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Dipl.-Ing. Hans R. Kranz VDI
HAK Consulting
Enzstrasse 10
76694 Forst
0 04 91 72/ 2 92 60 21
hans@kranz.com

# INITIAL AND CONTINUOUS COMMISSIONING OF BUILDING AUTOMATION AND CONTROL SYSTEMS (BACS)
# - PREVIEW EN ISO 16484 -

Did you ever think about: "why are our buildings so dumb?" The simple answer might be: because we have a lack in commissioning. The car industry is introducing the "Diagnosis plug" – can you imagine this in our industry? We are missing standards, right? Professional building owners and facility managers require system solutions featuring integrated building management comprising building automation and control (BAC) along with fire safety and/or security. Those solutions require coordinated procedures during the design phase as well as during the execution phase. For energy performance it is realized that the initial and a continuous commissioning of building services is required – the BACS is an important tool for performing that.
The only globally accepted standard for BAC-Systems (BACS) is the EN ISO 16484 with its several parts. Part 2 describes the requirements for the Hardware, Part 3 defines the "BACS functions", Part 5 the BAC-Network communication protocol for interoperability of different systems, and Part 6 the procedures for the testing of conformity. The upcoming Part 1 of the global BACS standard is specifying the requirements for project implementation and system integration including engineering and commissioning of a BACS. System integration allows the user to take advantage of synergies between the different applications. It also is involving complex efforts in terms of achieving building and energy performance.
The field of building automation and control and the integration of related building services needs a comprehensive functionality, but the question of responsibility in projects with combination of autonomous systems for all building services is a serious matter of the various construction contracts – and will not be covered by any standard.
The review and improvement of building performance does not form part of a BACS project implementation. After completion, improved building performance can be achieved by the BACS if the commissioned values are reviewed and amended periodically, providing improved energy performance and reduced operating costs. This comprises modifications as necessary to fine tune and maximize the effectiveness taking into account changing site conditions and usage.

RESULTS
The Part 1 of the global BACS standard specifies principles for project specification, implementation and for integration of other systems into the BACS. The standard describes the phases required for the implementation of a BACS:

design: definition of project requirements including the commissioning;
engineering: detailed function and hardware specification design;
installation: commissioning of the BACS (but only the BACS) – as a tool for commissioning other building services!;
completion: acceptance, documentation and operator introduction.

The quality of the implementation of a BACS is dependent on the design and the specification of the building systems and the commissioning process. The global standard provides guidance for review and improvement of building performance after completion of a building services project.
REFERENCES
[1] ASHRAE. 2004. Standard 135 2004, BACnet®;
[2] IEA ECBCS Anx.40 Commissioning Bldg. HVAC Systems for Improving Energy Performance;
[3] ASHRAE Guideline 0-2005 The Commissioning Process;
[4] ASHRAE Guideline 13-2000 Specifying Direct Digital Control Systems.