

Calculation of the heat output of an heat insulation box for heating and solar pump units

Fraunhofer-Institut für Bauphysik IBP

Baufachlich anerkannte Stelle für Prüfung, Überwachung und Zertifizierung

Institutsleitung
Univ.-Prof. Dr.-Ing. Klaus Peter Sedlbauer

Client: Watts Industries Deutschland GmbH
Godramsteiner Hauptstraße 167
76829 Landau
Germany

Investigation: Three-dimensional finite difference calculation of the heat output of a heat insulation box for heating and solar pump units in comparison to a concentric insulation; providing proof that the insulation box's heat output is not exceeding the heat output when using a concentric insulation.

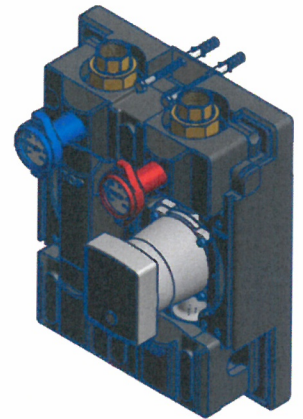
Heat insulation box: »Heat insulation box, type 8180, for heating and solar pump units« three-part insulation box made of expanded polypropylen (EPP) consisting of a lower shell, an intermediate insulation and a covering insulation of the water pipe components such as shut-off valves, mixer, pump and pipe pieces.
Thermal conductivity EPP: $\lambda = 0,039 \text{ W/(m}\cdot\text{K)}$

Calculation: According to the decision 5.2 of the Committee of Experts (SVA) B1 "Thermal conductivity and thermal insulation materials" of the German Institute for Structural Engineering (DIBt). Comparison of the heat output using a 15 mm thick concentric pipe insulation (50 % insulation according to EnEV) and the thermal conductivity $\lambda = 0,035 \text{ W/(m}\cdot\text{K)}$ with an internal diameter of 35 mm.

Boundary conditions: Air temperature in unheated room 10 °C
Temperature of the high-temperature system 70 °C
Thermal resistance to unheated room 0,17 (m²·K)/W

Requirements: According to the German Energy Saving Regulation 2014 (EnEV 2014) the heat insulation box used as connection and intersection area of pipes is provided for a pump group of maximum up to DN 32.

Results: **The equivalence according to EnEV 2014, Annex 5 thus has been proved for the heat insulation box type 8180 for heating and solar pump units of Watts Industries Deutschland GmbH.**



The result exclusively refers to the tested object.

The test laboratory is recognized as a testing facility by the German Institute for Structural Engineering (DIBt) according to LBO/BRL No. BWU-10 and according to EU-BauPVO as Notified Body No. 1004. It has been granted flexible accreditation according to DIN EN ISO/IEC 17025 under DAkkS No. D-PL-11140-11-04.

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Stuttgart, February 5, 2015

Deputy Head of the test laboratory

Responsible Engineer

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Dipl.-Ing. (FH) Andreas Zegowitz

Dipl.-Ing. (FH) Christian Schumacher



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DIN EN ISO/IEC 17025:2005

Prüflabor Wärme-Kennwerte
Nobelstraße 12 | 70569 Stuttgart
Telefon +49 711 970-3333
Telefax +49 711 970-3340
www.ibp.fraunhofer.de/pruefstellen