

**IMPROVEMENT OF THE PROCESS OF IMPLEMENTATION  
OF NEW PRODUCT FOR EUROPEAN MARKET - CASE STUDY**

*Michał ZASADZIENÍ*  
*Silesian University of Technology*  
*Zofia NOWROT*  
*Building Research Institute*

**Abstract:**

An inseparable element of intelligent processes is the effective use of knowledge gained from external sources and the ability to change under the influence of external factors. An example of this can be found in the process of introducing a new construction product to the EU market. It has to react to the ever-changing EU legislature and the national regulations that adapt to it. The frequently asked questions from manufacturers and importers indicate the necessity of creating a procedure that would allow for precisely explaining what the algorithm of the process looks like and what criteria must be met to introduce the new product into the construction product market. The complexity and multitude of regulations as well as the language barrier also cause other complications with the understanding of the process procedure of conduct. The graphical presentation of the algorithm should facilitate following the path of conduct in the case of introducing a new construction product into the EU market. The graphical form should allow for intuitive movement in the process and can constitute a basis for creating an interactive form.

**Key words:** *construction product, the EU market, CE, harmonized standards, labeling*

**INTRODUCTION**

Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products is currently considered a key one within the European Union and stands above national law. It is referred to in short as Construction Product Regulation (CPR). From the day the aforementioned regulation came into force, the manufacturers introducing construction products into circulation within the European system were put under obligation to:

- draw up and deliver along with the batch of products intended for a single recipient a copy of a new document – a declaration of performance,
- marking the products with the CE marking with additional information [1].

These obligations are closely connected with the need to conduct the process of assessment and verification of the consistency of functional properties and drawing up technical documentation. According to the CPR, the product is to be accompanied by operating instructions and safety information, as well as information resulting from art. 31 or 33 of the Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) [2].

According to Art. 6 sect. 3 of the CPR, manufacturers declare the functional properties of the essential characteristics with reference to the intended use of the product according to the harmonised technical specification. The

CPR simultaneously requires the functional property to be declared with reference to at least one essential characteristic, and in the case of a product for which a European Technical Approval has been issued it is necessary to declare all the properties included in the ETA (European Technical Approvals). At the same time, the scope and level of the properties declared needs to take into account the technical regulations pertaining to the use of the product in the location of its prospective application.

Regulation (EU) No 305/2011 changes the established meaning of the CE marking. A CE marking on a construction product currently serves to prove its compliance with the functional properties declared. It is the scope and level of those properties that decide whether the product can be made available in the market of an EU member country, and the member states gain the right to withdraw from their markets products whose properties do not comply with their technical requirements. The CE marking is, therefore, no longer a passport which allows for the product to be sold in the EU market; it simply constitutes a confirmation of the declaration's credibility [3].

The above conditions cause the manufacturer's decisions regarding planning the type of construction product described by a set of functional properties of the essential characteristics to become especially important. It is a time-consuming and costly task which requires detailed and up-to-date knowledge in terms of both the technical requirements of the European Union countries and the procedure for setting and contents of technical specifications harmonised with the CPR.

Of course, alongside CPR we should also analyse co-existing complementary regulations. Especially worthy of note are:

- Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products,
- Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products,
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH),
- European Technical Approvals Guidelines (ETAG).

According to the Regulation (EU) No. 305/2011, the tools used for declaring functional properties are harmonised European standards (hEN) and European Technical Assessments. The European Commission publishes information on giving the European Standards the status of standards harmonised with the directive in form of communications which appear in the Official Journal of the EU.

In the case of innovative products which do not fall within the objective scope of harmonised standards or ones for which the norm is not an adequate assessment tool, the correct reference document when declaring their functional properties is a voluntary European Technical Approvals (ETA) document. It is a documented assessment of functional properties issued by the Technical Assessment Body (TAB) and agreed on by the European Organisation for Technical Assessment (EOTA).

To sum up, according to the CPR all business entities in the chain of supply and distribution should undertake measures to guarantee that they are introducing into circulation construction products in compliance with the requirements set forth in the CPR aimed at ensuring the functional properties of construction products and meeting the basic requirements for structures. Importers and distributors of products should be aware which essential characteristics are regulated in the EU market and what special requirements are in place in the member Countries.

The manufacturer or importer (distributor) is therefore obliged to:

- perform a compliance assessment,
- issue a declaration of performance and make it available in accordance with the relevant regulations and on the basis of:
  - initial type testing,
  - factory production control,
  - tests of final products conducted by the manufacturer in accordance with the testing plan,

- marking of the product in accordance with the regulations,
- conducting tests on the final products.

#### PROCESS IMPROVEMENT – ASSUMPTIONS

The process of introducing a new construction industry product is very complicated for the manufacturers. The legislation in this regard is ambiguous, multi-levelled and complex. Apart from the current legal situation, product standards and testing standards as well as being acquainted with the terminology, the manufacturer must also know their responsibilities resulting from the law and identify the regulations which pertain to their, oftentimes specific, product. There are, admittedly, tools which aid manufacturers, but for many companies they are not sufficient or do not function as expected.

An analysis of data from the General Office of Building Control and the European Commission [4, 5] made possible the identification of the most important areas of knowledge which the process participants have problems with. They are presented in Table 1.

As can be seen, 60% of the queries relate to the “Other” and “Product marking” categories. These categories include questions pertaining to the procedures connected with marking products with the “B” and “CE” markings as well as others, not related to categories 1-4. Therefore, it seems important to create a universal tool that is easy to interpret and which would facilitate the process of introducing new construction products into the European Union countries’ market. As introducing a new product into the market has been treated as a process, the easiest solution is to illustrate it with a graphic algorithm and develop relevant procedures. Such material can be the starting point for creating a utilitarian IT tool which can be implemented in a production company. Due to the highly complicated regulations of the EU legislative system in this regard and the existence of a great number of construction products, the algorithm is very complex and cannot be presented in full in this article. Six functionally separate processes (paths of conduct) which can be utilised have been identified.

#### Path 1

This path is used when there is a harmonised product standard and the product is subject to said standard. It is therefore necessary for the product to be certified with a “CE” marking. The superior regulation in this case is the CPR. Exempted from obligatory marking are products:

- manufactured individually,
- manufactured traditionally,
- produced for a specific use.

Table 1

1 State Universities in the Silesian Voivodeship which offer the Production Engineering and Management course

Query topic	Percentage share of the category in all queries
General query about information resulting from the CPR	7%
Declaration of performance	13%
Duties of the parties	20%
Product marking	27%
Other	33%

*Path 2*

This path is used when there is a product standard, but it is not harmonised (e.g. Polish Standard). It is therefore necessary for the product to be marked with the “B” construction marking. the procedure is described in the Regulation of the Minister of Infrastructure of 11th August 2004 on methods of declaring compliance of construction products and methods of marking them with the construction marking (Journal of Laws, No. 198, item 2041 as amended).

*Path 3*

To use this path, the product must meet the following requirements: there is a harmonised product standard, but the product is not fully subject to the existing harmonised standard. In order to introduce the product into the market, it needs to be marked with the “B” construction marking.

*Path 4*

This path is used when there is no product standard, but there exist European Technical Approvals. It is therefore necessary for the product to be marked with the “B” construction marking.

*Path 5*

This algorithm can be applied when there is no product standard but there exists a European Assessment Docu-

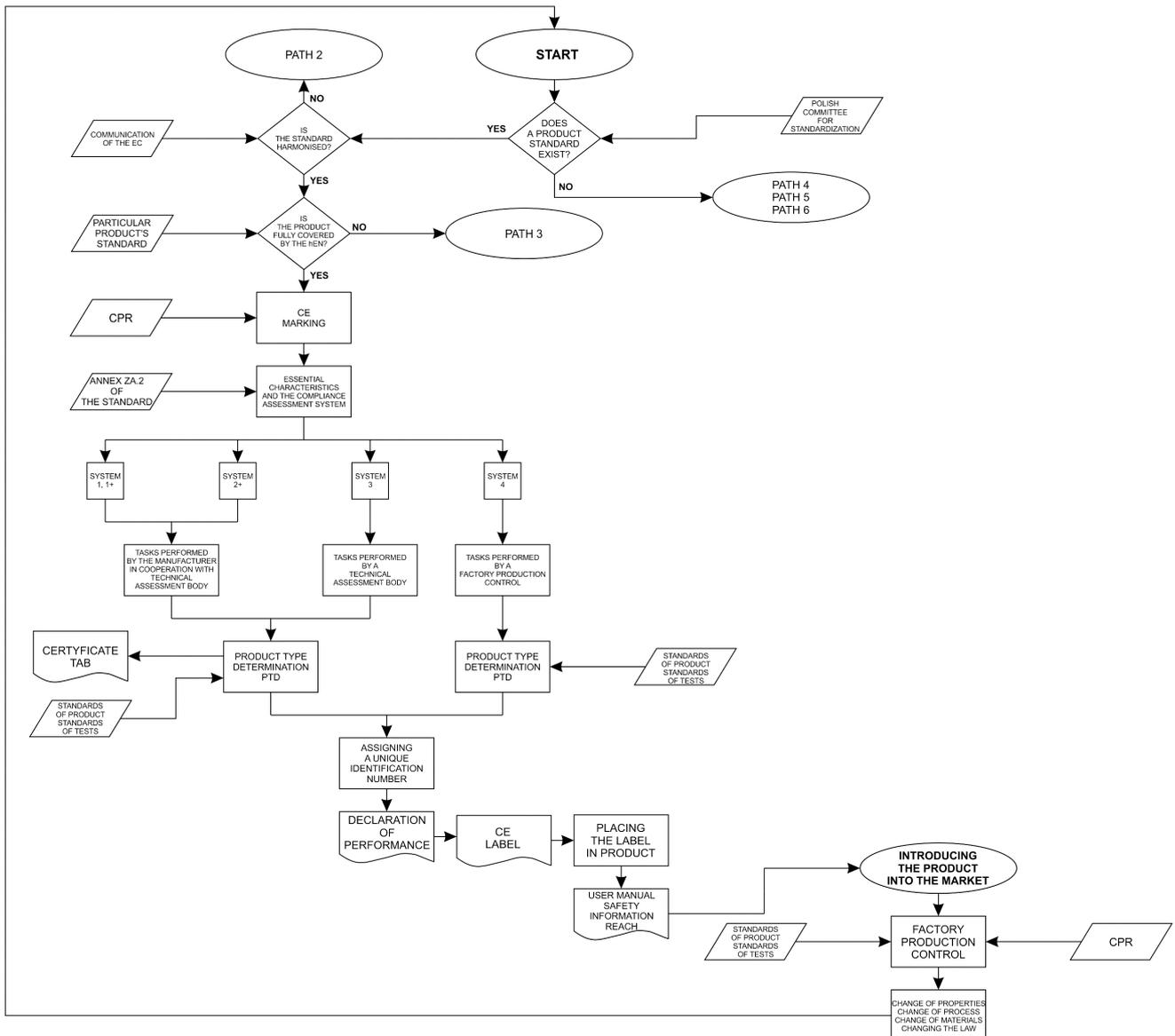
ment – EAD. It is possible to voluntarily mark the product with the “CE” marking. Path 5, therefore, is similar to the first one.

*Path 6*

This path is intended for products for which there is no product standard or any other reference document. In this case one should get in touch with the selected TAB and apply for an EAD. Following that, the procedure continues as in the case of path 5. All the while it should be remembered that the procedure of creating a European Assessment Document is currently straitened and costly. It is, however, possible for the procedure to be financed by several companies simultaneously.

**ALGORITHM OF CONDUCT – EXAMPLE**

Taking into account the complexity of the algorithms developed, only one of them - the one most typical for cases when the product is subject to a harmonised standard (hEN) – is shown below. In such a case “CE” marking is necessary, in accordance with the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011. Graphical representation of the procedure has been shown in Figure 1.



**Fig. 1** Path 1 of the process of introducing a new product into the market

The subsequent stages of path 1 are executed in the following order:

1. Does a product standard exist – “YES” answer  
In order to answer this question one should capably identify the product and then check the sources available to see whether such a document exists. This can be done using the search engine available on the website of the Polish Committee for Standardisation; e.g. factory-made Styrofoam products (EPS) have their standard designated as PN-EN 13163+A1:2015-03.
2. Is the standard harmonised? – “YES” answer  
Helpful in finding an answer to this question will be the communication of the European Commission which lists the standards harmonised with the CPR, e.g. the PN-EN 13163+A1:2015-03 standard is listed as harmonised with CPR in the current communication of the European Commission.
3. Is the product fully covered by the hEN? – “YES” answer  
To answer this question one needs to have access to the particular product’s standard. Exact information can be found in the first point of the standard in the chapter titled “Scope”.  
If the product is fully covered by the harmonised norm, it mandatorily has to be marked with the “CE” marking in order to be introduced into the European market. Therefore, the company must follow the guidelines of the CPR, i.e. complete the following steps of the procedure.
4. Verification of the essential characteristics and determining the compliance assessment system  
In the case of extruded polystyrene, the necessary information can be found in Table ZA.2 of the PN-EN 13163+A1:2015-03 standard. The compliance assessment system will in this case depend on the declared reaction to fire. The Styrofoams most common in the market have a reaction to fire class designated as E, and therefore their compliance assessment system is “System 3”.
5. Product Type Determination (PTD)  
The assessment of the functional properties of a product is done through product type testing. Depending on the compliance assessment system, these tests are conducted by either the manufacturer themselves or in cooperation with a notified research unit.  
Product type determination (PTD) of extruded polystyrene is carried out by a Technical Assessment Body. The result of the laboratory tests conducted is a test Report, which will be a part of the documentation kept by the Factory Production Control.
6. Assigning the product with a unique identification number
7. Drawing up declarations of performance  
The declaration document must be in compliance with the CPR. the declaration must be kept for 10 years from the date the product was last made available in the market. Its copy can be placed on a website, in which case a paper copy is delivered to the customer only upon an explicit request.
8. Designing the CE label  
The label should be placed in the product in accordance with the CPR guidelines.
9. Creating an operating manual  
Before releasing the product into the market it should be appended with an operating manual and information

pertaining to the hazardous substances the product contains in accordance with the REACH regulations.

10. Introducing the product into the European market  
After having introduced the product into the market, the manufacturer is obliged to conduct factory production control and carry out control tests in accordance with the requirements of the product’s standard. In case when: the standard is changed, replaced or expires, the FPC indicates a change in the functional properties of the product or the production process gets modified, it is necessary to analyse the changes, and in most cases go through the procedure again starting with point one [6].

## CONCLUSIONS

As a result of the research conducted, we can conclude that:

1. There is no problem with accessing information sources, but their scope and the way they are put together can cause problems with their analysis. The process is complex, the procedures of conduct elaborate, often unclear to their actors.
2. The analysis of data from reliable sources (EC, GOBC) has shown which issues are the most problematic for the process participants. The most frequently asked questions pertain to marking products with the “B” construction marking (which is most likely a result of the national regulations being constantly adjusted for compliance with the CPR). Also visibly problematic for them are the issues connected with using the CE marking and fulfilling the obligations put upon the manufacturer by the CPR.
3. A graphical representation of the process algorithm has been proposed as a solution to the problem. Information gathered in the literature part has been presented using a dedicated program in form of a procedure. The procedure is comprehensible and the order of actions clearly defined.
4. The procedure and algorithm developed can serve as a starting point for designing a functional IT tool which would facilitate the process of introducing a new construction product into the European market.

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dr inż. Michał Zasadziń

Silesian University of Technology, Faculty of Organization and Management

Institute of Production Engineering

ul. Roosevelta 26, 41-800 Zabrze, POLAND

e-mail: [michal.zasadzien@polsl.pl](mailto:michal.zasadzien@polsl.pl)

mgr inż. Zofia Nowrot

Building Research Institute

Thermal Physics, Acoustics and Environment Department

al. Korfantego 191, 40-153 Katowice, POLAND

e-mail: [z.nowrot@itb.pl](mailto:z.nowrot@itb.pl)