

## **Ecodesign Preparatory Study DG ENER Lot 24: Professional washing machines, dryers and dishwashers Minutes of the Final Stakeholder Meeting on Dishwashers**

**Place:** BIO Intelligence Service  
20-22 Villa Deshayes, 75014 Paris

**Date / Time:** December 9<sup>th</sup>, 2010  
10h00 – 16h15

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## Agenda:

10:00 – 10:15	Welcome of participants
10:15 – 10:30	Introduction and Scope of the Meeting
10:30 – 11:00	Brief overview on draft final state of Tasks 1 - 4
11:00 – 12:00	Presentation and discussion of draft final state of Task 5 (Base Cases)
12:00 – 13:00	Presentation and discussion of draft final state of Task 6 (BAT / BNAT Analysis)
13:00 – 14:00	<i>Lunch break</i>
14:00 – 15:00	Presentation and discussion of Task 7 (Improvement Potential)
15:00 – 16:00	Presentation and discussion of preliminary results of Task 8 (Policy Options)
16:00 – 16:15	Further proceeding, any other business
16:15	End of meeting

*The times of the agenda are the originally planned times, and may not reflect the reality of the events that occurred.*

**Annex:** Stakeholders who read these minutes should also consult the powerpoint presentations of the meeting that are available on the project website ([www.ecowet-commercial.org](http://www.ecowet-commercial.org)).

## Participants:

### European Commission

*AC*      Alix Chambris      EC – DG ENER

### Lot 24 project team

*CG*      Carl-Otto Gensch      Öko-Institut

*DS*      Dieter Seifried      Büro Ö-Quadrat

*SM*      Shailendra Mudgal      BIO Intelligence Service

*LL*      Lorcan Lyons      BIO Intelligence Service

*TF*      Thibault Faninger      BIO Intelligence Service

*RC*      Raul Cervantes      BIO Intelligence Service

### Stakeholders

*AH*      Andreas Helm      HKI Industrieverband

*AB*      Anna Brückner      Universität Bonn

*DB*      Dietrich Berner      HOBART GmbH

*EM*      Erika Menosso      Electrolux professional

*HJ*      Hans Jager      ECOS

*JK*      Jorgen H Kjeldgaard      Danish Technological Institute (telephone participation)

*KB*      Karl Büttner      HOBART GmbH

*KV*      Kathrin Völker      HKI Industrieverband

*MI*      Marco Imparato      CECED ITALIA

*MG*      Markus Gessler      Winterhalter GmbH

*MM*      Matthias Meiwes      Miele & Cie

## 1. INTRODUCTION

CG welcomed participants to the meeting and presented the agenda. CG mentioned that the Final Stakeholder Meeting for Laundry equipment will take place on 12 January 2011. CG directed the “tour de table”.

## 2. TASK 1

CG presented the task. There were no particular comments during this presentation.

## 3. TASK 2

TF presented the task. There was a comment about the detergent price used; the project team will double-check this value.

## 4. TASK 3

CG presented the task. There were no particular comments during this presentation.

## 5. TASK 4

CG presented the task. At the end of the presentation of Tasks 1-4, MG asked for confirmation that the term “professional” (and not “commercial”) is used throughout the report. The project team confirmed this approach, which was already discussed at the interim stakeholder meeting. EM explained that dishwashers are one of the rare sectors where non-domestic appliances are normally referred to as “commercial”, instead of “professional” but she understands the point of view of the study, for the sake of consistency. AC added that if regulations are adopted in the end, the Commission mandates the relevant standards organisation (CENELEC) to harmonise the terminology to ensure proper implementation of the measures.

## 6. TASK 5

TF presented the task.

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### *Representativeness of the base cases*

EM explained that there are some products that may not be directly linked to the current base cases presented, e.g. glasswashers, which are under-counter one-tank dishwashers with a smaller capacity. TF explained that as the technical parameters of the machines are similar (except the capacity), the global economic and environmental outcomes of base-case 2 should be similar to the potential results of a

thorough analysis of glasswashers (the absolute values would differ but the base case is supposed to be close to an EU average). This explanation will be added in the report.

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#### *Distance travelled for maintenance*

There was agreement among stakeholders that the distance travelled for repair/maintenance is not easily measurable. MG proposed to take the purchase price as the basis of calculation instead of the lifetime as suggested by TF. KB proposed to use 200 km during the lifetime for product category 2 (under-counter one-tank) and, based on the price of the machines, proportionally extrapolate the value for the other categories. The stakeholders agreed on this method and the report will be changed accordingly. CG added that this definition does not affect the results significantly.

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#### *Landfill percentage*

DB mentioned that the 5% proposed by the team corresponds to the figure estimated throughout Europe. He expressed the view that in the case of Germany the figure is actually 0% as everything is recycled. He could not however mention a figure for Europe. TF explained that due to the nature of some parts of the machines, a 100% recycling rate would be impossible. CG agreed to use 5% as the methodology suggests and said that this is not a major issue considering the results of the report.

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#### *Improvement ratios*

AC asked if the figure of 70% of the industry (that the report is representative of) includes eastern countries. Stakeholders confirmed this as the manufacturers that were represented during the meeting also sell and represent the major market share in these countries. AC inquired about the main markets of the machines, and if these companies were present 10 years ago in countries that joined the EU more recently. AC also asked if the figures (slide 14) were applicable to all over Europe or just EU-15. EM mentioned that the companies involved in this study have been present a long time in all EU-27 countries, especially for big equipment, though for small machines there may be some local manufacturers. MG confirmed this and pointed out that these new countries are a growing market, since some years ago establishments preferred to use sinks instead of automatic machines and this is often still the case. The information will be added in the report.

According to MM, the improvement ratio for category 1 should be 1.00.

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#### *EcoReport results*

EM asked if changing the source of energy for the water heating (e.g. gas) would change the results. TF pointed that the use phase would be in any case the most important for the energy consumption impact, but that its share could be slightly reduced by using a more efficient heating process. Global Warming Potential would show a similar evolution. DS mentioned the importance of the primary energy source to this matter.

## 7. TASK 6

DS presented the task. DS explained that obtaining the data for the study was difficult due to the lack of statistics and the length of the working paper sent to stakeholders.

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### *Analysis of energy consumption*

HJ asked the reason of the differences between the Miele equipment and the Winterhalter equipment presented on the slides. DS answered that the main reason corresponds to the different sources of information: the manufacturers. HJ mentioned that maybe the data is not comparable.

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### *Energy and Water savings from six selected improvement options*

AC asked whether it was relevant to have two sub-options covering improvement option 2 (heat pumps) since there are big differences between the heat pumps that can be used. DS replied that he did not see the need for splitting this category. DS mentioned that the applicability of option 2 to categories 5 and 6 will depend on the kitchen itself. The available space and ventilation will determine this. MG commented that the main problem is that these machines are normally tailored to the customer needs. AC asked the project team to add this explanation in the report.

Based on the results of Task 5, AC mentioned that the detergent is an important factor and requested to know what methodology was used to prioritise the improvement options and why no new reduction of detergent consumption was considered in Task 6. DS mentioned that the detergent consumption is proportional to the water consumption (this assumption was agreed with by KB, DB and MG) as there is an optimal concentration of detergent to reach. SM confirmed this consideration and added that the variety of professional detergents is more limited than for domestic use. AC requested this to be explained in the report, at least in a footnote. TF mentioned that the detergent does not have an impact on CO<sub>2</sub> emissions, but only on eutrophication and that the production of detergent has negligible impacts on the overall environmental impacts of the machine. AC asked if the decrease of detergent consumption (linked to water consumption) is quantified in the Life Cycle Cost. DS confirmed that this was included in the calculation.

AC enquired the reason of not considering combined options and further water reduction options. DS replied that the difference of data sources is a problem for quantifying this as there is no baseline and no reliable information measuring the influence of distinguished improvement. AC requested a sensitivity analysis, since the results of the task lead to the conclusion of a high potential for water reduction, which is quite different from the end results. DS mentioned that preliminary results in manufacturers' brochures tend to show "ideal" results from a marketing perspective. AC requested more explanation of why options were chosen in the report together with the priority explanation in section 4 of Task 6.

DS mentioned that there seems to be a lack of Best Not yet Available Technologies outside the EU. AC offered to send US contacts that might help on this topic. AC pointed that in the report it is said that the US market washing temperature is lower, because they rely more on detergents. DB replied that 60-70% of the US market washes at a higher temperature, while 30-40% washes with chemicals but the latter approach has limited acceptance in the EU market due to perceived inferior washing and drying results (drying efficiency can be problematic). AC asked if this could be analysed as BNAT. DB mentioned that it

is already available in the EU, but not widely accepted (this was supported by EM) because of the poor drying results. AC said that it should at least be mentioned. CG proposed to describe these considerations more precisely in the relevant section of the report.

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#### *BNAT (Best Not yet Available Technology)*

In response to a comment from DS, AC explained that the BNATs will support the possible labelling and the definition of classes. Therefore, even if it is in a confidential way, the industry will have to provide this kind of information (saving potentials), otherwise the EC could establish arbitrary levels that the industry could not reach. According to MG, this kind of information does not exist as they cannot predict future developments. From another point of view, there are very few companies working in this competitive market, and they are not willing to share their technological secrets and developments. DB added that there is no independent research done in the dishwasher sector. HJ mentioned that for the TV study, industry did not provide information on LED TVs, which were then not included in the report, yet LED TVs were launched on the market one year after the publication of the preparatory study. CG proposed that improvement opportunities could be mentioned without quoting specific technologies, but just as a range of improvement potential. AC pointed out that labelling is normally good in terms of competition and that it is in the interest of the manufacturer to have a relevant labelling scale. MG mentioned that manufacturers struggle a lot and make investments in improvement, but it is not very clear what could happen in 5 years time. HJ answered that looking at options from previous slides, it could be possible to calculate the BNAT, introducing theoretical calculations, and he is sceptical when manufacturers claim that they do not know what the expected developments are, even at component level. DB mentioned that there is an issue regarding the “marketability” of these machines. MG agreed with DB, mentioning that the calculations are already being done. EM proposed an approach on the component side that was used in Lot 1: the components manufacturers should have a better visibility on the improvement expected at component level. DB mentioned that the component perspective might not be useful as it is the system not the components that matter. Pumps consume very little energy, for example, but contacting heat pumps manufacturers could be useful. CG mentioned that there are some technologies (zeolith) applied to household machines and asked if they could be applied to category 1. MM answered that this is not likely as the cycle length is completely different. CG asked for this to be clarified in the report.

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#### *Hood-type energy consumption tests*

KJ mentioned that the information provided by the DTI test results is not necessarily comparable as not all of the dishwashers are designed to do the same job, although they are evaluated under the same conditions. This is evidenced by the last two machines shown, which are designed for tougher jobs. Usually, the machines consuming the highest amount of energy also have a higher rinsing temperature and/or a better cleaning result.

DB inquired whether, according to the study, the customers lack information on the energy savings options and technological developments. DS replied that if the work is not really validated by external institutions, it cannot be considered to be done in a fair way. AC said that this should be discussed in Task 8. She asked JK if according to him the ten machines are representative of the market in terms of performance level (because of the difference with the current base case which shows significantly lower

energy consumption than the average of the tested machines). JK replied that it is not sure that those are a good representation of the market in Europe as machines were submitted for testing on a voluntary basis. MG asked for the testing procedure. JK said that the machines had been tested over a period of 3 years, and agreed to send the project website and data to the project team. He pointed that the test procedure should be located in Task 1 Annex 7-3. AC expressed her concern that the base case products could be too “optimistic”. As for a whole revision of Task 4 and base cases completely new data input from manufacturers would be needed, CG proposed to consider this aspect in the calculations and discussions of Task 8 (sensitivity analysis).

## 8. TASK 7

TF presented the task.

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### *Warm water option*

On the subject of the warm water input option, MI said that it was a system rather than a distinct improvement option and we should consider some additional costs due to the equipment purchase and/or maintenance. TF said that we would need new cost data to do so. JK added that the costs depend on the capacity of the current heating systems. DS added that it would be very different from building to building.

HJ said that the warm water option depends on the capacity of the existing system: the current assumption of a non-condensing boiler is not state of the art. A condensing boiler could be used instead. In fact, solar would be ideal but the boiler could also be much worse than is assumed – whether it would be a good idea to implement the option would have to be evaluated on a case-by-case basis. TF specified that this information was estimated, and verified by the French supplier GrdF, but that it will be cross-checked.

SM said it also depends on user behaviour. AC said that we need to have an estimate. TF agreed and asked what the additional cost should be. DS said that we can estimate a range of 500-1 500 €.

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### *Improvement options combinations*

On the topic of combining improvement options, AC asked why no other combinations were analysed. KB and DB felt that this information had already been provided but DS said that complete responses and data had been received only from one manufacturer, which is why these combinations were not presented and quantified in Task 6.

It was concluded that the report should make it clearer that the sum of all options, but not all possible combinations, is considered in the study.

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### *Bill of materials – refrigerant*

About the Bills of Materials, EM said that refrigerant leakage and loss had been estimated at 3% in Ecodesign preparatory study Lot 1 on refrigeration. DB added that this percentage should not be

different to the other sectors. TF said he would check this. EM suggested that the project team should contact heat pump manufacturers directly for information. AC said she also had information on this point and would forward it to the project team. SM said that the project team could also consult ARMINES (École des Mines) on this point.

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#### *Heat pumps*

The project team said that although the addition of a heat pump would increase the volume significantly, the influence of this on the overall environmental impacts would be negligible. AC said this should nevertheless be explained clearly in the report. Stakeholders responded that the size is much bigger in the case of professional dishwashers and that they are constantly looking for cheap suppliers.

Regarding the non-economic situation of the implementation of heat pumps or heat exchanges for many base cases, AC stated that the results of the preparatory study on households tumble dryers gave similar results, even if this is surprising. SM mentioned that a decrease in the prices of heat pumps might be expected in future. The project team should contact the DG ENTR Lot 6 team to get additional information on that topic.

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#### *Warm water gas*

DB explained that the gas boiler (“gas booster” or gas module that can be added to conveyor-type machines) option was not accepted in the market due to exhaust issues, gas availability, etc.; it is not sold in large numbers, even though it is better from a CO<sub>2</sub> emissions point of view. HJ said that 90% of efficiency for a non-condensing boiler is a high estimate; depending on the measurement method, it could be more like 70%. DS explained that it makes a difference if the efficiency of the system is looked at for an average or for marginal mode and 90% may be correct for the marginal case. The team will double-check whether the lower heating value or the upper value is required in EcoReport.

## **9. TASK 8**

TF presented the task.

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#### *Scenario analysis*

In the scenario analysis, improved machines are introduced from 2013 onwards. It was suggested that this should be explained more explicitly in the report.

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#### *LLCC and BAT scenario*

BAT and LLCC options are only different for base-case 5. For all other base cases, the same improvement option represents both the BAT and the LLCC.

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### *Improvement options*

AC and DS suggested that the warm water option should be treated separately and should only go to 50% maximum market penetration since the option is not available in all buildings. Scenario A could thus take the warm water input option into account (as BAT and LLCC options, to a market share of 50%) and scenario B would not take this option into account.

MM made the point that glassware programmes often need to start with cold water to avoid the breakage of glass and so it should not be assumed that where both cold and warm water inputs are available only warm water will be used.

EM said that for electricity and water, a margin of error of 15% should be used; DS proposed 20% in consideration of the quality of the data gathered and this error will be used for the sensitivity analysis.

SM said that if the BAT and LLCC options are the same, it might imply that the base cases are in fact above average. All stakeholders stand over their data but MG and EM (representing CECED Italia) said that the data provided does not represent the cheapest model, as data was mainly gathered from large manufacturers which can produce higher quality products than SMEs. SMEs cannot provide energy or water consumption data because the current testing methodology is too demanding.

More time is needed to develop the methodology. MI said that they have started collecting data with a view to discussion at the January TC59X meeting. They expect to spend at least one year working on a harmonised test methodology.

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### *Independent testing (benchmarking)*

DS explained that by independent testing, he meant not done by manufacturers to allow a fair comparison. On the subject of independent testing, AC said that it would need to be well justified because self-declaration with market surveillance is the usual procedure so far. MG added that it is specified in the Directive. EM said that a voluntary agreement enabling mutual testing between competitors is appropriate and works well for domestic appliances. She thinks it should work as well for the professional appliances. DS raised the question whether a complicated testing procedure could be used by the smaller manufacturers. Stakeholders said testing should be simple and reproducible in order to facilitate R&D, and DB added that manufacturers should be the ones developing the methodology. There is much more variation and issues than for the household sector (different dishes, detergents, etc.). CG said that testing should be reliable, reproducible and certified. DB said that self-declaration is used already for domestic machines and for CE marking. Third-party testing is also commonly practiced.

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### *MEPS Alternatives*

With regard to the proposal to provide information on a standard programme, stakeholders were sceptical. AC said that this should be clearly understandable by the user. MG said that could be ok for smaller professional dishwashers but not for conveyors. MM emphasised that the user should not have to switch from a standard programme every time the dishwasher is used; kitchen staff, for example, are already under severe time pressure.

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### *Eco-design requirements*

As regards specific Ecodesign requirements, the NSF is considered a poor methodology by stakeholders compared to the EU market. MG thinks the ASTM standards (used as a basis for the Italian testing methodology) should serve as a basis but are not directly applicable. EM explained that the working group 2 of TC59X will begin working on the harmonised methodology for the energy consumption in January. A relevant question that will be addressed by the group is to find out who is interested to perform the tests. MG said that the VGG methodology had not been updated in a long time and should be ignored (low repeatability), and that discussions should now take place within CENELEC. JK said that in the tests the DTI carried out, the repeatability was ok for energy and water consumption and that the soiling method of the VGG was the only applicable soiling method today.

CG said that the study can recommend only basic requirements on future test standards. MM pointed out that hygiene should be added to the list of important parameters for performance measurement.

AC requested that Task 8 should consider a full range of possible policy options (e.g. Ecodesign measures, labelling, public procurement and “no action”).

EM asked whether noise could be ignored because it is covered under safety legislation. AC replied that if that is the case then ok.

AC also proposed that users could be provided with an Excel tool to compare machines with different options (e.g. electric or gas heating). Such additional information would improve the effectiveness of labelling by showing how to achieve a higher class and purchase the best product given a systemic approach (is it worth investing in infrastructure?). MG said that manufacturers already offer such tools to customers but they cannot know how a machine will be used in practice. AC asked whether the manufacturers could agree or provide a common methodology for the policy option of labelling. She insisted that the project needs to have a concrete proposal for the label classification (in task 8 or in an annex). DB explained that for the customers, the environment is considered only when it becomes economic (the options have to pay off in the long term). EM added that a common methodology does not currently exist but as previously mentioned, the coming year should see some development on that topic.

## **10. NEXT STEPS**

- CG said that all remaining comments should be submitted by Christmas (closing date for inputs) and the draft final report is expected to be published by the end of January (contractually it cannot be published later).
- Stakeholders asked about the connection between the dishwasher and laundry parts' timelines. AC said that this is not a consideration as the dishwashers can go to the consultation forum stage first, even if the study on the laundry appliances is not finalised. The time taken for the impact assessment to be completed varies considerably but six months is typical.
- Laundry meeting was set for 12 January 2011.

## 11. OPEN QUESTIONS TO STAKEHOLDERS

This last section lists remaining questions for which stakeholders are kindly invited to provide any information/contacts that might help finding complementary data:

- Information on Best Not yet Available Technology development. Even quantification (e.g. in % for potential energy and water savings expected in the future) without mentioning the associated technology under development would be very useful.
- Information on heat pumps: what is the percentage of refrigerant lost during the lifetime? In order to check consistency of the description of options in task 6, what is the purchase price of an average heat pump for dishwashers?
- What is the average type of boiler (used for the warm water input option) in EU-27 and its average efficiency? Is there any other alternative water heating system that is common?
- What represent the additional costs due to the use of the boiler/external infrastructure to heat up the water (e.g. purchase price, maintenance)?