COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 22.7.2009
SEC(2009) 1017 final

COMMISSION STAFF WORKING DOCUMENT

accompanying the

Commission Regulation implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for circulators

SUMMARY OF IMPACT ASSESSMENT

{C(2009) 5677}
{SEC(2009) 1016}

COMMISSION STAFF WORKING DOCUMENT

accompanying the

Commission Regulation implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for circulators

SUMMARY OF IMPACT ASSESSMENT

Lead DG: TREN

Associated DG: ENTR

Other involved services: SG, LS, ENV, COMP, ECFIN, INFSO, MARKT, SANCO, TRADE, RTD

EXECUTIVE SUMMARY

The Ecodesign Framework Directive lists products which have been identified by the Council and the European Parliament as priorities for the Commission for implementation. The Spring Council 2007 called for thorough and rapid implementation of the five priorities[1] set by the Energy Council on 23 November 2006[2], based on the Commission's Action Plan on Energy Efficiency. One of those priorities is to "dynamically and regularly improve and expand the scope of minimum efficiency requirements for energy-using products by "fully utilizing the Ecodesign Directive", including appliances in heating, ventilation and air-conditioning systems in which circulators are used. Thus circulators are one of the priority product groups considered for implementing measures under the Ecodesign Directive. The need to quickly come up with minimum energy performance requirements for these devices has been emphasised in the Article 16.2 of the Ecodesign Directive and supported by the Member States representatives and the stakeholders in the Consultation Forum.

The approach for developing the proposed ecodesign implementing regulation for circulators and its impact assessment was structured in four steps:

Step 1: assessment of the criteria for an Ecodesign implementing measure as laid out in Article 15(2a)-15(2c) of the Ecodesign Directive, taking into account the Ecodesign parameters identified in Annex I of the Ecodesign Directive;

Step 2: consideration of relevant Community initiatives, market forces and environmental performance disparities of the equipment on the market with equivalent functionality as laid out in Article 15(2) of the Ecodesign Directive);

[1] Brussels European Council 8/9 March 2007, Presidency Conclusions, 7224/07.

[2] TTE (Energy) Council on 23 November 2006, 15210/06.

Step 3: establishing policy objectives including the desirable level of ambition, the policy options to achieve them, and the key elements of the Ecodesign implementing measure as required by Annex VII by the Ecodesign Directive;

Step 4: environmental, economic and social assessment of the impacts on environment, consumers and industry, with a view to the criteria on implementing measures set out in Article 15(5) of the Ecodesign Directive.

0 Step 1

In order to assess the criteria for Ecodesign implementing measures as laid out in Article 15(2) of the Ecodesign Directive, the Commission has carried out a technical, environmental and economic preparatory study on circulators[3] following the provisions of Article 15(4a) and Annexes I and Annex II of the Ecodesign Directive. The study has shown that (1) circulators are placed in large quantities on the EU market, (2) the environmental impact related to the life cycle energy consumption and electricity consumption of circulators is significant, (3) there is a wide disparity in the environmental impacts of circulators currently on the market, and technical cost-effective solutions exist that could lead to significant improvements. These criteria are fully met by small domestic and large commercial standalone circulators and by domestic boiler integrated circulators (hereafter 'circulators').

Small standalone circulators (below 250 W) are mainly used in single household buildings and large standalone circulators (250 W to 2500 W) mainly used in commercial and residential buildings. Boiler integrated circulators (typical size of 90 W) are designed and fitted for a specific boiler, and hence are not sold separately.

Only glandless[4] circulators are treated in this Impact Assessment, as (glanded) pumps used in circulator applications are included in a specific Impact Assessment on (glanded) pumps. The primary function of a circulator is to circulate hot or cold water within a closed circuit (i.e. loop). Domestic drinking water circulators are not included in this impact assessment. Drinking water circulators (15-25 W) are mainly used in single household buildings to increase pressure in the drinking water circulation system but the materials used in these circulators are different to other circulators due to hygienic reasons.

With regard to the criteria established by Article 15(2) of the Ecodesign Directive, the preparatory study has established the following results for circulators in the EU, covered by this Impact Assessment:

---

3 "Preparatory studies for Ecodesign Requirements of Ecodesigns – Lot 11 on electric motors, water pumps, circulators in buildings and fans for ventilation in non-residential buildings. Appendix 7: Lot 11 - 'Circulators in building' 8 April 2008, available on Eco Motors website http://www.ecomotors.org/files/Lot11_CirculatorsInBuildings_DraftFinalReport.pdf

4 Wet running pump (the rotor of the pump is immersed in the pumping medium for instance in the hot water in the heating system)

Table 1: Criteria of Article 15(2) of the Ecodesign Directive applied on circulators

Article 15 (2a):	**Annual sales volume in the Community**	**14 million units in 2005 17 million units in 2020**
Article 15 (2b):	**Environmental impact: energy consumption of circulators (BaU)**	**49.7 TWh in 2005 55.3 TWh in 2020**
Article 15 (2c):	**Improvement potential (savings applying cost effective existing technology). Sub-option 3**	**26.6 TWh in 2020**

The latest Europump data on sales volume from 2005 shows an annual sales volume of 14 million units. A relative small increase on 1.4 % p.a. in the sales volume is expected, which gives a sales volume of 17 million units in 2020.

The significant aspect for improving the environmental performance of circulators is the life cycle energy consumption. Impacts from production and distribution are minor compared to the use-phase impact. The use-phase electricity consumption of circulators can be reduced significantly in a cost effective way.

Compared to a business as usual (BaU) scenario it is estimated that the proposed regulation (sub-option 3) will lead to annual use-phase electricity consumption saving in EU of about 26.6 TWh (stand alone and boiler integrated circulators) by 2020, corresponding to an annual reduction of 12.2 Mt CO_2 emissions (stand alone and boiler integrated).

The improvement potential is due to the fact that cost-effective technical solutions and products already exist on the market, but their market share is very low (5 % in 2006).

0 Step 2

Further to Articles 15(2) and 15(4c) of the Ecodesign Directive, relevant Community and national environmental legislation is considered. Related (voluntary) initiatives both on Community and Member State level are taken into account, and barriers preventing for market take up of technologies with improved environmental performance leading to a market failures are analysed.

The Ecodesign Directive implies that legislative action on circulators cannot be taken on Member State level, and the Member States expect that a harmonized legislative framework is set, the legal basis being Article 95 of the Treaty.

Several market failures have been identified to explain that cost-effective technologies leading to energy efficiency improvements are not penetrating the market to a satisfactory extent by market forces alone. Firstly, not all environmental costs are included in electricity prices. That is why consumer (and producer) choices are made on the basis of lower electricity price not reflecting environmental costs for the society (negative externality).

Moreover, main consumer related barrier for energy efficient circulators is the fact that consumers are not able to consider the full life-cycle cost of the circulator. The purchase price is well visible and is typically higher for energy efficient circulators. On the other hand, information on running costs/cost savings is not explicit and can be obtained only with difficulties (asymmetric information). An additional element leading to the excessive power consumption is that these devises normally run constantly, even when no pumping function is needed.

As a result, manufacturers have no incentive to reduce the energy consumption of these devices, even though this could be done at reasonable additional cost to the manufacturer and would bring significant savings to the consumer and reduced CO_2 emissions.

Finally, practically all circulators are installed by professional installers not paying the electricity bill generated by the use of the circulator, which makes the purchase/selling price the first priority rather than the life cycle cost (split incentives).

Due the identified market failures the Cost-effective improvement potential is not realized. This is further discussed in Section 2.

0 Conclusions on Step 1 and 2

Over the coming years the amount of circulators sold in the EU and the associated energy consumption will continue growing modestly or stagnate at 2010 level. However, as standard circulators are running constantly, if not specifically switched off by the user, their energy consumption will remain high due to the high number of circulators in buildings. Existing cost-effective solutions that allow a reduction in the energy consumption of these devices are not applied because of the market failure outlined above. The existing policy initiatives will have only a very limited impact on the environmental performance of circulators. In the light of the important savings potential, and in the absence of Community action, there is a risk that future initiatives at Member State level could hamper the free circulation of these products within the internal market.

It is concluded that the criteria for Ecodesign implementing measures as set out in Article 15(2) of the Ecodesign Directive are met, and circulators shall be covered by an Ecodesign implementing measure pursuant to Article 15(1) of the Ecodesign Directive.

0 Step 3

The Annex II of the Ecodesign Directive provides that the level of ambition for improving the environmental performance and electricity consumption be determined by an analysis of the least life cycle cost for the user of equipment. Furthermore, benchmarks for technologies yielding best performance, as developed in the preparatory study and the discussions with stakeholders during the meeting of the Ecodesign Consultation Forum[5] on 29 May 2008, are considered. The minutes of this meeting as relevant for this product group are attached in Annex I. The results are reflected in the objectives that the proposed regulation aims to achieve.

[5] The Consultation Forum is a balanced formation of the Member States representatives and of affected parties such as the industry, consumer and environmental NGOs called to express their views.

The objective of the proposed Implementing Regulation is to trigger the market transformation that would enable the realisation of the improvement potential. Several policy options were considered, including **self-regulation, mandatory energy labelling and mandatory minimum energy performance requirements**. This is discussed in Section 3. However, due to the mandate of the Legislator for establishing ecodesign requirements for circulators, the depth of the analysis for options other than an ecodesign implementing measure is proportionate, and the focus is on the assessment of the proposed implementing regulation. This is discussed in the first part of Section 4.

0 Step 4

An assessment of the proposed implementing measure is carried out. In particular, sub-options for Ecodesign requirements in several stages are analysed, taking into account the criteria set out in Article 15(5) of the Ecodesign Directive, and the impacts on manufacturers including SMEs. This is discussed in Section 5. The considered sub-options are as follows:

– The preparatory study and stakeholder comments lead to following 4 sub-options[6]:

1. EEI ≤ 0.30 mandatory by 2015-01-01;

2. EEI ≤ 0.23 mandatory by 2012-01-01;

3. EEI ≤ 0.27 mandatory for standalone circulators by 2012-01-01 and EEI ≤ 0.23 mandatory by 2015-08-01;

4. EEI ≤ 0.23 mandatory for standalone circulators by 2012-01-01 and EEI ≤ 0.19 mandatory by 2015-08-01.

[6] EEI values are used based on the new Europump calculation method, as explained in Annexes 5 and 6.

The below table shows the levels of savings from the sub-options of the policy option 2 against the discarded BaU option 1.

Table 2: Savings			
Electricity and savings 2020 in TWh sub options vs. BaU			
	Use	**Savings**	
	TWH/a	TWh	%
BaU	**55.3**	-	-
Sub. opt. 1: EEI,new ≤ 0.30 from 2015	**40.6**	14.7	26
Sub. opt. 2: EEI,new ≤ 0.23 from 2012	**26.8**	28.5	52
Sub. opt. 3: EEI,new ≤ 0.27 from 2012 + EEI,new ≤ 0.23 from 2015	**28.7**	26.6	48
Sub. opt. 4: EEI,new ≤ 0.23 from 2012 + EEI,new ≤ 0.19 from 2015	**26.5**	28.8	52
Expenditure and savings 2020 in EUR sub options vs. BaU			
	Expenditure	**Savings**	
	(€ billion)	€ billions	%
BaU	**17.3**	-	-
Sub. opt. 1: EEI,new ≤ 0.30 from 2015	**15.1**	2.2	13
Sub. opt. 2: EEI,new ≤ 0.23 from 2012	**13.0**	4.3	25
Sub. opt. 3: EEI,new ≤ 0.27 from 2012 + EEI,new ≤ 0.23 from 2015	**13.4**	3.9	23
Sub. opt. 4: EEI,new ≤ 0.23 from 2012 + EEI,new ≤ 0.19 from 2015	**13.6**	3.7	22
CO2 eq emissions and savings 2020 sub options vs. BaU			
	Use	**Savings**	
	CO2 eq/a	**CO2 eq/a**	%
BaU	**25.3**	-	-
Sub. opt. 1: EEI,new ≤ 0.30 from 2015	**18.6**	6.6	26
Sub. opt. 2: EEI,new ≤ 0.23 from 2012	**12.3**	13.0	52
Sub. opt. 3: EEI,new ≤ 0.27 from 2012 + EEI,new ≤ 0.23 from 2015	**13.1**	12.2	48
Sub. opt. 4: EEI,new ≤ 0.23 from 2012 + EEI,new ≤ 0.19 from 2015	**12.1**	13.2	52

The preferred choice in terms of least life cycle cost is the second sub-option. However, the technical feasibility of reaching the level EEI ≤ 0.15 or lower was shown to be impossible for all circulators, as shown in Annexes 5 and 6. Under these circumstances, the technical difficulties and the cost for manufacturers was considered to be too high in comparison with the additional savings achieved in comparison with the sub-option 2 on EEI ≤ 0.23 (2012).

0 Conclusions on Step 3 and 4

A comparison of objectives (sub-options within the option on ecodesign implementing measure) shows that the appropriate policy option for realizing the improvement potential of circulators is a Commission Regulation setting ecodesign requirements with entry into force for requirements 2 years after the proposed regulation. This approach ensures that:

– cost-effective potentials to improve the electricity consumption of circulators are quickly realized, leading to important electricity and CO_2 savings in the Community, while reducing the life-cycle costs of these devices for consumers;

– in 2020 the annual electricity consumption of circulators will be reduced by 26.6 TWh corresponding to 12.2 Mt CO_2 emission (stand alone and boiler integrated) compared to a business as usual scenario.

– costs for redesign for those manufactures that do not yet produce permanent magnet circulators will be kept within feasible limits;

– that the specific mandate of Legislator is respected;

– a clear legal framework providing a level playing field for manufacturers, ensuring fair competition and free circulation of products;

– requirements for circulators are harmonized in the Community, leading to a minimization of administrative burdens and costs for the economic operators;

– disproportionate burdens for manufacturers are avoided due to transitional period which duly take into account redesign cycles;

– in 2020 the employment will be increased by 5,000 from 24.800 to 29.900 personnel compared with BaU;

– additional energy savings outside the EU27 will be on a smaller scale, since the major part of circulators are produced and sold in EU. The measure will have a small impact in the few third countries with a circulator market, such as e.g. Switzerland and Norway;

as laid out in Section 7, monitoring of the impacts will mainly be done by market surveillance carried out by Member State authorities ensuring that the requirements are met, whereas the appropriateness of scope, definitions and concepts will be monitored by the ongoing dialogue with stakeholders and Member States.