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Feedback for the revision of AMS-II.D

Applicability

(iii) One option is to pursue and expand the suggestions in the consulting report on the expansion of AMS-II.C, considered at SSCWG 33 in August 2011 (Annex 5). This consulting report suggests

- pumping stations
- compressed air
- air conditioning
- lighting

For each system several optimization measures are defined. All of these measures fit well into AMS-II.D.

With this consulting advice, AMS-II.C vs.14 was expanded by a baseline option 2a with $EFLH_i$ for variable load devices, and option 2b with a regression approach. Finally baseline option 3, production efficiency, was expanded. The other parts in AMS-II.C vs.13 were maintained. Option 2a was again removed and 2b remained as option 2. This option 2 has not been used since and AMS-II.C is still almost exclusively applied for equipment running 8,760 hours/year (other than CFL), indicating that vs.14 is not usable for variable loads of all types of systems. The changes introduced in II.C vs.14 seem insufficient to increase the usability as proposed in the consulting report and more flexibility and more baseline choices are needed.

The limits of AMS-II.D are similar to those of AMS-II.C, the absence of realistic options for baselines and monitoring. AMS-II.D has a higher failure rate than similar methodologies (esp. the ratio registered to validated projects). The majority of PDDs published do not separate the impact of the specific energy saving of a new piece of equipment, controls, heat exchangers, motors, etc., from other changes in a production process, be that a glass furnace, a refinery, steel or cement plant. Many submitted PDDs don't clarify such signal-to-noise aspects sufficiently and neither the causal relation between project activity and emission reduction nor between project activity and costs are described.

These could be the main reasons why the successful applications of AMS-II.D so far most often comprise complete replacements of production units. The generic nature of II.D has resulted in a limitation of project activities to changes in major equipment because only then changes in annual totals for electricity or steam consumption are indicative for the project activity.

(iv) A choice suggested for II.D is whether a distinction between thermal, process and electrical efficiency can increase the usability of II.D, or whether it is necessary to distinguish specific types of equipment (monitoring categories and variables). Certainly improvements in both directions are relevant. Option 2a and option 2b in II.C can be further subdivided into baseline choices. Links between baseline options and energy forms are weak, and more so in II.D than II.C. An attractive alternative to distinguishing energy forms is to distinguish equipment types. To achieve usability of II.D, some of the baseline options should be equipment specific.

For example, a very large potential for AMS-II.D are adjustable speed motors (ASM, also called VFD) to drive fans, pumps, blowers, conveyors and similar installations (only one such PoA is submitted). With European energy prices and investment conditions, ASM have become the standard solution in many industries, while in other countries the higher costs of these motors are prohibitive. The price differential between standard pumps and ASM has not changed in the last ten years¹. ASM energy savings often range between 40-50%². II.D can include variables for ASM on pumps, other variables for ASM on fans, and so on. Specific variables can be defined without additional metering equipment required for the ASM and without additional measurements for the baseline case equipment. The instrumentation of the ASM can serve also to define the baseline of pumps or fans and the throttling valves that would have to be used without the ASM. Throttling losses and pump efficiencies can be estimated (for pumps especially with the European efficiency standards). An approach with minimum measurements for ASM would certainly reduce the CDM registration risks also for those ASM applications where more instrumentation is anyway in use, for example for larger units and in sectors such as glass.

Other types of equipment AMS-II.D can reflect in baselines and monitoring are heat exchangers, steam traps, condensate drain traps and flue gas oxygen controls. These "cross-cutting" technologies can be supported with GHG accounting elements that can also be used on industry specific technologies. Cross-cutting and industry specific technologies are varied and overlapping categories. Heat pumps and heat exchangers are cross-cutting while types of heat pumps (transfer fluids) and heat exchangers (materials, for instance titanium tubes) are industry specific. Splitting AMS-II.D could to an extent reflect the cross-cutting characteristic.

Cross-cutting technologies can be objects of new methodologies and also of other methodologies focussing a sector such as glass or textiles. How much a baseline option can be specific and thereby improve the usability

¹ Worrell E, Bode JW and deBeer J, (1997) *Energy Efficient Technologies in Industry*, Utrecht University, Report No. 97001, p. 73)

² *Ibid.*: 72

of the methodology is often not directly related to the equipment type. But this seems a weak reason for not enabling those technologies where this relation is stronger.

(v) These request for feedback questions imply that a new or revised methodology can use an approach that discriminates processes with difficult, not isolatable or otherwise potentially non-conservative baselines. Such a question seems overly ambitious.

For example, the CDM project #6246 comprises a technology for which the application of AMS-II.D is reliable, but it is an exaggeration to assume that this is inherently the case with this technology, the industrial sector or the product. A different application of this technology, project #7270, has a much higher emission reduction and it is not possible to predict (from the information in the PDDs) which one of two projects would be more conservative. The overriding assurance for the baselines' conservativeness is the recording of fuel use (thus shaped by the DOE's skill) and that these burners are the major fuel consumers. To add to this assurance, information about these quite specialised burners is needed and such information is generally not available and not without costs. The hope that a methodological approach has an eligibility criterion that increases the certainty of conservativeness or the degree of conservativeness is not realistic for the majority of industries and processes.

Baseline

(i)

1- Performance standards

Refrigeration in fish processing is a suitable sector, two separate benchmarks would be effective – one for the Coefficient of Performance (COP) and a second one for leakage of refrigerants (esp. equipment with HFC-134a, an opportunity to correct the limits of the unused AM0060)

2- Deemed Savings

For adjustable speed motors on pumps and on fans in all sectors
pressure drop across throttling valves as a function of the load

$$\Delta p = f(\Delta V)$$

for standard fluids and gases, for different temperatures

(ii) A standardised approach for small pumps in closed systems, so-called circulators, for example in solar water heaters or in central heating.

The EU Eco-design directive 2005/32/EC (revised through 2009/125/EC) led to the EU regulation no.641/2009 for circulators (glandless circulators between 1W and 2,500 W). A voluntary efficiency standard for circulators is promoted by the European Association of Pump Manufacturers. This approach can be used in a standardised baseline <600 MWh.