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Compatibility Coefficient

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Authors:	Rossetti, Vaccari		
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The compatibility coefficient has been inserted in the Energy Intensive Industries List (EII List) as a qualitative indication to define a priority between the different sectors identified as interesting for heat recovery applications.

Due to the fact that the compatibility coefficient has been inserted in the EII List during the project it has been defined in two different ways depending on the availability of one or more audits in the industrial sector under analysis:

- If one (or more) of the factories belong to the industrial sector under analysis had been investigated, the compatibility coefficient has been defined based on the audit(s) result;
- If no one factory of the industrial sector had been investigated, the compatibility coefficient has been defined considering the information collected about the sector during the definition of the Energy Intensive Industries list.

The considered elements in the compatibility coefficient are:

- Presence or absence of heat recovery in internal process; where 1 indicates the total absence of heat recovery systems for the process and 3 the presence of heat recovery systems internal to the process that highly reduce the availability of thermal power.
- Access to heat source without invasive procedures for the process; where 1 is referred to the case with one discharge point for all the exhaust with an easier access (for instance, a single chimney where it is easy to install a heat exchanger) and 3 is referred to a case with multiple discharge points for the exhaust gases.
- Hours of operation per year; where 1 is referred to an amount of hours per year which ranges between 6.000 and 8.500 h/y and 3 for an amount between 1.000 and 4.000 h/y.
- Technical parameters of heat source: temperature and flow rate. Concerning temperature, 1 is referred to a temperature higher than 300°C and 3 to a temperature lower than 230°C. Regarding flow rate, the value between 1 and 3 is defined considering the temperature, in order to attribute a 1 to flow rates that permit to achieve a high thermal power (> 3 MWt) and 3 to flow rates that lead to a low thermal power available (< 2MWt).
- The quality of the heat source; where 1 indicates clean gas without presence of dust and 3 indicates dirty gas with presence of dust or other negative characteristics (presence of ash, critical dew-point, ...)

The availability of data varies depending on the sector study level.

An example:

Elements	Value 1-3	NOTE
ATECO Sector: Melting of other non-ferrous materials – Secondary refinery		
heat recovery in internal process	3	Usually presence of pre-heating of the raw material (billets)
source temperature	1	Very high temperature of the exhaust
source flow rate	2	Usually it is not so high, due to the use of electric induction furnaces for the melting process
source quality	1	In the most cases the raw material is submitted in quite pure billets and the melting is done with induction furnaces, so the exhaust gases are quite clean and without dust
availability heat source	2	Usually there are several little furnaces, but sometimes the exhaust are piped to a single chimney
h/y operation	2	Usually these companies work only during the weekdays and on two shifts per day
COMPATIBILITY COEFFICIENT	2	Interesting sector, but only for few cases

Table 1 Example of definition of the compatibility index