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From : Karolien Peeters Annex(es): PPT presentation

To : Cesar Santos; Stakeholders

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Minutes of 1st stakeholder meeting on potential Ecodesign/Labelling Requirements for Power Cables

BREY Building, Brussels, Belgium, 05/12/2013

Present

European Commission

DG Enterprise Cesar Santos CS

Project Team

VITO Paul Van Tichelen PT

VITO Dominic Ectors DE

VITO Marcel Stevens MS

VITO Karolien Peeters KP

Stakeholders

Copper Alliance Fernando Nuno Gonzalez FN

Viegand Maagoe Anne Svendsen AS

European Aluminium Association AISBL Bernard Gilmont BG

Nexans (and Europacable) Friedrich Müller FM

EDF Maud Franchet MF

Fachverband Kabel und isolierte Draehete Helmut Myland HM

University of Bergamo Angelo Baggini AB

CLASP Marie Baton MB

Objective of the meeting

Stakeholder consultation in the framework of a study with regard to **Ecodesign of Power Cables** (Lot 8) accomplished under the authority of DG Enterprise of the European Commission (EC), under specific contract No 185/PP/ENT/IMA/12/1110333-Lot 8, within the multiple framework service contract No FC ENTR/M29/PP/FC Lot 2, preparatory studies and related technical assistance on specific product groups.

Discussion on the interim report for task 1, 2 and 3.

Agenda

- Welcome;
- Short presentation of participants;
- Introduction to MEErP and the ErP directive;
- Presentation of draft Task reports 1-3;
- Presentation of first screening;
- Enquiry results;
- Break & Lunch;
- Discussion on scope;
- Answers to questions received in writing before the meeting;
- Other Q&A;
- Further needs for data provisions and/or enquiries;
- Closure.

Minutes

Short presentation of participants (all)

Introduction to MEErP and the ErP directive (PT)

The tasks in the MEErP methodology are interrelated. We will discuss today the first three tasks which are on collecting data and evidence. It are typically tasks with data, not with conclusions.

The first three tasks can be downloaded from the website. They are not final, but give an idea and help you to assist us with the data. If you have data available, please share them with us. If it concerns confidential data, we will aggregate them and can sign an NDA.

The different MEErP tasks were explained (see powerpoint presentation in annex and project website).

Name	Comment/Answer
FM	Question on the scope: The focus is on power cables installed in in buildings. It will be important to see the power cable in the installation and the way it is used. The way of installation influences the losses. Is the way of installation also included?
PVT	Answer will be given in task 3 dealing with system aspects.
FM	Does 'buildings' covers all buildings, including special buildings like power plants? There is

	no clear definition of the meaning of 'building'.
PVT	This is a problem that we also faced. There will be side cases which we need to report in task 7 (impact). Basically we focus on indoor cables, but the same cable can be used in a power plant. We need to look at this at the end of the study. We have no clear answer yet, but we are aware of the problem.
CS	Reflection about the terminology: in Ecodesign context, the scope refers to the product itself. The scope is the cable itself, not the losses. The scope has to refer to a specific case. (Remove losses from title). The losses is the main significant impact.
PVT	OK we understood the point. We need to look at this at the end. The scope might be to broad or to narrow.

The project planning was presented (PVT), see powerpoint in annex/website.

Presentation of draft Task reports 1-3

Task 1 (PVT)

We proposed in the screening to focus on installed power cables and wires in buildings (residential and non-residential) AND cables and wires behind the electrical meter. Cables installed behind the meter are out of the control of the utilities. Moreover we focus on indoor cables. Outdoor cables are also seen as other product groups.

Not taken into account are cables on distribution level. We see this as another business with other stakeholders.

Product scope:

We will look at an installed cable, an electrical circuit. It is not possible to look at the cable alone, we have to look at the application. In MEER terminology the cable is the product that is brought on the market by the installer. He introduces this in an electrical circuit which has an impact on the losses. We will look at the cable as a functional element. The first intention is not to have all data on circuit breakers. We will for example not ask the bill of the material of the circuit breaker, this will be simplified.

Product?

- Prodcom:

NACE 27321380: "Other electric conductors, for a voltage < 1000V, not fitted with connectors"

Too broad because it also covers other cables. The statistics in prodcom are higher than what we have in our model.

- Standards/Designation codes:

Every country has its specific designation for cables. The table on slide 19 should be verified and completed by the stakeholders. If there is something missing in this table, please let us know.

- Other possibilities:

Field of application: for example cables installed in lighting circuit – we will introduce application oriented categories.

Product performance parameters (PVT)

Primary performance parameter: “current-carrying capacity” of the cable/conductor [Amperes]

Another approach could be the losses, but this is not the function of the cable. If there are other opinions, comments are welcome.

Secondary performance parameters: cross sectional area, DC resistance, construction parameters and use parameters. We will look to where the cable is installed and how to model the impact of the cable.

Measurement and test standards (MS)

EN 60228 and EN 50395 are the most important standards for conductors and cables.

HD 60364-5-52 is the most important for electrical installation. Contains correction factors and maximum voltage drop.

IEC 60287-3-2: Economic optimisation is defined in this standard.

IEC 60228: Measurement of resistance. Accuracy of the measurement equipment is not included. Stakeholders informed us that this is defined in another standard. We still need to check this standard.

Legislation (MS)

- Directives applicable to LV cables:
 - Low voltage Directive
 - RoHs directive
 - Cable must be marked with CE and/or HAR mark
 - Construction Products Regulation (EU) No 305/2011 (CPR) – work in progress
 - Are there other directives applicable: please provide input.
- Member state level legislation
 - This work is not complete yet. If you have more information available, please provide
- Third country legislation:
 - Information is still missing – please provide

Presentation of first screening (DE)

Objective: Check the appropriateness of the chosen product for Ecodesign measures. The following conditions are mentioned in the Ecodesign directive:

1. The product shall represent a significant impact on the environment;
2. The product shall represent a significant potential for improvement;
3. The product shall represent a significant trades and sales volume.

1: Significant impact on the environment?

We looked at the circuit level because we need to look at a broader scope than the cable. For this screening we defined 4 types of circuit categories for 3 sectors (residential, services, industry) which are used throughout this screening step.

- circuit level 1 (also called distribution circuit): distribution from main board to sub distribution board
- lighting circuit;
- socket outlet circuit;
- dedicated circuit, serving one or more heavy loads.

We started for this first screening from the analysis included in the Ecodesign working plan and reviewed it. In this study annual sales and stock data were available.

Losses are directly related to the energy consumption. Overall energy consumption data in buildings is based upon projections made by the European Commission. The calculated losses (loss ration) in power cables in the services sector and industry in the EGEMIN study is about 2%. This figure is used as the overall loss ratio in the working plan analysis.

VITO reviewed this loss ratio by modelling an electrical installation in a residential and a services building.

Residential model: figures are based on enquiry that VITO sent to the installers.

Two formulas are used to calculate loss ratio. The formulas will be elaborated more in task 3.

The formula based on I_{avg} gives the lowest losses. Losses are proportional to the square. There are many possible approaches.

Residential model: Losses are for this model 0.24% or 0.15%. Services model: 2.26% of losses.

Industry: alternative approach is used (no specific model), but looked at the design methodology, primarily based on maximum voltage drop. (1% - 8 %)

2: Improvement potential

In the working plan 4 improvement strategies, based upon cross sectional area increase, were calculated:

- S+1: one size up
- S+2: two sizes up
- Economic strategy: optimized on minimum cost (investment and losses)
- Carbon strategy: optimized on minimum CO2 emission

Results of the working plan: 45% of buildings according to the new improvement scenario in 2030 results in annual savings of 20 TWh.

In the review of the improvement potential VITO looked at the physical parameters and calculated the improvement potential for a S+x strategy. For instance a S+1 strategy will result in reduction of the losses in between 17% and 40%, depending on the used CSAs in the electrical installation. The 2 percent used in the working plan is similar to a combination of S+2 and S+3 scenario.

OUR FINDINGS:

Residential sector: 0.3% losses

Services and Industry: 2% losses.

In total savings will be in between 3.77 and 8.88 TWh/year in case of a S+1 strategy, and in between 7.32 and 13.98 TWh/year. The difference when excluding residential buildings is small.

CONCLUSION:

Yes, there is significant environmental impact

Yes, there is potential for improvement: for instance using a S+1 or S+2 strategy.

This is a first screening. The only thing that we can conclude at the moment is that the residential sector is not important. Of course we can discuss on the existing stock. In new installations there is not much to improve over Business as Usual.

Name	Comment/Answer
AS	For which kind of buildings is this 3%, industry or.... Are these your figures?
DE	For the total number of buildings. These are the working plan figures. This is what we used in the first screening. In other task we used other figures. We had for example a figure of 12% renovation rate for industry and 1% for residential buildings.
FM	Could you explain in more detail why you used another model for industrial buildings. What is the reason for this and how did you came to the figures for industrial buildings?
PVT	It is simple and in line with the working plan, not much further. With the argument that we had, there is a significant potential. A more detailed analysis will be in the subsequent tasks..
FM	Is it allowed to calculate with the maximum allowed voltage drop?
PVT	Indeed we are aware that it is in between the 50%. We will collect more data in the next task. In the categories that we not exclude they should be raised at the end of the study. After the first screening we can only say that there is not a significant potential in the residential area..
DE	In industry the situation is more diverse than in the residential and services sector.
FM	What is the reason to use a different approach per sector?
PVT	For example we have average data on lighting circuits – reliable statistical data. For dedicated loads in buildings we should also have more specific data. Socket outlets in the service sector will also be known more or less, because we know the electricity and we can reverse estimate the loading.

3: Significant trade and sales volume

Yes, there is a significant trade and sales volume.

Prodcom: 20128 kT of production with value of 12 billion euro. This category includes more than just low voltage cables in buildings. If we divide by 3 we arrive at the same figures as presented in the working plan.

CONCLUSION TASK 1: Yes there is significant environmental impact (see powerpoint in annex) **Our proposal is to exclude residential buildings from the study.** Of course the losses are calculated when using installations with the practices of today. The losses can be higher in old buildings.

Name	Comment/Answer
FN	Issue: What is the environmental impact of additional material? For copper there is already an assessment in the working plan. But we see that there is a big gap between economic section and environmental section (when we go back to EGEMIN study) in terms of CO ₂ emissions. It cost quite low adding more material in terms of CO ₂ compared to the savings. If you only look at this aspect, it would allow S+6. But this does not make sense from economic perspective. We are far from the switching point were additional impact in manufacturing compensates for losses.
FN	On the residential sector: It wouldn't make sense for adding sections in new installations. We might be underestimating the losses already taking place in the residential sector, especially in existing buildings. More than 60% of the households are more than 40 years old. There might be a potential in the old installations. For new installations it doesn't make sense to go for upsizing, but maybe there is something in the old installations.
BG	Renovation rate: You use 3%, but the current refurbishment rate is 1% according to Renovate Europe association.
DE	In tasks 3 we mentioned the study you are referring to, but other studies mention much higher rates. Certainly for non-residential.
BG	If we would have 3% I would be very happy, but we are very far from that.
BG	Legislation: Do you mean the construction products regulation (slide 25)?
MS	Yes we will correct this.
CS	I want to stay on the 3.5 TWh figure which are the losses for residential a little longer. I want to ask the colleagues if anyone challenges this figure. It is important. If this is the case, it is indeed a candidate for excluding from the scope.
AS	We are assuming that we have a loss when we have a consumption. The more energy efficient equipment we get, the lower the consumption will be and the lower the loss will be. Have you taken that into account?
DE	Yes. Actually it is the end consumption and it is based on projection of the European Commission.
AS	We only have losses when we have consumption. Has a time factor been taken into account?
DE	Yes. This has been taken into account in task 3. The formula about the load profile and load form factor.
FM	You consider full electricity consumption. Is it not the case that for specific circuits the loads is going lower? Because of development of more economic equipment, lighting is changing to led. Have you taken this into consideration?
DE	Than you assume that there are more circuits. Total energy consumption is still going up

PVT	For being clear, this first screening is a simple approach and more details will be elaborated in later tasks. Scenarios are more or less stable, but we can in sensitivity analyses take this into account.
CS	AS raises a very valid point. Household appliances may become more efficient (partly due to Ecodesign). Is it more cost effective to make electricity installations more efficient or make household appliances more efficient? This is probably beyond the scope of this study.
PVT	Indeed, but not completely..
CS	I want to know the feeling of the group towards the proposal of excluding residential buildings. Is this a good idea or not?
FN	Before excluding I would further asses the level of losses as an average in the household. 60% of very old installations might have higher losses than the new installations. The residential sector probably needs different policy measures than industrial and services, but there might be relevant potential in the residential buildings which could be addressed through renovation programs or so.
AB	There is a dualism between product and installation. If we can address the problem just by the way of installation, Ok we can exclude. But if we have to take into account also the product perspective product are the same in residential or other category of buildings. So the same product in the European market has to follow two different roads if it will be installed here or there. Is this an issue or not?
PVT	It can be an issue.
FM	We have already today the situation that the same product installed in residential and industrial have different losses. It is not the product, but the way we use it and the application. We may need to address residential buildings as well, but it goes in another direction. If you want an improvement in the residential sector, you have to push for higher renovation rate, while here we are pushing for larger cross sections. Two different directions. Can we cover both directions in this study?
PVT	Indeed. The problem is even more complex, because similar cables are also used inside machinery.
CS	In principle Ecodesign requirements have to be independent of the application of the product. Secondly placing the product on the market. This is a complication of the discussion.

Task 2: Markets

See powerpoint presentation in Annex.

Task 3 Users

See powerpoint presentation in Annex.

Name	Comment/Answer
FM	This comment may be a question of definition. If you say recycling of copper, all the copper from all cables will be recycled, not only 95%.
PVT	Yes, we need to adapt our wording in the slide 76. We should make assumptions on the cable and make assumptions on the cable process later on.
CS	In certain member states the theft of cables is quite substantial. Will this be recycling or disposal?
PVT	Indeed it can have an impact, but basically the material is brought to scrap merchant. We will not consider stolen goods as reuse.
BG	It will be recycled.
BG	5% disposal of aluminium. This is not because aluminium wires end up in landfill but because of oxidation losses, depending on recycling process.
FN	We will try to find out sources with information on recycled content. There are some figures on ratios between consumption and recycling of materials. In Europe above 40% recycling rate. It is however difficult to track where the materials come from: motors,...
BG	We are talking here about the recycled content. It will be a lower percentage than 95%. The best standard where both (recycled content and recyclability) are separated is the EN15804. Two things happen at different point in time (respectively beginning of life cycle and end of life cycle).
PVT	These are assumptions for what will happen in 40 years, so at the end of life of the products that are today put on the market. We assumed of course that the situation will not be worse than today.

Enquiry results ()

Not discussed.

Discussion on scope (PVT)

Two important points noted for discussion:

1: The same cable can be found in other applications, used outside the defined scope (machinery...)

Name	Comment/Answer
HM	We have to note cables are used inside applications. We should be clear that we do not consider the cables and the insulated wires in applications. Those are covered by the applications. There is a lot of legislation on this and are therefore covered.
PVT	Indeed.
HM	The application exists on its own, it includes the cables inside. It might be helpful to be very clear, never speak about connection equipment in installations.
PVT	OK

FM	For fixed installations in the sense that it is for supply of energy in the building.
PVT	There remains a grey area: for example cables in a nuclear power plant, is this a building? The cable can also be in a partially indoor/outdoor area? We have to be careful with industrial applications. The scope is clear for us: connected to an application inside the building but there might remain a grey area.
MF	How will wind turbines be considered?
PVT	They are also regulated. We consider this the same as equipment, it is an electrical machine.

2: Residential: Do we exclude them from the scope?

We will of course come back to this in task 7, but if we exclude them, we will not collect much more data.

Name	Comment/Answer
AS	Suggest to take into account the comments that if we don't see a big energy saving potential we should not proceed in this area. But there may be a big potential in existing old buildings which we may miss. This should be mentioned that there probably is a big potential, but for the moment I suggest not take into account residential buildings.
PVT	Could also be studied together with complete renovation, including insulation of the building. Losses in power cables are a very narrow reason to reconstruct or renovate a house.
AS	When you come to energy labelling part it is for product.
CS	Given that the resource for project are limited. If we exclude residential, this will allow to go deeper into industrial and services?
PVT	Good suggestion. We can take up this part in task 7. We can mention that this should be looked at in the EPBD.
FN	Point of old residential installations: there are some schemes already implemented in some countries. In France there is a compulsory revision of electrical installation that is older than 15 years. This can be a vehicle for renovation. But I can agree that this is far out of Ecodesign spirit. Just to note that there is something, but this is another study.
FM	An interesting aspect, this is very efficient what we see in France. Should we propose such measurements under the head of Ecodesign?
CS	Certainly not Ecodesign.
AB	Why just AC application and not DC application? Why just low voltage?
PVT	There are studies for having more DCs in buildings, but this is not a mainstream application.
AB	But it is increasing for example because of PV.

PVT	We can mention this as best available technology in the next task. But this is before the inverter. This goes up to very complex discussions. There can always be side applications. But this is outside the scope.
AB	Not power cable, just signal cable.
PVT	We have to always be careful, certainly when it comes to the point of legislation. Is this a loophole or not? I don't think it will become a loophole. We can add more examples to the list: PV, cable between motor and inverter in industry.
AB	Did we exclude medium and high voltage because we know that losses are negligible inside building?
PVT	Medium voltage is excluded because it is another stakeholder group. (distribution system operators). Practices and use are different.
AB	But in industrial buildings we distribute medium voltage.
PVT	We consider this mostly outdoor, between buildings. Not inside the building.
AB	It is inside in my opinion. In the big building for sure the internal distribution should be medium voltage.
PVT	We also said 'behind the meter', meaning the user side, not the grid side. Our focus is clearly on low voltage. We maybe miss a very narrow area.
HM	In the kick-off meeting we talked about 'there is no further transformer in the system'.
CS	Good idea. Not after the meter but after the last transformer.
AS	I suggest to keep the definition 'from energy meter'. From the meter on it's the people we can perhaps influence this.
PVT	AND: 'after the meter' and 'after the last transformer' Note: the location of the meter depends on the country.
AS	Normally the supply company owns the cable on the other side. They would replace the cable if they see an interest in this.
PVT	This is indeed the policy part. I suggest we do: And: after the meter And: no transformer involved And: the mains voltage is low voltage
BG	Aluminium inside buildings is not used according to members in Europe. I am waiting on a more documented input and will provide. Aluminium below 3.5 mm is not produced. The production process does not allow this.
DE	Enquiry: two installers mentioned that they were using aluminium inside buildings.
BG	Can you provide this information so I can challenge my members.

3: Other topics?

Name	Comment/Answer
PVT	<p>Labour cost differs more over Europe than cable cost.</p> <p>We can take the copper price as a parameter and take it into account in a sensitivity analysis. Outcome will be a big cloud of results.</p> <p>We will collect as much as possible data. Maybe we can look at the copper price used in the transformer study.</p>

Answers to questions received in writing before the meeting – from Copper institute (PVT)

The time frame for comments is 15th of January. Please use the form we provided. You can also give specific ideas in 'proposed change' column. You can even provide the exact wording that you want us to use in the report. We will reply to the comments after the 15th of January.

See document later available on the website with all received stakeholder comments, the remarks discussed in the meeting will be taken into account.

Other Q&A (All)

Any other remarks?

Name	Comment/Answer
FM	Improved efficient use of resources in Ecodesign. The environmental impacts of bigger cables, do you intend to add them? Or is this more something for task 5.
PVT	Yes in Task 5. We will use a simplified LCA. There are 7 important parameters, not only global warming potential.
FM	In the document one you have different scenarios S+1, S+2, eco, environmental. What are the criteria for the last two scenarios.
DE	Based on working plan. It was based on the EGIMIN study.
FM	Is it only taking into consideration the additional cost of the cable or of the full installation?
FN	<p>The economic scenario consists on taking 10 years horizon. Every cable has a price, which is the price used by EGIMIN. The balance is found within this 10 years. It includes the cost of the installation.</p> <p>Environmental section makes the trade of in terms of CO₂ only. Not really representative because much bigger sections.</p>
PVT	Is the report publicly available?
FN	<p>I will check if we can share the report.</p> <p>The study was based on 4 typical buildings. Extrapolation was done on basis of those 4 scenarios. The approach of VITO leads to compatible results.</p>
MB	We spoke a lot about the cross section. Could the study lead to recommendations about the way cables are installed or laid?

PVT	Yes this is possible. We also see that topology is also a saving option. This can also be a recommendation.
AB	Topology can affect the efficiency, but for us this is out of the scope, because it is related to the building design.
PVT	Indeed outside the scope. But it is possible that we give some recommendations here. Recommendation can be that this should be taken in the design stage (integral approach).
CS	<p>We wouldn't do a regulation just to have a recommendations.</p> <p>There are two types for Ecodesign requirements:</p> <ol style="list-style-type: none"> 1. Minimum requirements for the given environmental aspect; 2. Product information requirements normally to inform purchasers or for example to facilitate recycling. <p>In no case we would have a regulation only with recommendations.</p>

Further needs for data provisions and/or enquiries ()

The most needed data is a cost model for installation.

We will contact the installers because they are not present here. We should know how the tenders are made per point of connections, per running meter.

Name	Comment/Answer
FN	Do you need the cost for labour?
PVT	Yes, how much time is needed to install a circuit, e.g. per meter.
MB	If the cable is more heavy there are also costs coming from the transport.
PVT	<p>This is often foreseen in the cable price.</p> <p>Most of the installers must have such a cost model?</p>
MS	For larger cable you also need a larger conduct.
MB	When will the scope be definitively defined?
PVT	The last day of the study.

Comments that you send to us are public.

Closure (PVT)

Date of the next stakeholder meeting:

Mid may of early june: week of the 19th of May, subject to availability of meeting rooms.