

Project Note

Saving energy when showering – what is the potential?

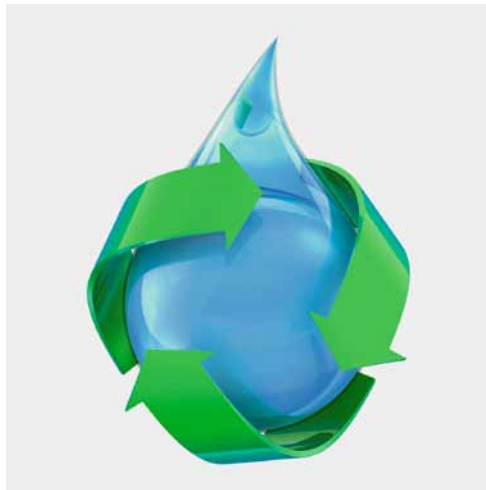
The greatest energy consumers in private homes are warm water and heating. A supplier of bathroom appliances therefore started looking for innovative solutions together with Zühlke in order to achieve energy savings when showering.

Task

A leading manufacturer of bathroom appliances is continuously launching new innovative products in its market. The basis for a new project was that energy could be saved when showering by enabling direct heat recovery. A pilot study was initiated in which Zühlke investigated the potential savings and technical feasibility of such a system. Clear specification was the easy integration into existing already installed systems as well as renovations or new constructions. Apart from that the system also had to require low maintenance. Various types of heat exchange and integration options were investigated and evaluated in existing modules. The design of the end product was also an important aspect of the study.

Solution

Zühlke specialists determined the required heat exchange surface, installation size and achievable level of efficiency, based on detailed heat exchange calculations. They also investigated various models, production processes and materials – always focusing on low manufacturing costs. As part of this process, Zühlke held intensive discussions with possible suppliers. CAD models were created, FEM calculations were carried out to support stability analyses and a manufacturing process was tested. The project team summarised the various options in a decision-making matrix and assessed them together with the client on the basis of a number of previously defined criteria. The options with the greatest potential were investigated in more detail with regard to extendibility and market potential. Payback estimations were also part of the study.



Technical Data

Thermo-dynamic Calculations
- VDI Wärmearbeitsatlas
- MathCAD

CAD, FEM

Workshops

Decision Matrix

Sample Manufacturing

Customer benefits

- Innovative ideas were generated in the team during the creative phase and then investigated by Zühlke with regard to their energy saving potential, technical feasibility, manufacturing cost, design and market potential.
- Detailed thermodynamic calculations of the various options and an the assessment of suppliers provided a profound basis for the further decision making process.
- The client benefited from the experience of Zühlke in the field of energy efficiency.

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