
ECODESIGN DIRECTIVE: SIX REASONS WHY BUILDING AUTOMATION SHOULD BE INCLUDED IN THE 2015-2017 WORKING PLAN

ECI Position Paper for the Ecodesign 2015-2017 Working Plan

October 2015

Document Issue Control Sheet

Document Title:	Ecodesign Directive: Six reasons why building automation should be included in the 2015-2017 working plan
Publication No:	Cu0231
Issue:	01
Release:	Public
Author(s):	Diedert Debusscher, Paul Waide, Hans De Keulenaer
Reviewer(s):	Andrei Litiu, Denzil Walton

Document History

Issue	Date	Purpose
1	Oct 2015	Initial public release
2		
3		

Disclaimer

While this publication has been prepared with care, European Copper Institute and other contributors provide no warranty with regards to the content and shall not be liable for any direct, incidental or consequential damages that may result from the use of the information or the data contained.

Copyright© European Copper Institute.

Reproduction is authorised providing the material is unabridged and the source is acknowledged.

SUMMARY: ACTION ON BUILDING AUTOMATION AND CONTROL SYSTEMS (BACS) CONTRIBUTES TO SEVERAL DIMENSIONS OF THE ENERGY UNION STRATEGY

Action on making the current policy frameworks more supportive of unlocking the large-scale savings of BACS contributes to several dimensions of the Energy Union strategy:

- Energy security: if the savings from BACS would be realised today, they would improve Europe's energy independence by 3 to 5 percentage points, from currently 49.5% to 53-55%.
- Energy efficiency and moderation of demand: the savings potential from BACS means 15-22% reduction of the total energy consumption in European buildings.

The above savings are highly cost-effective, with benefits being 9 times higher than costs, and hence merit consideration in the context of the EU's Efficiency First principle.

Even more significant are the contributions towards climate change mitigation. A reduction of 260 to 419 million tons of CO₂ reduces Europe's emissions from fuel combustion by 8-13%.

Between two and three hundred thousand direct jobs would be created by 2030 if an EU policy framework is implemented that is proactive enough to exploit the untapped energy savings potential¹. Many of these jobs will be for trained installers, for whom it will be necessary to establish competence requirements supported by accreditation and certification. In addition, up to 3.7 million indirect jobs would be created (based on the Optimal Scenario, 1.1% of EU GDP saved and reinvested in other sectors with average employment rates per unit of GDP).

The main questions are how to achieve these potentials, whether the Ecodesign Directive is an appropriate policy instrument, and how will it interact with the EPBD and Energy Efficiency Directive?

Here are six reasons why BACS should be included in the next Ecodesign Working Plan.

REASON 1. EVEN IF ONLY THE MOST MINUSCULE FRACTION OF BACS SAVINGS POTENTIALS WOULD BE ACHIEVABLE VIA THE ECODESIGN DIRECTIVE, THEY LEAPFROG MANY OTHER PRODUCT GROUPS CURRENTLY ENVISAGED

The energy consumption improvement potential from BACS is assessed at between 3800 and 6300 PJ per year. This is over 500 to 900 times the threshold of 7 PJ/y as set in the pre-screening methodology for WP2015-2017. This potential clearly dwarfs that of all the other products included in the priority list of the draft Ecodesign 2015-2017 Working Plan and of many product groups selected for Ecodesign regulation in the past.

The preliminary analysis (Task 3) indicates some uncertainty regarding this potential because it comes from a single study². Yet in the case of other product groups, no study is cited behind the estimates given. It is of course

¹ No formal assessment of employment for this sector has been conducted specifically. The numbers are assessed by analogy with other product markets where such assessments have been done.

² Waide et al. (2013). Building Automation: The scope for energy and CO₂ savings in the EU. Retrieved from: <http://i.mp/BASavingsEU>

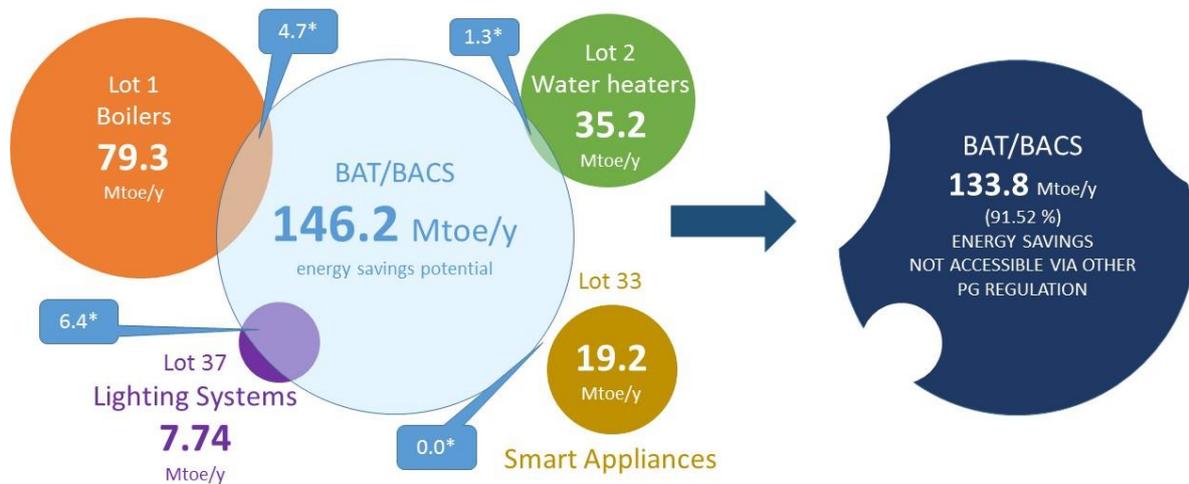
absolutely correct that a substantial part of the potential savings from BACS will not be directly realisable from BACS but it only requires 1/500th of the potential to be achieved through Ecodesign measures for BACS to match the threshold of 7 PJ/y. A more appropriate response would be to say that the potential for savings in BACS is huge but that part which can be realised through Ecodesign needs further investigation.

Such further investigation would ideally mean including BACS as a Product Group in the next Working Plan and mandating a preparatory study to analyse the technical, economic, market and societal aspects. Regardless of the outcome (whether it should cover specific implementing measures or not), such a study would provide the necessary data and information to support the Commission in designing the most appropriate regulation framework to unlock the large-scale savings of BACS.

REASON 2. THE ENERGY SAVINGS POTENTIAL OF BACS IS NOT ACHIEVABLE BY ADDRESSING THE CONTROLS OF OTHER PRODUCT GROUPS UNDER REGULATION

There is the perception that the energy savings potential of improved BACS will be covered via addressing the controls for other product groups, such as boilers (Lot 1), water heaters (Lot 2), smart appliances (Lot 33), and lighting systems (Lot 27). Although a certain overlap does exist (with the exception of smart appliances, that deliver none of the potential savings of BACS), it only covers 9% of the entire energy savings potential of BACS. As shown in the figure below, annual savings of 137.6 Mtoe are not accessible via regulation on the controls of other targeted product groups.

BACS in the Ecodesign WP: A separate product group is needed to access savings



(*) Portion of the energy savings potential (in Mtoe/year) that is potentially accessible via addressing controls in other product group ErP regulation

REASON 3. A SIGNIFICANT SHARE OF THE SAVINGS POTENTIAL OF BACS IS RELATED TO THE PRODUCT DESIGN. ACHIEVING THESE SAVINGS REQUIRES ACTIONS DIRECTLY TARGETED ON THE PRODUCT (VIA ECODESIGN POLICY MEASURES)

In the current WP2015-2017 methodology the criteria to assess the eligibility for product groups under Ecodesign are:

- a) The potential for design-related improvement options;
- b) The remaining space for product differentiation (competition);
- c) The appropriateness to target the isolated product (versus the system that integrates it).

With respect to points a) and b) there are clearly functionality and performance differences between different BACS. As the potential for energy savings depends on these design differences, there is a significant savings potential related to product design.

With respect to point c), the energy performance of the system (in casu the building services) depends directly on the quality of the BACS that controls it. Policy instruments that target BACS as a system are certainly needed in addition to any Ecodesign measure and will most likely lead to substantially greater savings.

REASON 4. MANY EXPLICIT ECODESIGN MEASURES DIRECTLY APPLY TO BACS

They include:

- Strengthening the interoperability: ensure or encourage products to use open communication and control standards so that data is correctly exchanged, understood and interpreted, in order for BACS to:
 - control the most possible HVAC and other energy services equipment;
 - enable effective Demand Response by providing interoperability with the supply side;
 - provide consumers with a "plug and play" solution that is manageable without expert knowledge.
- Improving functionality: ensure or encourage products to have sufficient functionality to enable significant savings
- Improving usability: ensure or encourage products to be more user friendly, perhaps through common user interface templates in line with industry best practice, and (depending on the product type) alerts notifying of excessive energy losses (e.g. when the same zone is being heated and cooled)
- Development and disclosure of a common performance classification scheme perhaps via labelling or a rating disclosure process (either as components or within a larger system classification scheme)
- Requirements on the sensitivity and permitted tolerances: e.g. ensuring that sensors are accurate. According to eu.bac, the accuracy of sensors varies between products, , which directly affects the efficiency of the control system
- Safeguard the system's energy performance: creating stimuli to repeat commissioning via an inbuilt alarm when a set period has passed since the last assessment of the system's energy efficiency

Each of these would be expected to lead to energy savings, either directly or indirectly, that would comfortably exceed the savings projected for other product groups currently considered. Moreover, a mandatory EU-wide energy performance classification scheme for BACS, under either Ecodesign or energy labelling , would greatly improve awareness regarding the distinction in performance between different BACS solutions and could better promote the value proposition and good practice in the market.

REASON 5. THE EXISTING SELF-REGULATORY INITIATIVE CAN GIVE THE PREPARATORY STUDY A HEAD START BUT NEEDS EXTENSION AND EXTERNAL VALIDATION

The preparatory study would benefit from the existence of the self-regulatory initiative by the European building automation and controls industry. Represented by eu.bac, the industry has developed European schemes for product certification and labelling, as well as for system audit and labelling. Built on European standards they have the objective to ensure energy efficiency of products, energy efficient operation of building services (throughout the life cycle of the building) and at the same time high indoor environment quality with direct impact on health, comfort, productivity and well-being. In their communications, eu.bac supports the inclusion of building automation and control systems for non-residential buildings in the next Working Plan and urges all stakeholders to do the same.

Although the eu.bac certification scheme is a welcome step in the right direction, more is needed to increase market coverage and encourage engagement and extension to other areas in the supply chain. This would include developing service quality norms and certification/accreditation for those engaged in specifying, installing and commissioning systems. The eu.bac scheme addresses much of this need but requires external validation and, if found to be effective, broader support to ensure it is implemented at scale across the whole industry.

REASON 6. INCLUDING BACS IN THE NEXT ECODESIGN WORKING PLAN IS KEY FOR THE ENTIRE SUITE OF ENERGY EFFICIENCY POLICY INSTRUMENTS TO BECOME MORE SUPPORTIVE OF UNLOCKING THE LARGE-SCALE SAVINGS OF BACS

The simple action of including BACS within the Ecodesign process will help to clarify to the EC's satisfaction what potential there is for savings under BACS and what part of these could be realised by actions directly on the product (via Ecodesign policy measures) as opposed to what part needs to be addressed under other directives or instruments. Only investigations such as in the framework of the Preparatory Study could help identify what needs to be defined at EU level on product properties (thus avoiding a patchwork of rules), and what could be left to national transposition as more relevantly addressed at system level and depending on local conditions.

Such requirements through an Ecodesign Regulation would be complementary with other Directives such as EPBD and EED. These two Directives aim to increase the energy performance and energy efficiency achievable through BACS. They can increase the penetration of BACS which would increase the energy savings related to Ecodesign measures and energy labelling. Critically, if BACS are not included in the Ecodesign working plan it will not be possible retrospectively (at least until the next working plan) to develop minimum product performance specifications and rating disclosure schemes via the EPBD or EED. Yet potential actions which aim to target savings from BACS via these Directives are likely to require such mechanisms to be in place as a precursor to effectively implement additional policy measures within their direct scope and increase the quality and deployment of installed BACS.

ANNEX – SAVING CALCULATIONS

EU'S ENERGY BALANCE

- 775 Mtoe primary energy production
- 1563 Mtoe TPES
- Energy independence: 49.5%

EU CO₂ EMISSIONS FROM FUEL COMBUSTION

- 3161 MtCO₂/year

SAVINGS POTENTIALS FROM BACS³

- Energy saving = 90 - 150 Mtoe/year
- Energy cost saving = 185 B\$ / year = 57% of the annual energy bill of Germany
- CO₂ saving = 260-419 MtCO₂/year

INDICATORS

- 8-13% reduction of CO₂ emissions from fuel combustion
- If energy savings translate to reduced imports, energy independence increases to 53-55%

³ Waide et al. (2013). Building Automation: The scope for energy and CO₂ savings in the EU. Retrieved from: <http://i.mp/BAsavingsEU>