Introduction

Climate protection doesn’t stop even for buildings. The «Green Building Labels» represent a guideline for eco-friendly construction. These certification systems provide global standards for the development and planning of ecologically efficient buildings. Labels such as EPD, MINERGIE-ECO, LEED or DGNB not only offer tailored certificates for various project requirements and building uses but also record on a checklist the minimum requirements for the environmental compatibility of the construction products.

Taking into account social, economic and ecological aspects (the three pillar system), coating systems from IGP Pulvertechnik AG make their contribution to this sustainability concept, in many cases at various levels:

- Avoidance of the use of environmentally hazardous substances
- Complete avoidance of the use of solvent-based dispersants
- Coating systems with efficient curing properties
- Quality monitoring taking into account the service life of the buildings
- Preference of regional suppliers for the purpose of reducing grey energy
- The greatest possible avoidance of the use of rare raw materials

Since April 2014, IGP has been the first powder coating manufacturer to provide internationally recognised environmental product declarations (EPDs) according to ISO type III, based on the ISO 14025; ISO 14040 and the European DIN EN 15804 standards.

EPDs are data audited by independent institutes (e.g. Institut Bauen und Umwelt e.V., Berlin), which provide transparent and quantified information on the environmental impact of the declared products during their life cycle.

In addition to information on the production, use and product performance, a product-related Life Cycle Impact Assessment (LCIA) provides specific details of the environmental impacts. For the EPDs of IGP Pulvertechnik AG, all product-related energy and material flows and IGP-specific manufacturing processes are taken into account according to the LCA methodology.

IGP Pulvertechnik recommends the following coating systems for coating building construction components made of aluminium and steel, which meet the Green Building Label requirements and the Qualicoat and GSB quality certification requirements for the coating of (aluminium) components:

- IGP-HWFsuperior – Coating product made of modified polyester, highly weather-resistant+
- IGP-HWFclassic – Coating product made of modified polyester, highly weather-resistant+
- IGP- DURA®face – Coating product made of polyester, weather-proof
- IGP- DURA®xal – A particularly interesting ecological substitute for anodised surfaces
Powder coating contribution

The internationally valid ISO type III declarations of IGP Pulvertectnik AG for the façade products DURA®face 5807 (weather-resistant façade powder coating, silk gloss) and IGP HWF classic 5903 (highly weather-resistant façade powder coating, matt), with their quantitatively reliable information on environmental performance, are directed at many interested parties: architects, construction companies, real estate companies, facility managers, and of course companies which are involved (through the products they manufacture and the services they provide) in the value chain from the raw materials through to the finished building.

IGP’s EPDs can be used, for example in connection with the German Assessment System for Sustainable Building (Bewertungssystem Nachhaltiges Bauen - BNB Deutschland), the Swiss brand MINERGIE-ECO for sustainable building standards as well as several other national and international building quality seals for the evaluation of a building’s environmental performance, such as for

- DGNB (German Sustainable Building Council / Deutsche Gesellschaft für Nachhaltiges Bauen)
- LEED (Leadership in Energy & Environmental Design)
- BREEAM (Building Research Establishment Environmental Assessment Methodology)

For the EPDs of IGP Pulvertectnik AG, all product-related energy and material flows and IGP-specific manufacturing processes are taken into account according to the LCA methodology. As the environmental impact of the coating process itself depends to a significant extent on the pre-treatment methodology and pre-treatment chemicals used, the application (pre-treatment, application, stoving process, transportation to the end customer) was not included in the LCA model of the production of IGP powder coatings. However, application-related data for specific pre-treatments can be additionally obtained on request from IGP Pulvertectnik AG.

EPDs example

In April 2013, the European Commission announced the «Environmental Footprinting Initiative» in order to harmonise the market for sustainable products. The initiative establishes a framework for the assessment of the environmental characteristics of products, services and companies over their respective life cycles. This initiative is based on the growing desire of customers, business partners and the general public to be informed in future, not only about the product's function and performance, but also about the impact of production on resource consumption and the environment, through standardised documents and comparable datasets.

In addition to information on production, use and product performance, a Life Cycle Impact Assessment (LCIA) provides specific details of environmental impacts relating to:

- the formation of greenhouse gases (CO2 equivalents)
- the destruction of the ozone layer
- acidification (of water and soil)
- eutrophication
- the creation of photochemical oxidants
- the depletion of fossil energy resources
- the depletion of mineral resources

Here, the EPDs are used among other things as the basic data for calculating the LCA (grey energy) and/or energy consumption of a building. This makes it possible to compare different variations of the same building during the planning phase, with respect to ecological quality.

The declarations make statements about the use of energy and resources and the extent to which a product contributes to the greenhouse effect, acidification, eutrophication, ozone depletion and smog formation. Furthermore, they include information about technical properties that are needed for assessing the performance of the construction product in the building, such as durability, heat and sound insulation, or the effect on the quality of the air inside the building.

TI 109: Eco labels

The following contains three examples of the contributions that can be made towards compliance with the Green Building Label criteria by using IGP powder coatings:
BREEAM example
BREEAM stands for Building Research Establishment Environmental Assessment Method and illustrates the environmentally relevant overall performance of a building, from the planning phase, through implementation, to usage. The environmentally relevant overall performance is explained by dividing it into these categories:

- Management: Aspects of general processes
- Health and comfort: Interior and exterior aspects
- Energy: Operational energy and CO2 aspects
- Water: Consumption and loss-related aspects
- Materials: Ecological influences of the materials used
- Site ecology: Aspects of the ecological site value
- Pollution: Aspects of air and water pollution

Powder coating contribution
Powder coating can make the most significant contribution in the «materials» area. This category focuses largely on environmentally hazardous ingredients.

IGP powder coatings are solvent-free and generally do not contain environmentally hazardous substances, so they can contribute to a positive assessment in the «Materials» category.

DGEB example
The classification made by the Deutsche Gesellschaft für Nachhaltiges Bauen (German Sustainable Building Council) increasingly takes account of economic and socio-cultural themes, as well as ecological aspects. In this way, certification by the DGNB takes into account all three pillars of sustainability. The assessment categories are divided in:

- Ecology
- Economy
- Social and functional aspects
- Technology
- Processes
- Location

Weaknesses in one of these categories cannot be compensated by strengths in other categories. Depending on the compliance level achieved, the property is assigned a corresponding classification (gold, silver, bronze).

Contribution made by using IGP powder coatings
In the economic assessment category, powder coatings can positively affect the compliance level by means of improved life cycle costs (e.g., IGP-HWF products), and/or optimised maintenance costs (e.g., extension of façade cleaning intervals).

In terms of «ecology», the solvent-free aspect and the absence of environmentally hazardous ingredients have a positive impact. Environmental pollution and the possibility of demolition are also assessed in this category.

With regard to environmental pollution, powder coatings can in general make a contribution with their optimised reactivity (LT powder with low stoving temperatures).