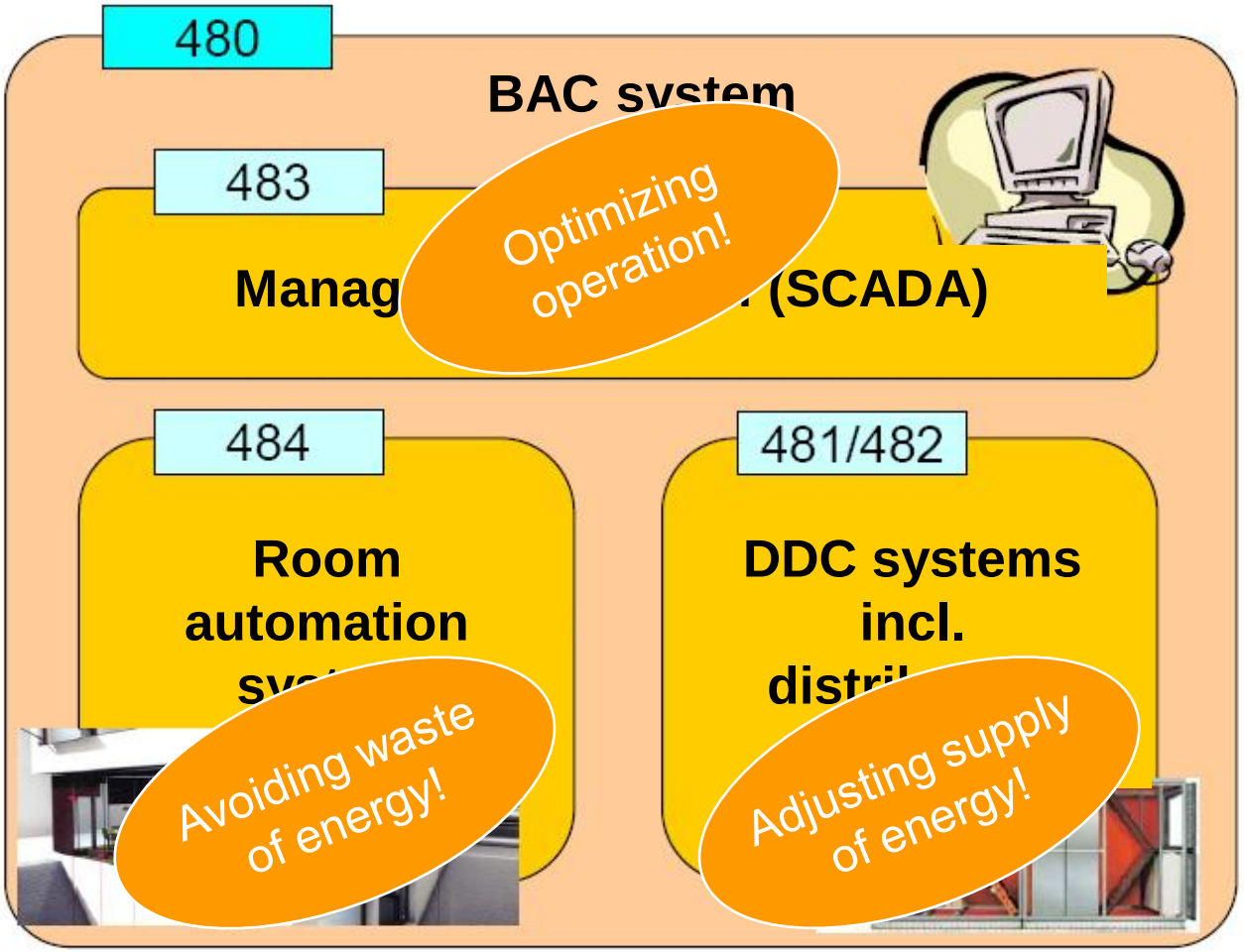
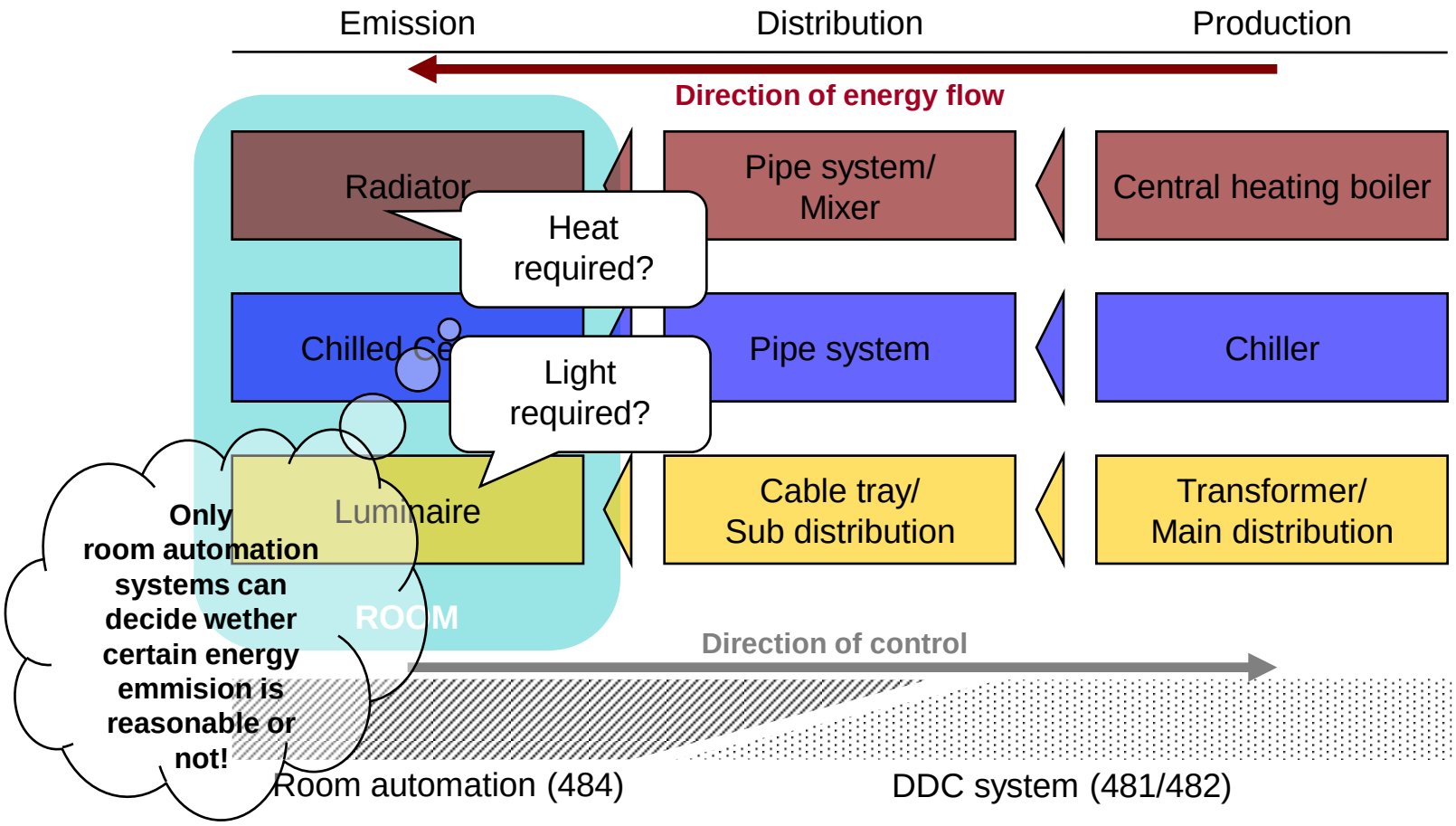
Building automation and control system

DIN 276: Parts of a BAC system (Cost groups)



Room automation for energy performance

DIN 18599: Room automation avoids waste of energy!



Room automation for energy performance

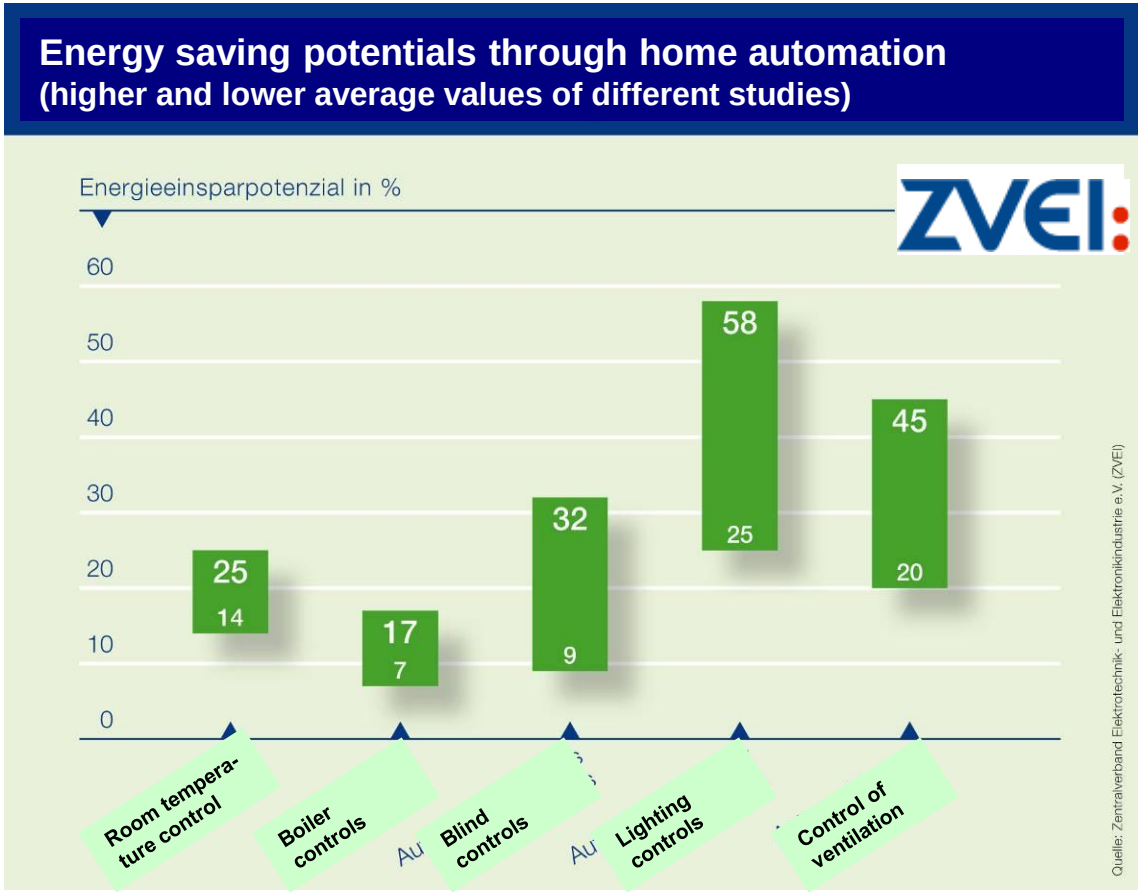
EN 15232: BAC efficiency classes imply room control

		Definition of classes							
		Residential				Non residential			
		D	C	B	A	D	C	B	A
AUTOMATIC CONTROL									
HEATING AND COOLING CONTROL									
Emission control									
	The Control system is installed at the emitter or room level, for case 1 one system can control several rooms								
0	No automatic control								
1	Central automatic control								
2	Individual room automatic control by thermostatic valves or electronic controller								
3	Individual room control with communication between controllers								
Control of distruibution network water temperature (supply or return)									
	Similar function can be applied to the control of direct electric heating networks								

Fact: Efficiency classes B or A require room automation

Studies on energy savings through BACS

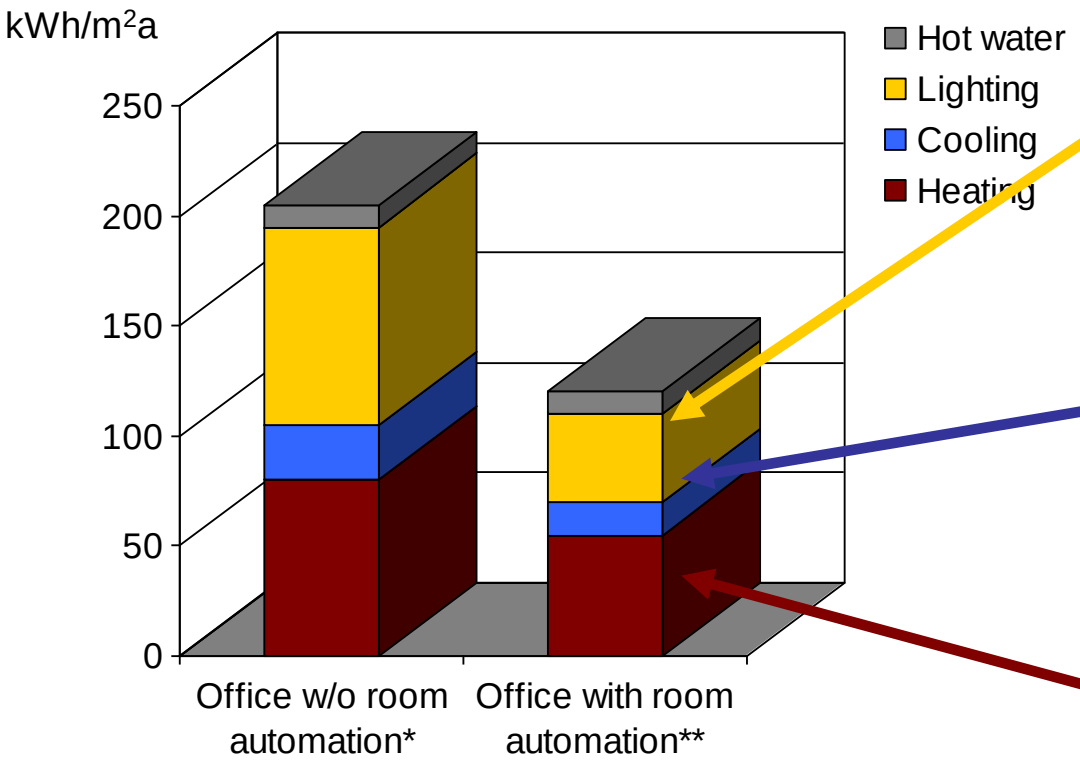
ZVEI study: Saving potentials in home automation



Source: Energieeinsparpotenzial durch moderne Elektroinstallation (ZVEI/University of Biberach 2008)

Studies on energy savings through BACS

LonMark study: Room automation saves up to 50%!



60% savings
in electrical energy
for lighting

45% savings
in electrical energy
for cooling or AC

25% savings
in heat energy

* Data source: Reference calculation in LonMark study acc. to DIN V 18599
** Saving potentials according to LonMark study 2007 (University of Biberach)

Studies on energy savings through BACS

LonMark study: Saving potentials on lighting energy

RA function*	Savings**	Influencing factors
Constant light control (presence-depending)	35 – 50 %	-> sufficient daylight provision -> high illuminance level (300lx +) -> most efficient with sun tracking
Daylight switching (presence-depending)	25 – 45%	-> sufficient daylight provision -> high illuminance level (300lx +)
Sunlight control	5 – 8%	-> sufficient daylight provision
Sun tracking control	10 – 13 %	-> sufficient daylight provision -> most efficient with light control
Automatic light	n.s.	-> intermittent presence (e.g. corridors)

* see explanations and definitions in spega e.control catalogue (pages 10 - 15)
** Saving potentials on lighting energy acc. to DIN V 18599 and prEN 15232 compared to EPBD reference building type

Studies on energy savings through BACS

LonMark study: Saving potentials on thermal energy I

RA function*	Savings**	Influencing factors
Mode change-over via time program	5 – 10%	-> long operating time of boiler or chiller -> low building mass
Occupancy sensors	5 – 10%	-> longer periods of absence during operating time of boiler and chiller
Window monitoring	5 – 10%	-> low building mass
Free night cooling	n.s.	-> air circulation must be possible
Summer compensation	n.s.	-> feasible for all cooling systems
Load optimisation	n.s.	-> feasible for all heating and cooling systems

* see explanations and definitions in spega e.control catalogue (pages 10 - 15)

** Saving potentials on lighting energy acc. to DIN V 18599 and prEN 15232 compared to EPBD reference building type

Studies on energy savings through BACS

LonMark study: Saving potentials on thermal energy II

RA function*	Savings**	Influencing factors
Sunblind thermo control	5%	-> sufficient daylight provision -> outside sunblind systems
Time program for sunblinds	n.s.	-> prevents cooling-down during night

* see explanations and definitions in spega e.control catalogue (pages 10 - 15)
** Saving potentials on lighting energy acc. to DIN V 18599 and prEN 15232 compared to EPBD reference building type