

Building-Integrated Photovoltaic – Standardization and Testing

Franziska Rehde, Bernhard Weller

Technische Universität Dresden, Institute of Building Construction, Germany

Contact: franziska.rehde@tu-dresden.de; bernhard.weller@tu-dresden.de

Abstract

Opaque building surfaces offer large-area spaces for generating energy. Today, sustainable façade systems contribute to producing high-performance buildings that are economical and energy-efficient. Furthermore, PV which are integrated in the building skin as building integrated photovoltaic (BIPV) produce energy. They play an important and leading role in achieving the future goals of emission free energy consumption. Several requirements of national building laws and regulations have to be considered since PV modules are integrated into the façade as building products. In order to realize a BIPV project properly, detailed knowledge of building codes is required. Therefore, the EU research project “Construct PV” aims for a common and Europe-wide applicability of BIPV. This paper presents the legal situation of building codes in Europe and selected national regulations, which will establish a basis for future BIPV design in achieving the goals of an emission-free source of renewable energy.

Keywords: BIPV; buildings; sustainability; renewable energy; standards and tests; building codes.

1 Introduction

Since PV modules are integrated into building skins as building integrated photovoltaics (BIPV), several requirements have to be considered. BIPV-modules are, as construction products, an integrated part of the façade or the roof and an important part of the electrical system. They are constructive, functional, design as well as electrical components of the building envelope. Hence, PV-modules must fulfil these requirements for construction products and building structures as well as electrical installations. Within the EU-funded research program “Construct PV – Demonstration of customizable size photovoltaic modules integrated in the opaque part of the building skin” (2013-2017), a study on standards, regulations and rights for BIPV integration in buildings within Europe was discussed in the document “standardization and testing” [1].

The next chapter presents the project “Construct PV” and briefly summarizes the document

“standardization and testing” and its results. It covers the general European legal situation of the building code and some national building codes in detail. In addition to France, Greece, Switzerland, Italy, Spain, the Netherlands and Austria, mainly the German standard situation and its legal process will be discussed. The European situation with regard to standardization and regulations is still not legally defined.

An approach for a European standard is given with the draft EN standard 50583. Based on this pre-norm and its individual mounting categories A-E, the research was expanded and subsequently completed with European and national standards.

2 Project “Construct PV”

Construct PV is a cooperative research project with 12 Partners from 5 different European countries. The main objective of the project is, to develop and demonstrate customisable, efficient, and low cost building integrated photovoltaic (BIPV) for opaque