiency transformer** | 0.5% |  | **2** | Not part of the ISO standard, but is an auditable action. Cannot be combined with 8.1 |
| **Controlled switching power supply for auxiliary power 24V** | 0.5% |  | **2** | Not part of the ISO standard, but is an auditable action and could potentially be included |
| **Machine concept** |  |  |  |  |
| **Thermal management regarding control cabinet** | 0.5% |  | **2** | Not part of ISO standard, and definition is not clearly defined |
| **Switching valves with low Watt technology / alternative control via use pulse width modulation (PWM)** | 0.5% |  | **2** | Not part of the ISO standard, but is an auditable action and could potentially be included |
| **Peripheral devices** |  |  |  |  |
| **Demand depending controlled peripherals (devices like mist extraction, chip conveyor, etc)** | 1.0% |  | **2** | Is an auditable action, but definition is imprecise |
| **Control systems** |  |  |  |  |
| **Setting for operating condition (customer specific unit switch-off, e.g. screen saver for operating terminal and work space lighting to be switched-off when not in use)** | 0.5% |  | **2** |  |
| **Automatic operating state switching** | 1% |  | **2** | Is an auditable action, but definition is imprecise |

1. Best estimates of report project team. Further verification of energy savings by additional experts would be useful. [↑](#footnote-ref-2)