



## Deliverable D2.2

### Technical Sector Report on Data Models for Industrial Machines

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## Executive Summary

The main objective in this WP is to develop simplified operation methods to reduce the practitioner's efforts to acquire life cycle inventory data and to reduce methodical complexity for an easy to use tool.

The tool is designed to target two groups: primarily, SMEs in the production of machine tools who will use it for product improvements and secondarily the customers of these SMEs or users of the machine tools who can employ it for product comparison.

Based on the case study research on environmental assessments carried out in WP1, industrial machines are use intensive products due to the dominance of the environmental impact of the energy consumption in the use phase. The current standardisation and possible future legislation for industrial machines also focuses on the energy consumption and energy efficiency. Additionally in some cases where machines are used less intensively, contained material is an important factor, one which was also requested as a main component for the webtool by the SMEs.

The proposed two-step approach is composed of a rough assessment including the whole product life cycle, followed by a detailed assessment according to the results of the first step.

In the first step the environmental profile of an industrial machine will be calculated by using the Cumulative Energy Demand (CED). With limited data input the environmental hot spots are defined and the focus for the detailed assessment can be specified. If the materials contribute more than 10% to the total CED in Step 1, both the materials and the energy consumption are considered in Step 2 where the total CED will be calculated. If the contained material contributes less than 10% to total CED, only the energy consumption is taken into account in the Step 2. The energy consumption should be measured according to ISO/CD 14955 and calculated in kWh. In both assessment steps, the overwhelming part of the total environmental impact of the machine tool is covered. Possible improvement strategies are provided by the tool, based on the results of the detailed assessment.

This software approach helps SMEs understand the overall environmental impact of their machine tools, gain an understanding of the relative importance of different phases and their respective impact on the environmental performance of their product.