Input on draft Tasks 1-4
Preparatory study on Low-pressure and Oil-free compressor packages

June 2016

We welcome the launch of a new study on low pressure and oil free compressors, as we had been calling for. The Interim Report published on 30 March 2016 by VHK, is well structured and follows the MEErP method. The potential energy savings of heat recovery from compressors (in the light of a potential future system approach) is not sufficiently elaborated, although information is available.

- **Definitions (Task 1)**

Last chapter of Task 1 where definitions are made, is not yet available. The current draft defines "Low pressure" according to ISO and in accordance with ventilation (a pressure of 50 mbar should not be selected as lower limit because it contradicts the standardized definition of a pressure ration of 1:1.1). Different from the first study where the upper range ended with 5 bar, the current study proposes to define the scope of oil-free compressors up to a pressure of 7 bar, which is the threshold defined by the first study for "standard air" compressors. (p. 41: pressure up to 3.5 bar is mentioned in new standard). We support a pressure range up to 7 bar for oil free compressors to avoid a gap in regulation.

A definition of a range associated with oil-free compressors is missing in standards. Why does the study define oil free applications with a pressure range starting with 7 bar? There are also other oil free applications with lower pressure, e.g. 5 bar, see this example. We ask for an extension of the pressure range for oil free applications to include low pressure oil free applications.

Within the distinction between intrinsically oil-free and free of oil-contamination, the scope definition of intrinsically oil-free is well selected and will simplify the surveillance by authorities.

Nordic Swan: Criteria for stationary oil-free compressors existed until 2009 but were not extended. Mexico and China have labelling criteria (described in the document in 1.2.9). We would like the study team to include a description of the former Swan Criteria, including a description of why the criteria are no longer in use.

The API standard 619 can serve as a model for Ecodesign because it requires a minimum service life for 20 years and at least 3 years of uninterrupted operation. Note that a fifth edition from 2010 is available.

Remarks:

- In the study, "Note: It is recognized that this is a design criterion." (page 35) should be put in quotes to make clear that this is part of the quote of API 619 No. 5.1.1

- In Chapter 1.2.6, the criterion is interpreted by the study authors: "a "design criterion" (which may mean as much as that the compressor must be operated within the design conditions stated by the manufacturer)." However, reading the rest of the requirements under No. 5 (titled "Basic design"), it is clear that the manufacturer has to design the equipment for 20 years and 3 years of continuous operation, and the vendor has to make sure that the purchaser does not require an equipment expecting longer life that 20 years and longer continuous operation than 3 years. Hence we disagree with the interpretation stated above and propose to delete it.

1.3.9.1: We are not certain to understand the Pneurop argument: Why will Europe be a dumping ground of inefficient compressors no longer allowed in other countries if having a strict regulation?

1.3.12 (WEEE): Some compressors are sold in DIY markets and fall under WEEE. This should be added.

1.3.15 (IED): The last two paragraphs of the text seem out-dated: an extension of scope to cover combustion plants of 20-50 MW is no longer discussed, neither the emission trading scheme for SO2 and NOx.

1.7.1 (Conclusions): It is stated that in 1.1 the scope is defined, however definitions are still missing (pressure range). The report should highlight that no test standard for heat recovery was identified yet (subject of further investigation, according to 1.7.2).

1.7.2: It is not clear why a min/max flow rate and min/max power requirement is needed if the performance (e.g. max. 7 bar) clearly determines the product group.

- **Markets (Task 2)**

2.3.2: The footnote on the Frost and Sullivan study should refer to section 3.4.2 where energy efficiency aspects are discussed and reasons are provided why oil-injected systems can have higher energy consumption due to increased pressure losses.

2.5.5: The calculation of the scrap value is questionable, as no dismantling costs are included. We assume that either no dismantling takes place and that the complete compressor may enter secondary steel production hence the price would be the one for low allow steel, or dismantling takes place and will reduce the price of the valuable material share, resulting in similar revenues as if the entire compressor is evaluated with the low allow steel price. More realistic calculation is needed.

- **Users (Task 3)**

High saving potential at system level is in general well presented (in particular system leakage losses, reduction of pressure level, optimization of running times and system pipes design). However, the opportunities for heat recovery (p. 109) should be further elaborated as heat recovery techniques could be included in a system approach in the future and could be offered by the compressor manufacturers as part of the package.

3.5 (End of life practices): Information is missing on the potential extension of life by refurbishment. It should be evaluated whether refurbishment leads to a recovery of energy efficiency or whether new equipment is preferable. If refurbishment analysis is positive, Ecodesign requirements should include a list of typical parts that should be designed in a way that these parts can be replaced easily.

3.5 (Disposal): It is assumed that 80% of the compressor is metals and that these metals are completely recycled; additionally, it is stressed that for this assumption, "*major non-ferrous fractions are separated... as they should be, as otherwise the (precious and/or non-Ferro) metal content is 'lost' in generic metal recycling routes.*". We appreciate that ECOS's comments have been taken-up regarding the loss of non-iron metals. However, the wording still includes a contradiction, because even if "major" non-ferrous fractions are separated, all minor non-ferrous fractions (in particular valuable rare-earth metals) will end-up in iron recycling. We recommend deleting "major" or a different re-wording better reflecting this reality and shifting the last paragraph (related to metals) to the metal paragraph (before "Electronics...").

Moreover, we doubt that plastics end-up most likely in waste incinerators with energy recovery as dismantling is unlikely (due to low revenue) and therefore plastics will more probably end-up in secondary steel production (electric arc furnaces) where no heat is recovered.

- **Techniques (Task 4)**

It is concluded that "in absence of comparable performance data, establishing the best available technology is also not yet possible" (see 4.8.1). We reckon that comparison of data may be difficult, but should no additional data be delivered by manufacturers, we invite the study team to make assumptions based on available data.

We also suggest putting major efforts in the information collection on typical operating hours (contact with waste water associations) as this parameter will highly influence the final results.

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