

EPDs for ventilation components



AMUND ONA GJØL

Group Product Sustainability Manager
Systemair
amund.ona.gjol@systemair.com

Amund Ona Gjøl, in his capacity as Convenor of the CEN/TC 156 WG 26, outlines the scope and vision when creating complimentary Product Category Rules (c-PCRs) for ventilation components. He dives deeper into why a common European framework is urgently needed, and what is at stake, for both the industry and the environment.

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Backdrop

Demands for Environmental Product Declarations (EPDs) are on the rise. Originating from construction projects in Europe and elsewhere, they trickle down the construction works supply chain affecting both producers of ventilation components and their suppliers. As a result, companies, national and European industry associations are now playing catch-up to a development which has been years in the making.

Emerging initiatives have brought forth a range of perspectives and opinions on a relatively unfamiliar topic for many, sometimes resulting in extensive and unproductive discussions on already established fundamental principles. Amidst an influx of new three-lettered abbreviations, not recognising that the context is established, and the basic framework is already in place, we find ourselves debating the destination and the means of transportation. Meanwhile, the EPD train is already in motion.

One aspect is seemingly agreed upon: EPDs can be expensive and time consuming to make. The need to avoid diverging national requirements, resulting in several sets of EPDs per individual product, with differing declared environmental impact in each one, is perhaps also a non-controversial standpoint. This is also

the main motivation behind the CEN/TC 156 WG 26 initiative: To create a European standard for the complementary Product Category Rules for ventilation component, avoiding the undesired scenario described above.

In this article, I will try to explain the scope and overarching goals behind the CEN/TC 156 WG 26 efforts, that I hope most professionals can support. The industry needs to get behind the efforts in CEN, creating a European standard for how EPDs for ventilation components should be made.

Mandate and Scope of WG 26

The mandate for the new Working Group in CEN is to create a European standard for the complementary Product Category Rules (c-PCR) for ventilation components. The standard will prescribe how EPDs within this product category should be made, and perhaps more important, how they should be used.

With regards to scope, the standard will apply to all products covered by CEN product standards within ventilation, including air handling units, fans, air distribution products, dampers, ducts and duct fittings, fire dampers, sound attenuators and more. Air filters

will be left out of the scope as these are addressed in CEN/TC 195.

The industry needed this standard two years ago. Time is therefore of the essence. Facilitating and ensuring an effective process towards a published standard is an un-written part of the mandate of the new Working Group.

Overarching Goals

A standard which is not being used has little or no value to anyone. We are tasked with putting together a consensus-based set of rules suited for Europe-wide use, that at least the large majority can stand behind and support.

There will be many differing points of view and interesting discussions in this process. My own outlook has certainly matured since I first was presented these topics a few years ago. To facilitate productive discussions in the working group, and to help us reach a consensus, we will rely on four overarching goals in our work. When creating the standard defining how EPDs for ventilation components should be made and used, we will aim to achieve the following:



These goals are hopefully uncontroversial for everyone. During our work in CEN, viewpoints, ideas and suggestions can be evaluated against these goals. Not based on the good intentions behind any given suggestion, but rather on what the actual real-life consequences are likely to be. For the users, the industry, and for the environment.

One might think that these goals represent diverging requirements. However, having worked with these issues for a few years, my opinion is that these goals are complimentary to one another.

1. Rules that deliver on what is demanded

By now there should be no doubt about the general context and basic framework regarding EPDs. “complementary” refers to EN 15804 “Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products”. The context for EPDs is business-to-business communication and documentation of environmental performance of construction products, and the basic framework is defined in EN 15804. With regards to EPDs, the ventilation industry is a small part of a much larger construction products industry.

EPDs are primarily used by environmental consultants performing Life Cycle Assessments (LCAs) of buildings. Such assessments are increasingly becoming mandatory in European markets, through local building codes. EPDs also give credits in BREEAM and other voluntary certification programs, driving requests and in some instances demands for EPDs.

The definition of an EN 15804 EPD can be found in the standard, and is well worth a citation:

“An EPD communicates **verifiable, accurate, non-misleading** environmental information for products and their applications, thereby supporting scientifically based, fair choices and stimulating the potential for market-driven continuous environmental improvement.”

There are several ways of making EPDs. But when developing the general rules for our product category, “accurate” and “non-misleading” form the guiding principles. The information provided in the EPDs must be accurate and non-misleading.

Understanding what information is needed in the construction projects, is also crucial. EPDs are a good source for some types of environmental information. However, some project-specific aspects cannot be obtained from a general EPD. In fact, any scenario-based environmental impact declared in a EPD must be omitted from the building LCA and substituted with building specific values. Any sensible evaluation of a product should also be done based on its contribution to the environmental performance of the specific building in question. This is quite clearly stated in EN 15804, which recognises that the environmental performance of some products is application dependant – more so for some product categories than others.

Reaching the first goal requires us to understand and recognise what EPDs are, what they are used for and why they are needed. We must take ownership of the environmental data known to be generally valid for all projects. Project specific pieces of the LCA puzzle, beyond what is demanded in EN 15804, is not warranted nor asked for in the projects.

2. Rules that promote better sustainability

Appearances can be deceiving, and not every environmental policy ends up promoting better sustainability. In fact, when implementing EPDs for ventilation products, it is very easy to end up the exact opposite of the original good intention. The crucial first step is recognizing the difference between HVAC equipment and ordinary construction materials.

A piece of plywood does not consume electricity - many of our products do. And those that do not, are all important building blocks of larger installations, indirectly determining the energy efficiency of the completed system. A bucket of paint or a steel girder does not recover thermal energy - many of our products do.

And as a REHVA Journal reader, you are aware that these crucial factors vary from project to project, making the energy use and environmental impact highly application dependent. This also means that the energy optimal solution for one application is not automatically the best for another application.

In fact, quite the opposite is true, evident by the unparalleled diversity among products within the ventilation industry. This is also the reason why air handling units from one single supplier can be tailor-made, with countless variants of essentially the same product.

When it comes to making rules that actually end up promoting better sustainability, ensuring project optimal product selection will be key. The biggest pitfall in this entire endeavour is trying to make the EPDs into something that they can never be for our type of “construction products”: a complete and universally valid environmental answer sheet for all projects throughout Europe.

This type of oversimplification will inadvertently promote sub-optimal product selection, excess energy use and worsened overall sustainability on a building level. Hopefully, no one is interested in such an undesirable outcome.

We must recognise the potential importance of EPDs, and the role they might play in the projects going forward. The standard should not only contain the rules for how the EPDs should be made. It should also contain crucial information about how EPDs for ventilation components should be used (and not used). Information that points EPD users in the right direction for project specific calculations (product selection tools) should perhaps be mandatory in EPDs for ventilation components.

Despite manufacturers’ efforts to reduce products down to the thirteen different environmental indicators required in an EPD, EN 15804 states that the “comparison of environmental aspects and impacts need to be undertaken in conjunction with the social and economic aspects and impacts related to the building”. This statement has special relevance for HVAC equipment, which is critical for achieving a good indoor environment.

In addition to providing comfortable and healthy indoor conditions, and liveable buildings for people, good indoor environments have profound environmental consequences as well. It is directly affecting the number of people needed for a certain productive output, either enabling or limiting people’s full potential. The problem is that these issues are not part of any metrics in use today.

Compared to modern dwellings, dirt floor caves with a fire pit and some animal hides have very low embedded emissions indeed. However, it makes no sense to talk about energy efficiency or product sustainability without first acknowledging the importance of, and setting requirements for, the indoor environment. We must try to make sure that EPDs for ventilation components do not push this issue in the wrong direction.

3. Rules that support digital workflows

The third overarching goal is creating a set of rules that enables and supports digital workflows. We do so for the benefit of the makers of EPDs, but also for the users of EPDs facing new demands.

EPDs for ordinary construction materials have been around for the last ten years or so, and the number is increasing exponentially year on year. They usually take the form of a PDF document, with the environmental performance (or impact) listed in a results table. With the shift towards digital platforms and digital data management, we should acknowledge that these PDFs already can be considered obsolete. We must try to look forward and plan for what will likely be required in a few short years.

For the main use of EPDs, performing LCAs for buildings, the embedded emissions of the building is the sum of all materials and components used in the construction. In light of Virtual Design and Construction (VDC) and Building Information Modelling (BIM), it is almost inevitable that machine readable EPDs will become the norm. For the industry to avoid costly, duplicated work and a complete revision of the standard in question, we must have the foresight to create a set of rules that enable digitally “manageable” EPDs in a BIM context.

For manufacturers an important question is how to serve the need for EPDs most effectively, without tying up valuable engineering resources in time consuming production of PDF files. Technical personnel are needed elsewhere, first and foremost in product development making better, more efficient, and more sustainable products.

Linking ERP systems together with EPD generators is one solution already in use in other sectors, with automated generation of project specific EPDs for every order. If we would like the possibility to peruse similar solutions for ventilation products, the key will be to avoid unnecessary complexity that results in a cumbersome and impractical set of rules that do not accommodate digital, automated processes.

4. Enabling cost-efficient creation of EPDs

The industry must come to terms with two basic realities:

1. EPDs are expensive to make, and there is little or no willingness to pay a premium for this documentation.
2. EPDs will most likely become a matter of purchasing hygiene, something expected as part of the product delivery.

We do not want to create rules that complicate EPDs to the point that they disable small to medium sized companies in the industry, not able to employ dedicated personnel or hire expensive consultants. It is also very important for multinational companies with a large product portfolio. Any manufacturer should ask the following questions:

- How many EPDs will my company make in the next few years?
- How many new people will we hire for these tasks?
- How many consultants will we be hiring to assist us?

Make no mistake. In the beginning, the full burden will be carried by the manufactures. In the end, the cost of the EPDs will be borne by the building owners, who will have a little less money to invest in better technical systems, indoor environments, and energy efficiency. Putting an unnecessary premium on products, due to unwarranted complexity of EPDs, is in no-one’s interest.

In sustainability terms, cost-efficiency is also important. With a general validity of 5 years, costly creation and updating of EPDs might impede the all-important incremental product development that is a hallmark of the ventilation industry. Small changes for increased efficiency that in sum make a big impact (for the customers’ wallets and the environment) are put on hold until the valid EPD expires. Using engineering resources on EPDs instead of product development is also most likely a disservice to the environment in the long run.

Creating rules that enables the cost-efficient creation and updating of EPDs is therefore the final overarching goal. In conjunction with the other goals, the biggest pitfall will be a self-imposed and costly set of rules, with un-wanted and un-warranted complexity that no-one is asking for.

Conclusion

It is my hope that these goals form a solid foundation to start from. And in my view, they are mutually inclusive: the disregard for one will affect the others negatively. This insight is cause for both hope and concern on my part, and my reason for accepting the nomination as Convenor.

The upside is the true opportunity we have of making a set of practical, cost-efficient, and future-proof rules that serves all needs and promote better sustainability. The downside is the very real possibility of a self-imposed bureaucratic and expensive burden, potentially unparalleled in its negative consequences for both the industry and the environment.

To ensure a desirable outcome, the key will be to limit the scope to what is actually asked for and to adhere fully to the basic premise and framework already in place.

In other words – Keep it simple.

The first meeting of the CEN/TC 156 WG 26 takes place in January 2024 in Oslo, Norway. ■