

## Development of a generalised concept for building automation (VeroGAK)

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### Summary

The *Münchner Energiemanagement System (Munich Energy-Management-System, MEMS)* has been developed in the 90's, representing an enterprise-independent energy-management-system for public administration. The *Arbeitskreis Maschinen und Elektrotechnik staatlicher und kommunaler Verwaltungen (Working Group for Machinery and Electrical Engineering of Federal and Municipal Administration, AMEV)* supported this – by federal research-funds funded - development. MEMS proved itself by its application in different municipalities (state capital Munich, city of Lüneburg) as well as at the University of Stuttgart: making use of MEMS, it was possible for the first time to combine individual systems of different manufacturers on a single management level. Although it has to be stated that MEMS focuses on the needs of bigger municipalities or administrations with relating staff requirements. The concept of MEMS was then further developed for its use in the housing industry and smaller municipalities by the research undertaken in the project VeroGAK. The specific main emphasis of the further development was put on the conversion of the available data bank system of Oracle to an open-source data bank system. After a comparison of different data bank systems, PostgreSQL was found to be the best alternative to Oracle. The data record of MEMS was transformed from Oracle to PostgreSQL and the interfaces (communication process) of the data bank system to the other software modules of MEMS revised. A prototype with transformed data record and adapted interface was developed from the data bank system PostgreSQL and tested under realistic working conditions. The data bank system PostgreSQL partly showed a better performance under the testing conditions than Oracle. No limitations or problems by using PostgreSQL were to be identified. The prototype can be obtained free of charge at the Institut für ZukunftsEnergieSysteme. As a result of the research, a system for the economical data collection and data processing for building automation systems and consumption meters is now available. However, the realisation of a user interface for the transparent communication with the user was not possible in the context. This research will be a future task. The user interface has to provide related instruments for the consumption analysis not only for the specialised engineer but in particular for the occupants themselves. The preconditions for an on time feedback concerning the consumption data are already given by the existing interface of the data bank PostgreSQL. The basing user

interface can favourably be constructed by web-based software (web server – web client). A related solution attempt has to enable a personalised access on one hand and an informative presentation of the related data on the other. This will enable to meet the specific need for data visualisation of the occupants as well as the need for data processing of the facility manager.