european council for an energy efficient economy

Seminar on System Approaches in Product Policies

Arranged by eceee on 4 February 2014 in Brussels, in cooperation with the Swedish Energy Agency, Fraunhofer ISI and CLASP with support from Energifonden and the Representation of the State of Baden-Württemberg to the EU.



Highlights from the seminar

Moderator: *Sibylle Braungardt*, Fraunhofer ISI



Carlos Lopes from the Swedish Energy Agency welcomed everyone on behalf of eceee and the co-organisers. He outlined the objectives of the seminar: Ecodesign has moved from regulating relatively simple products to more and more complex products, such as the latest adopted regulation on boilers and the currently discussed regulation on process chillers. And now we are moving towards regulating whole systems and this will pose major challenges from the task of defining the scope to undertake market surveillance once the regulation has been adopted.

This seminar gathered for the first time experts from a wide-range of sectors to discuss common challenges and issues to grasp energy savings in product systems. Around 70 participants from EU Institutions, Member State authorities, businesses and NGOs participated to reflect upon opportunities for EU product policies to achieve more than what they currently do.



In an introductory speech, Nils Borg (eceee) provided several examples showing that optimising building, lighting, industrial and IT systems could deliver as much energy savings as what is expected from policies addressing the efficiency of products alone – such as the Ecodesign and Energy Labelling Directives. He also conveyed recommendations for policy-makers from a study conducted in 2011 for DEFRA on system approaches, in particular the need to assess potentials, define systems properly, develop indexes of performance, and set-up robust inspection and guidance schemes.

Opportunities in buildings and lighting



Robert Nuij (European Commission) provided an overview of the EU legislation in place and how far it could already support energy savings in systems. Attempts at going beyond products have been made in Ecodesign on a case-by-case basis (e.g. for motors and ventilation units). For heating equipment, an 'installer energy label' will experiment the assessment of packages of heating systems in 2015. As far as buildings are concerned, the revised EPBD[1] requests from Member States to set requirements on building systems encouraging their appropriate dimensioning, adjustment and control. However, they have so far responded to this instruction in varied degrees (The Netherlands being a benchmark case). Public Procurement and Ecolabel rules could provide further options. Mr. Nuij concluded on questions that are not necessarily fully clarified yet, for instance: What are the most suitable legal instruments to address system efficiency? Who is responsible for compliance? And where does the internal market stop and national rules can prevail?

[1] Energy Performance of Buildings Directive

Peter Nielsen (Danish Energy Agency) responded to this last question by raising a number of concerns relating to the consistency between EU product requirements and national decisions on building systems. Denmark has a long track record in reinforcing its building codes and introducing rules for optimising heating and cooling systems in new buildings. Requirements for renovation will follow next. However, what are Member States really allowed to do if the Ecodesign Directive already states what can stay on the market or not? Is Ecodesign suited for products meant to be installed in a system? The article 6 added to the Ecodesign Directive may not be sufficient to avoid legal conflicts and Mr. Nielsen fears that the EU Court of Justice will have to arbitrate. He hopes a solution can be found through the revision of the Directives beforehand.



Jürgen Sturm (LightingEurope) confirmed that massive savings were at hand in the lighting sector, although light is far more than a pure question of technical efficiency. The Ecodesign and Energy Labelling Directives have already made significant steps to address the consumption of lighting products. And this has a genuine impact on the market. Addressing systems is the logical next step. The penetration of daylight, presence, time and more sophisticated controls is still very low (<8%). Mr. Sturm welcomes the initiative of a European Lighting Strategy launched by the European Commission in which lighting installations will be discussed in preparation of the revision of the EPBD and Energy Efficiency Directive. Beyond that, the ascent of smart buildings based on IT has the potential to revolutionise the lighting sector. The EU lighting industry wants to remain a key player, and not just an observer in the changes ahead.



Colin Timmins (eu.bac) presented the views of building control manufacturers, and emphasised the need for intelligent controls in all building systems. He described the voluntary label developed by its industrial sector to award those installations that include well-installed and maintained controls. Top-class controls can deliver 25% more savings than poor ones. Mr. Timmins does not believe that the EU needs a new policy on system efficiency, as there are already several ways through which the EU could use regulatory measures for systems: the EPBD could require that Member States set standards for controls based on best benchmarks and ensure regular inspections of their functioning; the eu.bac label could be turned into a mandatory instrument under the Energy Labelling Directive; and Ecodesign could regulate the performance of building controls in a single batch.



Just before lunch, Alan Meier (UC Davis Energy Efficiency Center) took the audience through an inspiring trip to three forward looking developments that to him will change the way products interact with systems and push the boundaries of product policies. The first one is the crucial importance of user interfaces and their proper designing. The usability of thermostats and other devices has been poorly measured so far and needs improvement. The second is the advent of alternative ways of powering appliances through USB/DC plugs. This new paradigm will involve not only electricity supply but also exchange of information between the product and the supply system. However, test methods for DC appliances are lacking and need to be developed a.s.a.p. The last one is the "Internet of Things", with networked standby modes mushrooming everywhere. Alan Meier underlined that we are really facing the development of the "Internet of *Energy Using* Things". Regulation will have to tackle this information revolution so that it does not drag too much energy use.



Opportunities in industrial systems

Prof. Anibal De Almeida (ISR, University of Coimbra) gave a comprehensive talk on system-related aspects of motor and motor-driven units. Motors are responsible for a very large part of industrial electricity use and the optimisation of the systems in which they operate is essential. '*Like in an orchestra, one lousy player in the system can ruin everything*.' Improving the system often yields far more savings than simply changing the motor. However, there are informational, behavioural and organisational barriers. The Ecodesign Directive already has a portfolio of existing or pending measures covering motors, pumps, fans, circulators and compressors with a growing consideration of system



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auxiliaries (variable speed drives, speed starters, electronic controls). This is a positive trend and a world premiere, although some standardisation work is still on-going for determining the energy efficiency optimum of motor-driven applications. The potential for system approaches is huge (with further potential in e.g. conveyors, elevators, etc.) and the industry has started answering to it (see for example the Ecopump initiative).

René Kemna (VHK), the main contributor to the methodology used in the Ecodesign Directive, introduced the afternoon panel session by reminding that the revised MEErP[2] adopted in 2011 encourages the consideration of different layers (from the strict product scope to extended product approaches, technical system approaches and functional system approaches). When questioned whether more could be done to address system efficiencies, he answered with a wink '*Yes and no…*' The methodology is flexible enough to encompass lots of things, but an effective system approach requires more capacity building in industry and policy formulation, better reference data on system definitions and boundaries, and additional test and calculation methods. There is progress in the latter, but rather slow. In summary, the methodology is not really the problem. What matters is the ability to mobilise forces to address more complex situations and deliver with all involved designers and installers on three priorities: making all components of a system work together towards one goal, lowering system exergies whenever possible, and proper sizing ('less is more').



Panel session: Outlook for system approaches in EU Product Policy



The panellists discussed key challenges for better addressing system efficiency through legislation. What systems need to do better is clear (quicker adjustment to occupancy and load, etc.), but the current EU policy set-up is not ideal to apply unified system approaches. Product regulations such as Ecodesign measures are rather bottom-up and sometimes collide with each other. This being said, it could be a mistake to try and be too systematic. For instance, it would be useless to impose a variable speed drive when it is not needed.

At least, it should be possible to make progressive steps and ensure that products placed on the market are future-proof and ready to be operated properly in larger systems with controls. This has already been done in some cases, through better measurement methods at partial loads, flexibility in Ecodesign requirements, etc. Still, there is room for improvement. As an example, the rules for boilers do not cover efficiency at loads below 30%; this would need to be tackled at a future revision.

A balance is required between further expanding system approaches and leaving sufficient space for industrial innovation. Would voluntary approaches be a solution in the field of systems, through direct negotiations between the EU and industrial stakeholders? They can provide flexibility, although there is a huge question mark on controls and compliance. They could also fail to deliver in the absence of a broader policy push.

A prioritisation of policy intervention on systems appears necessary, because of the costs and complexity involved in dealing with these and enforcing the rules (standard tests in laboratories cannot be used here). Connecting better and solving the conflicts between the different existing Directives would be a good step forward. Another way to go would be to make the most of product regulations so that installed products deliver their promises

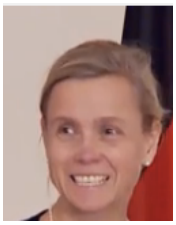
[2] Methodology for Ecodesign of Energy-related Products

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according to where they are placed. Last, progressing on standardised definitions of systems and efficiency indexes is recommended (the installer label for heaters can be inspiring).

The European Commission has put and will continue putting some thoughts on systems and consulting widely before moving forward in any direction. There seems to be no silver bullet to address systems, and anyway it could be dangerous to rely on a single policy instrument. The saving potentials are significant, but decision-makers need to be prepared for long discussions with a wide range of stakeholders. The support from industry and installers will be necessary. Once the instruments are delivered, Member States need to play their role in properly enforcing them.



Pernille Schiellerup (CLASP) summed up in brief: The good news is that we have a large systems potential – apparently as much from systems as we have already harvested from the current ecodesign regulations. But the big question remains: How can we turn this potential into actual savings? The questions arise here: How much of this potential is vulnerable to the user interface? And, from a public policy perspective, how much of that potential is available through different instruments? Ms Schiellerup gave an example from the Commission's invitation to discuss the lighting strategy. If we move focus from products to the services needed to deliver those lighting services, then a larger number of different policy options become available, options that go beyond the ecodesign and labelling Directives. There is scope to deal with systems issues in the current ecodesign Directive, but we need to be careful with how actions interact with other Directives, such as the EPBD. With systems, we also have the issue of complexity and exploding number of data requirements and number of actors involved. Adequate measurement methods are also an important factor, as is the issue of compliance.

All presentations and seminar videos are available on:
http://www.eceee.org/events/eceee_events/ecodesign-seminar-feb-2014

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