

TYPICAL PROBLEMS AND THE SOLUTIONS FOR HEATING SUBSTATIONS

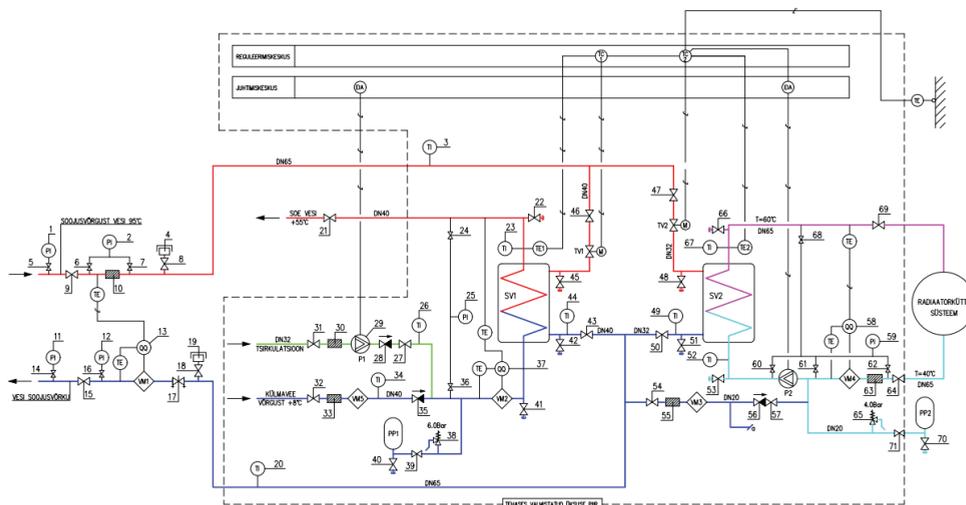
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Abstract – District heating (DH) systems are widely used for heat supply in Nordic countries. Early detection and elimination of faults in DH systems ensures the efficiency and longer lifetime of these systems. Heating substations are an essential part of district heating systems. They ensure that the required temperatures for space heating and domestic hot water (DHW) are provided to the buildings. In heating substations, the main faults, such as fluctuations in temperatures, noise, vibrations, cavitation and wear on valves and other moving parts, are caused by wrong dimensioning of the equipment. The study aims to find how the substation's operation is affected by incorrectly selected components and how several types of faults can be solved or avoided. This study mostly focuses on the dimensioning of the following heating substation's components, control valve, heat exchanger, circulation pump, etc., as incorrect dimensioning of this equipment can cause most faults which can be easily avoided. In this study recent research publications that present approaches to the elimination of failures in heating substations are examined with focus on data analysis. In the study examples of substations that have been deployed and the problems met in their operation are presented, proposing solutions for how failures could have been prevented, and which equipment should have been selected. The study will provide useful results for heating substation designers to avoid most common mistakes in dimensioning the substations and therefore avoid increased operational costs, and premature equipment failure.

Keywords – Dimensioning; district heating systems; heating substation; fault detection



An example of heating substation's diagram used in district heating projects

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