



# Technical Paper

## Building applications; Energy efficiency

### Session 18-2

## Basic considerations on the application of pumps in meshed pipe network

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## Summary

The application of pumps in building energy systems is under supervision of their energy efficiency. A standardised detailed method for the assessment of energy efficiency of pumps offers the opportunity to optimise dimensioning, design, and control of pumps in building applications in terms of the energy consumption related to their operation in hydraulic networks. This paper gives a short overview to the major parameters that are taken into account in the assessment method.

The analysis of pump performance in hydraulic networks is much easier since powerful computational software tools are available that are able to also handle meshed hydraulic networks. But still the effort to calculate mass flow rates and pump performance in meshed networks is bigger than the handling of regular closed-loop circular networks. This paper will also give a short insight into some rules how to model hydraulic networks.

A meshed hydraulic network typically installed in a building is a domestic hot water system. It is not only meshed but also with an open loop. As an example some results of a detailed analysis of a domestic hot water system are presented in this paper.