Topic	Minutes of the 2nd Technical Working Group Meeting: Ecodesign/ Energy Labelling Preparatory Study: High-Pressure Cleaners (HPCs)
Day & Location	23 and 24 January by means of interactive webinars
Project Team	Alejandro Villanueva (Chair – JRC); Ruben Dekker (DG ENV); Rocío Rodríguez Quintero (JRC); Dimos Paraskevas (JRC); Jan Viegand (Viegand) as expert; Kevin Sweeney (Intertek) as expert.
Participants	16 participants from: • 1 Member State: Belgium. • 4 HPCs manufacturers: Kärcher; WOMA; Dibo; Bosch; IPC • 3 trade associations: European Cleaning Machines Association - EUnited Cleaning; European Garden Machinery Industry Federation - EGMF; AFIDAMP. • 2 environmental and consumer Non-Government Organisations (NGOs): The European Environmental Citizens' Organisation for Standardisation - ECOS; European Consumer Organisations: ANEC – BEUC.

The agenda of the 2nd TWG as well as the presentation and minutes of the meeting have been uploaded to the project website:
http://susproc.jrc.ec.europa.eu/HighPressureCleaners/documents.html

Introduction and general aims of the 2nd WG meeting

The second Technical Working Group (TWG) meeting for preparatory study for High Pressure Cleaners (HPCs) was aimed at presenting and discussing the first draft of the Preparatory study. The meeting was carried out by means of two webinars as follows:

- 1st interactive webinar on 23 January 2019 (Wednesday), where the following tasks were presented:
  - Task 1 – Scope definition, standard methods and legislation
  - Task 2 – Market analysis
- 2nd interactive webinar on 24 January 2019 (Thursday), where the following tasks were presented:
  - Task 3 – Analysis of user behavior and system aspects
  - Task 4 – Analysis of technologies

1st webinar 23 January 2019

All participants introduced themselves and their company or association. The role of the JRC and more specifically that of the European Product Bureau was also presented, i.e., to support

the various DGs in the implementation of the respective policy instruments per product group. In order to achieve this, the JRC collects all the technical, economic and environmental information needed, then processes it and finally makes conclusions and recommendations following a **science-based neutral approach**.

Task 1 - Product Scope, legislation and standardisation

JRC presented the revised scope proposal, definitions and exclusions, together with the rationale supporting this proposal. The preliminary product scope covers: i) mobile and stationary HPCs; ii) cold and hot water HPCs for professional and domestic applications. More details on the preliminary product scope, the power systems, the definitions and the proposed exceptions can be found on the uploaded JRC presentation. HPCs are proposed to be divided into different sub-categories in order to be examined separately as their characteristics and use patterns are different, as was also mentioned by manufacturers.

In this respect, the JRC proposed two main subcategories, based on two key performance characteristics: i) maximum power (in kW); and ii) intended use according to manufacturer's design. The proposed scope is HPCs providing pressure between 2.5 and 60 MPa, which would cover all HPC units currently on the market. Other possible categorisations could differentiate hot water versus cold water HPCs; stationary versus mobile HPCs; or differentiations based on the type of technology (e.g. electric motor – battery/hybrid driven motor - combustion engine). The proposed categories are based on research conducted by the project team on the technical characteristics of 161 HPC models available on the market from 5 HPCs manufacturers. The JRC invited all stakeholders to provide their comments and suggestions on the proposed product scope, the definitions, the proposed product categorisation and the proposed limits. Stakeholders were also encouraged to provide as much **supporting information** as possible to the project team, especially where there might be request to make any major changes to the scope definition.

Stakeholder feedback and roundtable discussion

Manufacturers agreed with the concept of 'intended use" for the distinction between professional and domestic, though they did not agree with the maximum pressure limit of 60 MPa. They indicated that the pressure should be set in line with the safety standards[1] (for 2.5 - 35 MPa rated pressure) and highlight that the units performing above 35 MPa were predominantly industrial, and would as such be incomparable to the categories of products below 35 MPa, and their market share was very small. They also recommended the exclusion of battery powered products, since they are a niche category. Apart from that, the definition of stationary should be revised since it did not match with definitions within safety standards for portable products.

[1] EN 60335-2-79:2012 for rated pressure not less than 2,5 MPa and not exceeding 35 MPa; and EN 1829-1:2010 which addresses HPCs above 35Mpa.

NGOs suggested that the product scope should be as wide and broad as possible, especially in the stage of a preparatory study, also because present discussions are very preliminary. They also recommended being careful with exclusions, particularly of battery products. In other product groups such as vacuum cleaners, battery powered products are becoming very popular and its share cannot be considered as niche nowadays, though they were excluded from the scope for that reason at the beginning of the vacuum cleaners project.

The manufacturers replied to this remark explaining that HPCs are very different from vacuum cleaners and demand higher powers to reach the minimum pressure (above 2.5 MPa), so they did not envisage a significant increase of battery powered products in the short-medium term.

Task 2 - Markets

At the beginning of this section JRC shortly presented the ecomodelling tool[2] that was used for Task 2, and will also be used in the following environmental and economic assessment under Task 5. It includes a bottom-up stock and cash flow model that provides quantitative information underpinning product policy impact assessment (IA). This tool has also been used in the past for the IA of other products (e.g. washing machines and dishwashers, welding equipment) and was considered as most appropriate also for the case of HPCs. Regarding Task 2 the ecomodelling tool has been used for lifetime calculations (based on Weibull distribution) as well as to estimate the in-use stocks from the sales information that were gathered and WEEE generated stream estimations. Following the tool presentation, JRC presented the main findings of Task 2. More specifically:

- For domestic HPCs were presented for the EU28: the sales estimations and projections for the period 1987-2050; the lifetime calculations that were considered; the in-use stocks and the generated WEEE estimations for the period 1987-2050.
- Similarly for the professional HPCs were presented: the market segmentation for 2017; the EU28 sales and projections estimations for cold and hot water HPCs; the lifetime calculations; the in-use stocks estimations for cold and hot water HPCs separately.
- The market trend analysis which focused in: i) market share (%) of input power and maximum pressure categories for domestic HPCs for the years 2007-2017; ii) the cold and hot water HPCs sales with maximum pressure above 160 bar; and the iii) the cordless HPCs category.
- The average unit values (based on sales) evolution for the period of 2007-2017 for 7 discrete HPCs categories. Combustion engine driven hot water HPC is a niche product (with average price per unit at the level of 6,000 EUR per unit).

JRC asked the stakeholders if there are additional market data to be considered (e.g. sales information for east European countries) and asked for reflections on the proposed exclusion from the product scope of the 'hot water combustion engine HPC' as it is a niche product with the very low sales (market share less than 1% of the professional HPCs category).

[2] https://www.pre-sustainability.com/customer-cases/ecomodelling-framework-tool

NGOs asked for clarifications regarding the data origin and if it has been crosschecked with Eurostat data. They also asked the reason why WEEE streams are presented only for domestic HPCs and not for the professional categories. Finally they pointed out that any exception based on the market share is risky as the market may change quickly (e.g. as in the cordless market).

Industry and trade associations are in favour of the proposed scope exclusion. They mentioned that the sales for domestic HPCs are overestimated and that the market data may contain other product categories apart from HPCs. For this point they mentioned that they will provide written comments and information with more details. Finally they mentioned that the average unit prices are relative high and asked for clarifications.

JRC clarified that the data sources origin is: i) for the domestic HPCs category based on purchased historical sales information for different EU countries as well as from stakeholders input; and ii) for the professional HPCs the data sources are stakeholders input (historical sales information) which were double-checked where this was possible with the purchased market data. All sales data that were used concern the HPCs product category and do not include other products. The gathered historical market data were extrapolated to EU28 sales estimations considering the number of households per country, the purchase power standards and geographical patterns as explained in the report. The Eurostat data are indeed analysed in Task 2, however were not further considered as representative for the HPCs product category, as they contain more products and cannot be refined to HPCs. JRC also clarified that the WEEE estimations regarding the professional HPCs categories have not been included in the report, however, they have been calculated and will be added in the revised report version for the professional cold and hot water HPCs. The average unit prices are weighted by sales volumes.

2nd webinar 24 January 2019

Task 3 – Users

JRC presented the first draft of Task 3 devoted to user behaviour and systems aspects. JRC asked the stakeholders to provide their views on the different usage parameters affecting the water and energy consumption of high pressure cleaners. Stakeholders input was needed to confirm or correct the assumption on frequency and duration of use of hot water and detergents, and also the reference units taken for the estimations of annual consumption of resources.

Manufacturers generally agreed on the frequency (times per year and average time per use) for domestic products, though they seemed slightly high. They also recommended to be cautious with car washes, since the usage was expressed in a different way (cars per year), and the figure of 5000 cars per year and 68 liters per car were too high. Manufacturers also stressed that cars washes are usually equipped with water recycling systems, which reduce the water

demand. JRC replied that data of car washes was difficult to obtain, the only source found was a LIFE project that had investigated the water consumption of two car washers in Spain. In this regard, manufacturers would provide additional information in written comments.

Concerning hot water high pressure cleaners, manufacturers indicated the percentage of uses that the unit provides hot water is significantly higher than 50%. They could not give an average figure, but estimated it between 70 – 90%. On the other hand, the use of externally heated water in cold water domestic units was much lower, considering that 30 – 50% of the HPCs in the market are not equipped with a hot water inlet. Viegand replied that the estimations did not reflect the share of these products in the market, but of a reference high pressure cleaner capable to work with externally heated water.

To the question whether estimations included losses of the heating systems, JRC replied that they only covered the energy consumed by the heater, which included the transformation losses in the case of electricity.

JRC explained that annual estimations could not be used to compare units, meaning that there need to be test methods to measure energy and water consumed per functional unit. The results would reflect the performance of the HPCs in terms of water and energy consumption. JRC explained briefly the test methods currently available and how they address the different parameters to be taken into account: surfaces and materials, and types of soils. Other parameters that test method need to factor in are type of nozzle, distance and angle of nozzle, speed over the surface, temperature, detergent, etc. In general, it was acknowledged that the development of a harmonized test would be a complicated task. JRC explained an alternative to real performance test methods: an indicator based on the measurement of HPCs output (jet force or pressure and flow) referred to input parameters (power). This would be an efficiency indicator (output divided by input) that could give an approximation of the cleaning impact of which the HPCs is capable.

Manufacturers explained that the measurement of pressure, flow and power would be very easy to be carried out by a laboratory in a systematic and inexpensive way. However, jet force would be more difficult to measure, and in general, the indicator would not capture the real performance of the units, since the effect of the nozzle would not be taken into account. JRC partially agreed on this remark: based on the tests carried out by one of the stakeholders, there is a certain correlation between the indicator and the real performance. However, it is not strong enough to properly reflect the performance of the unit. Intertek indicated that similar real performance tests have been developed for other products such as dishwashers, and they could provide inspiration on how to proceed for high pressure cleaners.

Task 4 – Technologies

JRC started the presentation of Task 4 by presenting the general characteristics and description of domestic HPCs in comparison also with the professional HPCs. Followed the presentation of the results in water and energy consumption per cleaned 1 m^2, a comparison performed for domestic HPCs using standardized nozzle (please see the report for more information). The

results show significant variations (at the level of ±40% deviation from the average values) among different HPCs in energy and water consumption for similar cleaning results, indicating that the environmental performance from unit to unit may differ significantly. Other topics that were presented were: i) failure of critical parts in domestic HPCs: the domestic HPCs appear to have low reparability potential as compared to professional ones according to some reports and feedback from the first questionnaire; ii) the results of durability tests of 42 domestic HPCs (please see the report for more information) where the durability performance also varies significantly among different models. Finally various improvement options either as Best Available Technologies (BAT) or Best Not Available Technologies (BNAT) were presented.

Manufacturers commented that the level of non-repairable domestic HPCs does not reflect the reality. Their units are all repairable and spare parts are available, however, for safety reasons not all components of HPCs can be accessed for repair, and spare parts for such components are not offered. Manufacturers also commented that smaller HPCs cannot be compared to the more powerful ones when it comes to performance and energy and resource efficiency.

DG ENV commented that repairability is an important aspect in eco-design and has been a prominent point of discussion in recent (revisions of) measures such as those on washing machines and dishwashers. As this issue will surely be part of future discussions on possible measures, it is important that the report elaborates in detail on possibilities for repair and the reasons for (lack of) this (e.g. cost of repair, spare part availability etc).

Intertek commented that also the economy of repairing should be considered. It may be that the repair or the replacement of a component is more expensive than the price of a new unit, especially in the case of entry level products.

NGOs commented that is good to know that also domestic HPCs are repairable. For this category improvement potentials could be on durability e.g. assuring minimum durability requirement or not to fail prematurely as also Intertek commented. NGOs mentioned that there is a strong correlation between energy and water consumption and asked if there is a correlation among purchase price and energy and water consumption.

JRC clarified that the water and energy consumption tests for $1m^2$ of cleaned surface originate from lab tests and regards similar cleaning quality results (assessed qualitatively). More powerful machines, does not necessarily mean higher water and energy consumption. In the revision of the Tasks 1-4 the repairability aspects of domestic HPCs will be further investigated and refined to provide more information and insights.

In closing, JRC thanked all participants for their valuable contributions and reminded them of next steps. NGOs welcomed the approach of using webinars for this purpose, as it saves a lot of travelling, and encouraged the commission to use them more often.

Conclusion - Actions

- Stakeholders' feedback to be provided to the project team regarding the presented 1st part of the preparatory study (Task 1-4) either through BATIS or by email to JRC-B5-HIGH-PRESSURE-CLEANERS@ec.europa.eu by 24/02/2019.
- After receiving all stakeholders' comments, the project team will revise the documents accordingly.
- JRC will investigate the possibility of developing a cleaning performance standard with external experts and labs. In that case stakeholders will also be invited to contribute and comment.