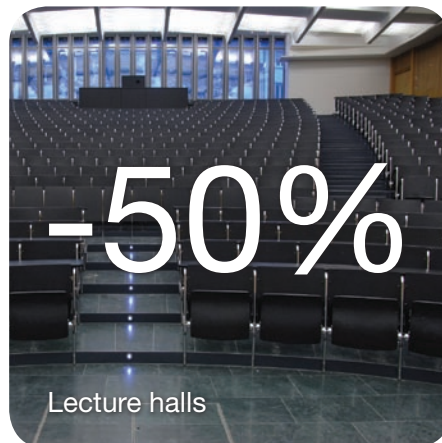
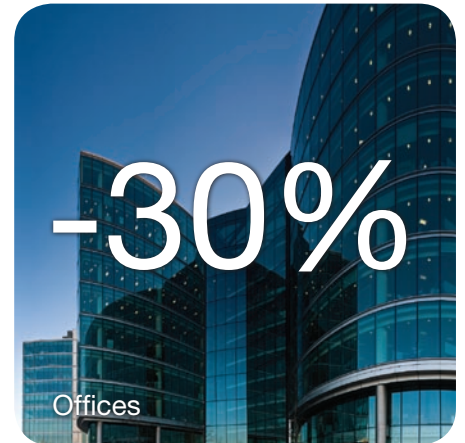


Yoga IB – the 1st Self-learning Intelligent Building



YOGA®

Building sector is responsible for 30-40% of total energy use worldwide. The related carbon emission exceeds the one of transportation sector.

Approximately 80-90% of the energy a building uses during its entire life cycle is consumed for heating, cooling, lighting and for other appliances. The remaining 10-20% is consumed during the construction, material manufacturing and demolition phases.

Among all economic sectors, over 80% of the CO₂ emission reductions achievable at negative costs in the IPCC (Intergovernmental Panel on Climate Change) estimation, come from the building sector.¹

Buildings are currently the biggest energy consumers. Turning to the positive point of view brings out the largest and cheapest opportunity to achieve significant energy savings, thus helping to attain objectives on climate change and security in energy supplies. When it comes to the energy efficiency of buildings, it's certainly much about the buildings envelope and insulation that has to avoid the thermal losses, but in case of commercial buildings, internal energy management and efficient building services have even bigger potential on cutting the costs.²

Intelligent control and optimization of the energy related services as well as continuous monitoring of the devices and their consumptions constitute the core of efficient interaction of a building. An investment into these technologies has a payback time among the shortest. In order to unify conventions and methods for estimation of the energy saving potential brought by building control systems, a European Standard has been worked out: Energy performance of buildings – Impact of Building Automation Control and Building Management (EN 15232:2007).

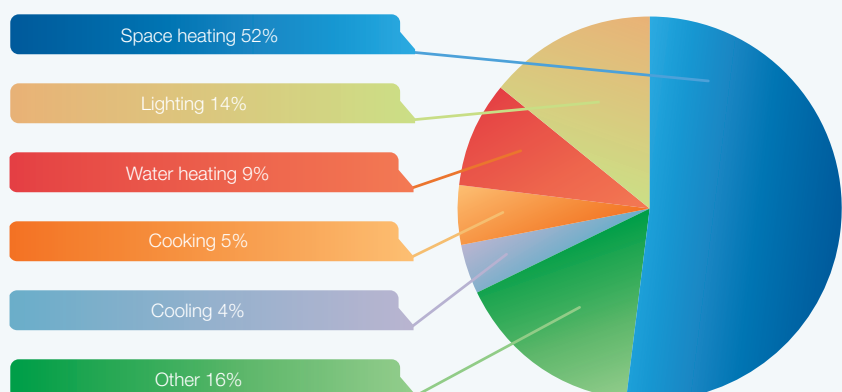
The standard divides Building Automation and Controls Systems (BACS) into four classes:

- **CLASS D** stands for the buildings with no or inadequate automatic control, which is considered as not energy efficient and in a need to be retrofitted (no new buildings may be planned according to that solution);
- **CLASS C** corresponds to standard automated controls that have only limited central functionality;
- **CLASS B** marks advanced controls with room based approach and management functionalities;
- **CLASS A** stands for holistic, high energy performance control system with communication between different parts of the system.

Among more specific scopes, the standard helps the building owners, architects and engineers to define the functions to be implemented and to easily get a first estimation of the impact of these functions on typical buildings.

Energy consumption of commercial buildings

As seen on the diagram, in the European countries space heating takes up the majority of the energy consumption of all commercial buildings. Although the picture differs drastically in comparison with the countries in warmer climate, it is often about the comparable amount of energy switched from heating to cooling and in general the proportion of thermal energy remains as the most important.³



The following table shows the building control system's impact to the use of thermal energy (heating and cooling) depending on the building type and the efficiency class the control system is related (according to the European standard EN 15232:2007).

Building types	Changes in building's usage of thermal energy in relation to the efficiency class of building automation			
	Class D No or inadequate automation	Class C Control devices with basic automation and no integration	Class B Control devices with advanced functionalities	Class A Holistic high performance control system
Offices	+51%	Reference efficiency level	-20%	-30%
Lecture halls	+24%		-25%	-50%
Educational buildings (schools)	+20%		-12%	-20%
Hospitals	+31%		-9%	-14%
Hotels	+31%		-15%	-32%
Restaurants	+23%		-23%	-32%
Wholesale and retail trade service buildings	+56%		-27%	-40%
Residential buildings	+10%		-12%	-19%

Anyone who wants to maintain the value of one's real estate, has to keep up with the energy performance related development so that he would not be left behind by all of the competitors as well as customers.

