



# Revised EPBD Opportunity for Building technology



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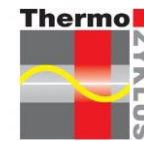


# The voice of European manufacturers in the home/ building automation sector

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Our vision is a world where anyone lives in buildings that are smart, decarbonised and efficient



# Agenda



- All i need is to take care and to....

## Know:

- What's in Green Deal
- What's in the fit for 55
- what is in the EED
- what is in the EPBD
- what is the SRI
- What is the SRI good for
- why EN ISO 52120-1:2021
- How eu.bac supports





# The challenges, solutions and support



  
Become climate-neutral by 2050

  
Protect human life, animals and plants, by cutting pollution

  
Help companies become world leaders in clean products and technologies

  
Help ensure a just and inclusive transition

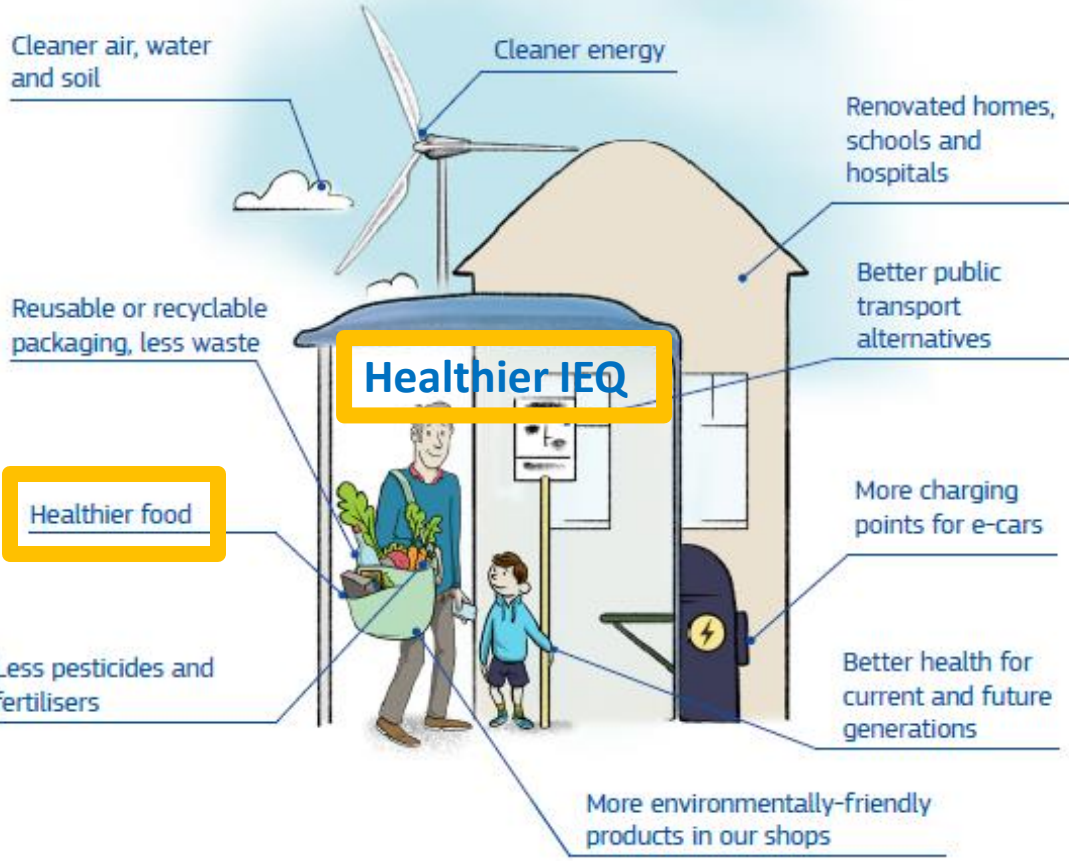
**Ziele der EU-Taxonomie**

- 3. Nachhaltige Nutzung und Schutz von Wasser- und Meeresressourcen
- 4. Übergang zu einer Kreislaufwirtschaft
- 5. Vermeidung und Verminderung der Umweltverschmutzung
- 6. Schutz und Wiederherstellung der Biodiversität und der Ökosysteme

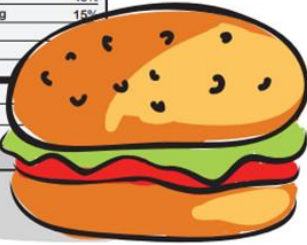
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# What's in it for me?

The European Green Deal will improve the well-being and health of citizens and future generations.



Nutrition Facts	
Per Sandwich(209g)	
Amount	% Daily Value
Calories	540
Fat 29 g	45%
Saturated 10g	53%
+Trans 0,5g	
Cholesterol 70 g	
Sodium 1,020mg	43%
Carbohydrates 44g	15%
Fibre 3g	
Sugar 9g	
Protein 24g	
Vitamin A	
Vitamin C	
Calcium	
Iron	



Nutrition Facts	
Per 100ml	
Amount	% Daily Value
Calories	45
Total Fat 0 g	
Saturated 0g	
Trans 0g	
Cholesterol 0 g	
Sodium 0mg	
Carbohydrates 10,6g	
Fibre 0g	
Sugar 10,6g	10%
Protein 0g	



## Important Measurements

- 1'000 ppm CO<sub>2</sub> Air Quality
- 40% r. F. Air Humidity
- 22 °C Air Temperature





# Fit for 55 = Assistance for HVAC....



### FIT FOR 55 – COMMISSION PROPOSALS

<p>EU Emissions Trading System (ETS) reform</p>	<p>New EU Emissions Trading System for building and road transport fuels</p>	<p>Social Climate Fund</p>
<p>Effort Sharing Regulation</p>	<p>Regulation on Land Use, Forestry and Agriculture (LULUCF)</p>	<p>CO2 emissions standards for cars and vans</p>
<p>Carbon Border Adjustment Mechanism (CBAM)</p>	<p>Renewable Energy Directive</p>	<p>Energy Efficiency Directive</p>
<p>Alternative Fuels Infrastructure Regulation (AFIR)</p>	<p>ReFuel EU Aviation Regulation</p>	<p>FuelEU Maritime Regulation</p>

# 2 out of 6 = 1. Energy Directive 2023



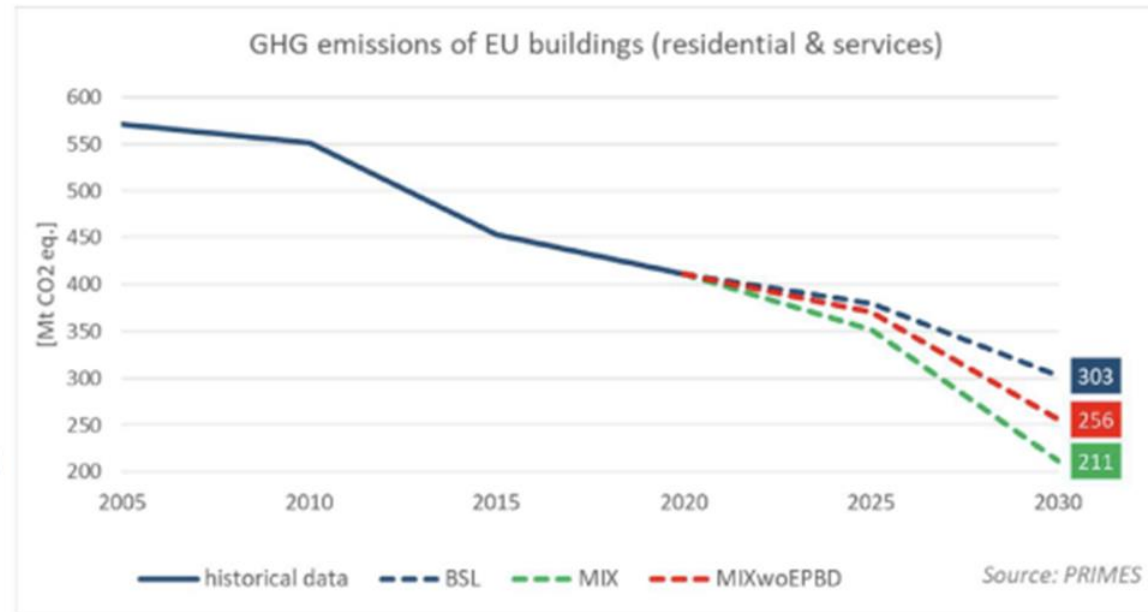
- Establishing an EU legally-binding target to **reduce** the EU's final energy consumption by **11.7% by 2030**
- **Increasing annual energy savings** from 0.8% (at present) to 1.3% (2024-2025), That's an average of **1.49% of new annual savings for the period from 2024-2030**

- Introducing an annual **energy consumption reduction target of 1.9% for the public sector** as a whole.
- **Extending the annual 3% buildings renovation obligation to all the levels of public administration.**
- Introducing a different approach, based on energy consumption, for business to have an energy management system or to carry out an energy audits.
- Bringing in a new obligation to monitor the energy performance of data centres, with an EU-level database collecting and publishing data.
- Promoting local heating & cooling plans in larger municipalities.
- Progressively increasing the efficient energy consumption in heat or cold supply, also in district heating.

# 2 out of 6 = 2. Energy Performance of Building Directive

## Objectives of the EPBD revision

- **Climate Target Plan** by 2030
  - reduce GHG emissions by 55%
  - integrate 32% RES
  - reduce final energy consumption by 14%
- **Renovation Wave** by 2030
  - renovate 35 million units
  - double and deepen renovation
  - establish minimum standards
  - harmonise EPC classes



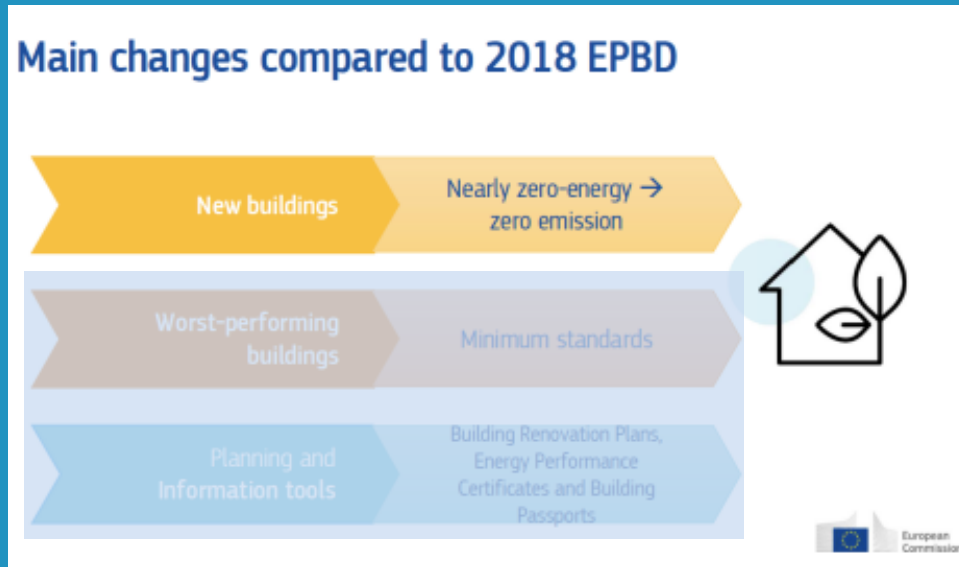
### Twofold objective:

Provide a **long-term vision** for buildings and ensure an adequate contribution to achieving climate neutrality in 2050

Set an **enabling framework** for an orderly transition by empowering all levels of action



# All i need is to know what is in the EPBD



## New buildings

- From Nearly zero energy to zero emission building
  - Update based on benchmarks per climatic zones, to be applied by 2030 (2027 for public buildings)
  - Stronger incentive to on-site renewables, efficient district heating and energy communities
  - Zero-emission buildings become the level to be attained by a deep renovation as of 2030 and the vision for the building stock in 2050
- **IEQ requirement**
- The life-cycle Global Warming Potential (GWP) of new buildings will have to be calculated as of 2030 in accordance with the Level(s) framework, informing on whole life-cycle carbon emissions (2027 for large buildings)
- Strengthened requirements for recharging of e-vehicles, and mandatory bicycle parking in new building

- Building Automation Control for:
  - Non-Residential buildings with effective rated output over 290 kW by 31/12/2024 and over **70kW by 31/12/2029**
  - Larger multifamily residential with effective rated output over 70 kW from **31/12/2024**

# All i need is **to know what is** in the EPBD

## Main changes compared to 2018 EPBD



- Definition of „deep renovation“
  - Strengthened requirements for recharging of e-vehicles in case of major renovation
  - Stronger provisions on the removal of obstacles and barriers to renovation
  - Member States must not subsidise fossil-fuel boilers as of 2027.
  - **IAQ requirements upon major renovation**
- ## Existing buildings
- Minimum Energy Performance Standards:
    - Union-wide MEPS to phase out worst-performing buildings
      - Public and other non-residential buildings: at least EPC class F by 2027 & EPC class E by 2030 •
      - Residential buildings: at least EPC class F by 2030 & EPC class E by 2033
    - MS to set up timelines for further improvement of their building stock in their building renovation plans
    - Supporting framework with a focus on vulnerable households and monitoring of social impact
  - National Building Renovation Plans (replacing the long-term renovation strategies)
    - BRP to be integrated into the NECP process, except the first plan
    - Common template with only national goals and key mandatory indicator, several elements opening to other dimensions beyond energy remain voluntary (accessibility, safety,..)

# All i need is to know what is in the EPBD

- § 1: Set Requirements for IEQ
- § 2: Definitions on IEQ
- § 3: Renovations plans including IEQ
- § 5: including IEQ in minimum requirements
- § 7+8: IEQ in new and existing buildings
- § 10: Including IEQ in Renovation Passport
- § 11: 1. Hydronic balancing
- **§ 11: 2a MS sets requirements for IEQ standards**
- § 11: 3. Monitoring and regulation of IAQ
- § 11: 8 (d) BAC monitoring of IAQ
- § 16: Implement IEQ in EPC
- § 20: Implement IEQ in inspections





# All i need is **to know what is** in the EPBD



- §1: Set Requirements for IEQ
- **§ 2: 57c. Definitions on IEQ**
- § 3: Renovations plans including IEQ
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Article 2: 57c.

Indoor environmental quality means the result of an assessment inside a building based upon parameters such as relating to **the temperature, humidity, ventilation rate and presence of contaminants,** influencing the health and wellbeing of its occupants

# All i need is **to know what is** in the EPBD

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- § 16: Implement IEQ in EPC
- § 20: Implement IEQ in inspections

3. Member States shall require non-residential zero-emission buildings to be equipped with

**measuring and control devices for the monitoring and regulation of indoor air quality.**

In existing buildings, the installation of such devices shall be required, where technically and economically feasible, when a building undergoes a major renovation

# All i need is **to know what is** in the EPBD

## Main changes compared to 2018 EPBD



## Main provisions on Information tools

- Energy Performance Certificates (EPC)
  - by 2025 all EPC must be harmonised
  - with energy and GHG indicators
  - validity of EPC of the lower D to G classes reduced to five years
- GHG become part of the metrics of the EPBD
- Inspections
  - Residential and non-residential split
  - Ventilation systems (sizing and optimization)
- New provisions to ensure access to buildings data,
- **The Smart Readiness Indicator (SRI) is required for large non-residential buildings as of 2026**





# All i need is **to know what is** the SRI...



Optimise energy efficiency and overall in-use performance

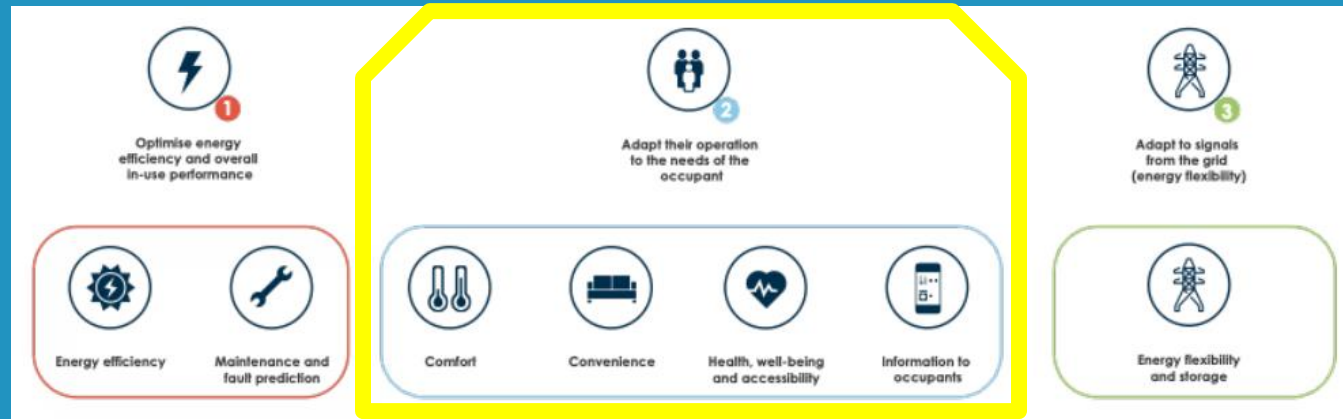


Adapt their operation to the needs of the occupant

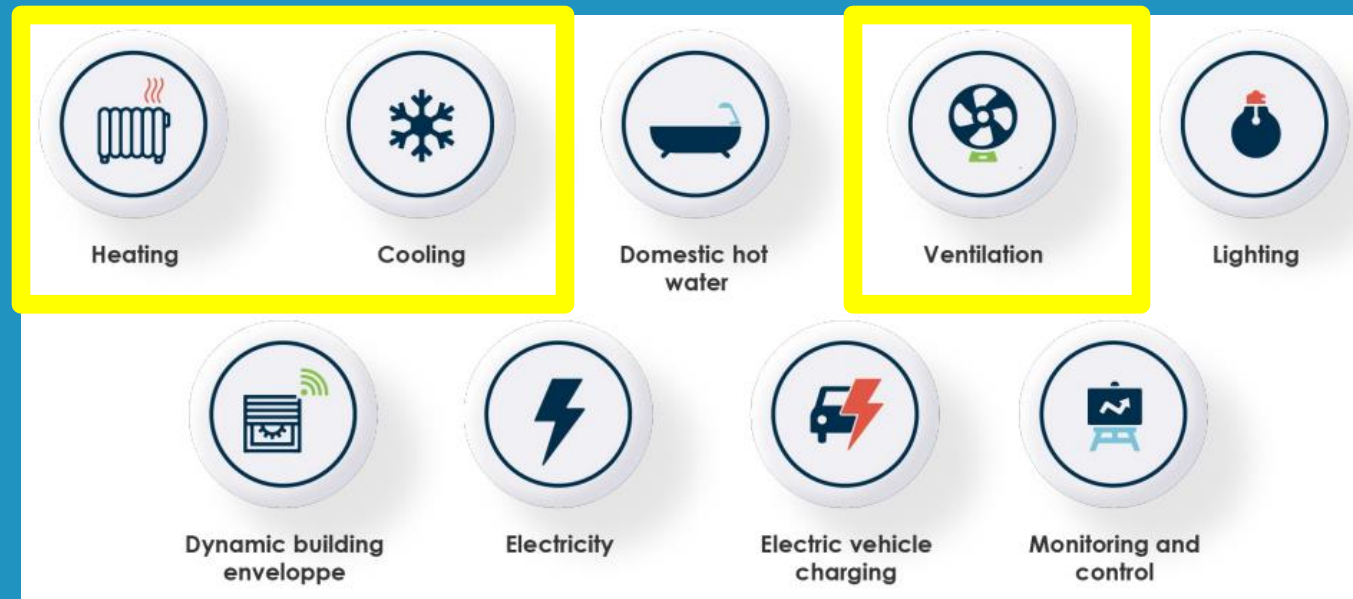


Adapt to signals from the grid (energy flexibility)

# All i need is **to know what is** the SRI...

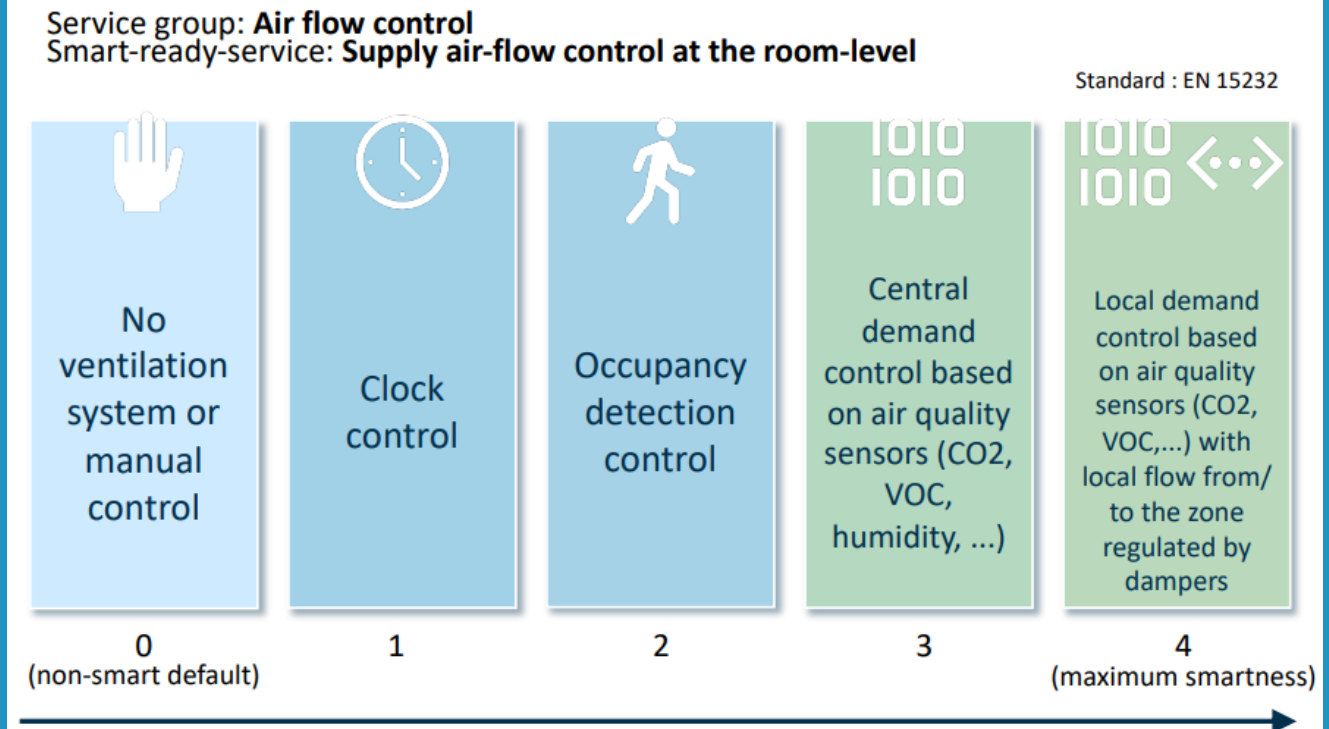


Article 2. 57c  
Indoor environmental quality means the result of an assessment inside a building bases upon parameters such as relating to **the temperature, humidity, ventilation rate and presence of contaminants,** influencing the health and wellbeing of its occupants




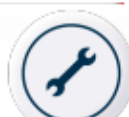





# All i need is to know what is the SRI...

Domain	Code	Service group	Smart ready service	Functionality level 0 (as non-smart default)
Ventilation	V-1a	Air flow control	Supply air flow control at the room level	No ventilation system or manual control
Ventilation	V-1c	Air flow control	Air flow or pressure control at the air handler level	No automatic control: Continuously supplies of air flow for a maximum load of all rooms
Ventilation	V-2c	Air temperature control	Heat recovery control: prevention of overheating	Without overheating control
Ventilation	V-2d	Air temperature control	Supply air temperature control at the air handling unit level	No automatic control
Ventilation	V-3	Free cooling	Free cooling with mechanical ventilation system	No automatic control
Ventilation	V-6	Feedback - Reporting information	Reporting information regarding IAQ	None





# All i need is **to know what is** the SRI...

	 Energy efficiency	 Maintenance and fault prediction	 Comfort	 Convenience	 Health, well-being and accessibility	 Information to occupants	 Energy flexibility and storage
Level 0	0	0	0	0	0	0	0
Level 1	1	0	1	1	1	0	0
Level 2	1	0	2	2	2	0	0
Level 3	2	0	3	3	3	0	0
Level 4	3	0	3	3	3	0	0

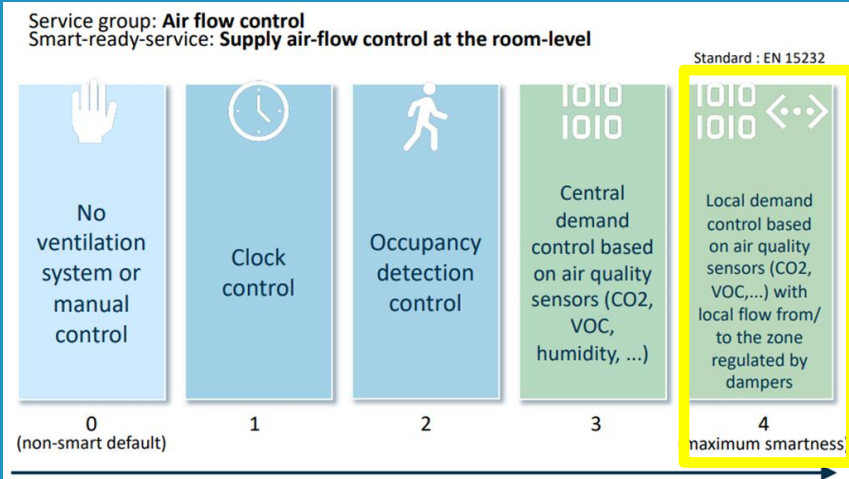
1010  
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Central demand control based on air quality sensors (CO2, VOC, humidity, ...)

3

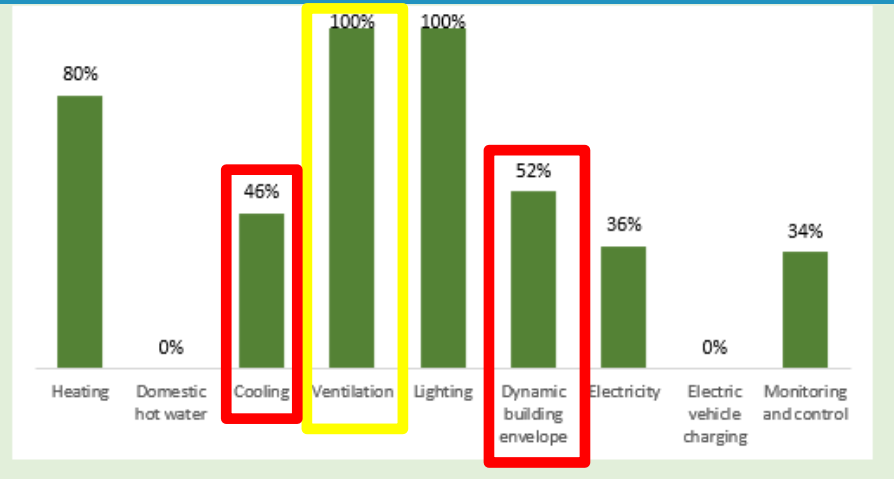


# All i need is to know what is the SRI...



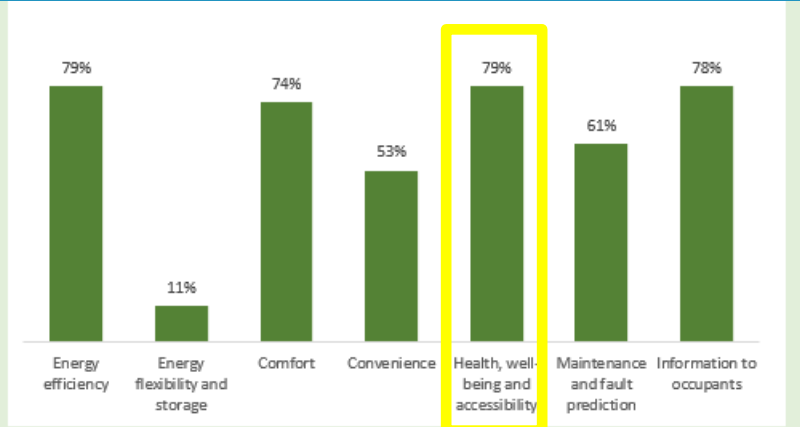
## DOMAIN SCORES

Heating	80%
Domestic hot water	0%
Cooling	46%
Ventilation	100%
Lighting	100%
Dynamic building envelope	52%
Electricity	36%
Electric vehicle charging	0%
Monitoring and control	34%



## IMPACT SCORES

Energy efficiency	79%
Energy flexibility and storage	11%
Comfort	74%
Convenience	53%
Health, well-being and accessibility	79%
Maintenance and fault prediction	61%
Information to occupants	78%



# All i need is to know what is the SRI...

## SMART READINESS INDICATOR (SRI)

### Case study n°2

#### THE BUILDING:

<b>Building type</b>	Residential (semi-detached houses)		
<b>Location</b>	Olm, Luxembourg		
<b>Surface area</b>	200 m <sup>2</sup>	<b>Construction year</b>	2020
<b>Specificities</b>	The Elmen social housing project, developed by SNHBM, is expected to become a model of sustainable construction in Luxembourg. The case study concerns the demo house of the project.		



Demo house of the Elmen project. © Sébastien Thomas

## OUTCOMES OF THE SRI ASSESSMENT:

Overall SRI score: **40%**\*

#### Scores per impact criteria:

Energy efficiency	51%
Maintenance and fault prediction	27%
Comfort	44%
Convenience	46%
Health, well-being and accessibility	32%
Information to occupants	35%
Energy flexibility and storage	51%

#### Scores per technical domains:

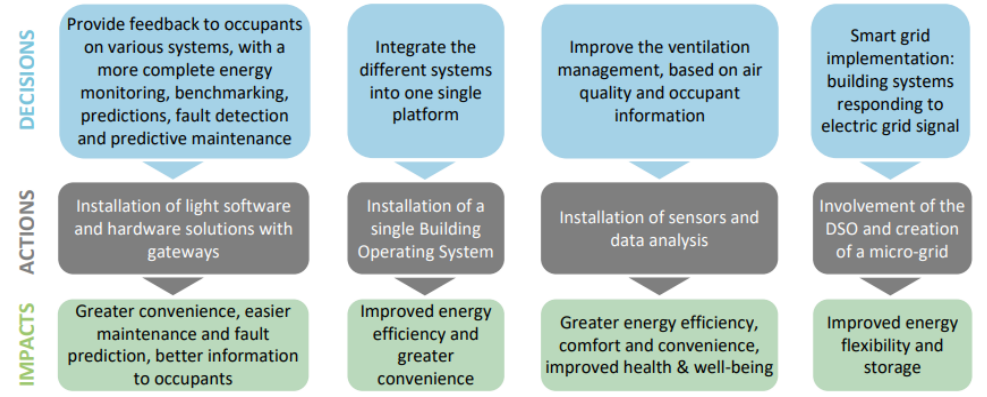
Heating	65%
Cooling	69%
Domestic hot water	31%
Ventilation	19%
Lighting	42%
Dynamic building envelope	16%
Electricity	51%
Electric vehicle charging	44%
Monitoring and control	31%

\* One of the highest scores observed for residential buildings which have an average score of 19%, according to a survey conducted in Q1 2023 (cf. [webinar presentation slides 66-68](#))

You can find factsheets and use cases on the [SRI implementation tools](#) page on the European Commission's homepage

## IMPROVEMENT POTENTIAL:

To increase the overall SRI score from **40%** to **70%**:



For [SRI News and newsletter](#)

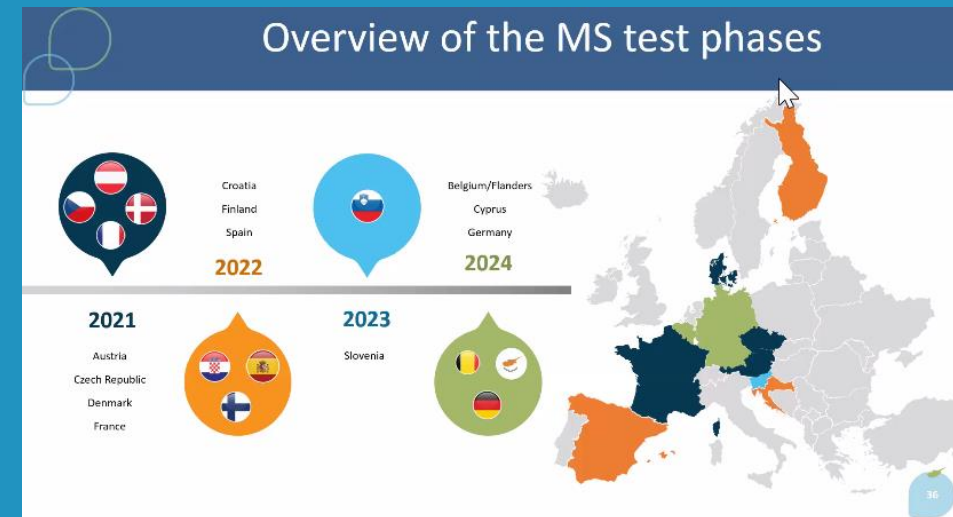


# All i need is **to know is what** the SRI is good for...

## 1. In compliance with the upcoming law!

EPBD 2021 revision: The Smart Readiness Indicator (SRI) is required for large non- residential buildings as of 2026

Tests underway in 11 EU countries



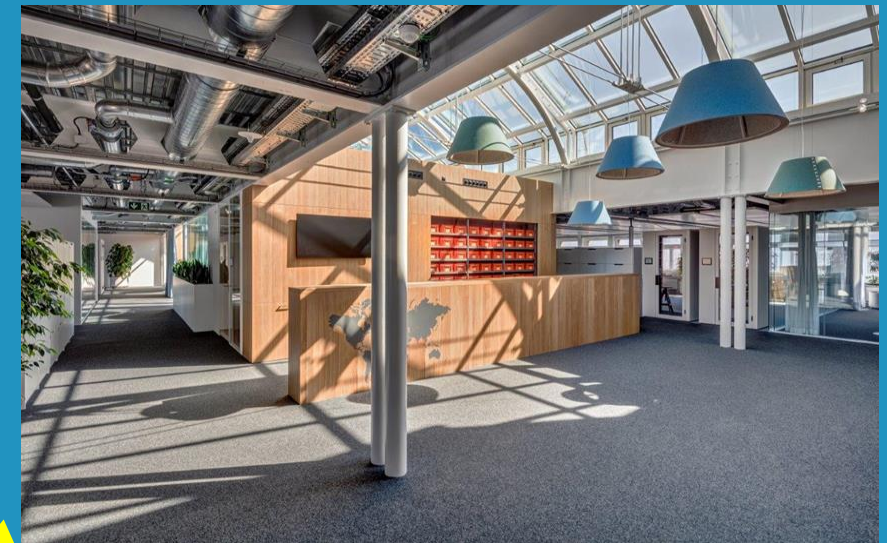
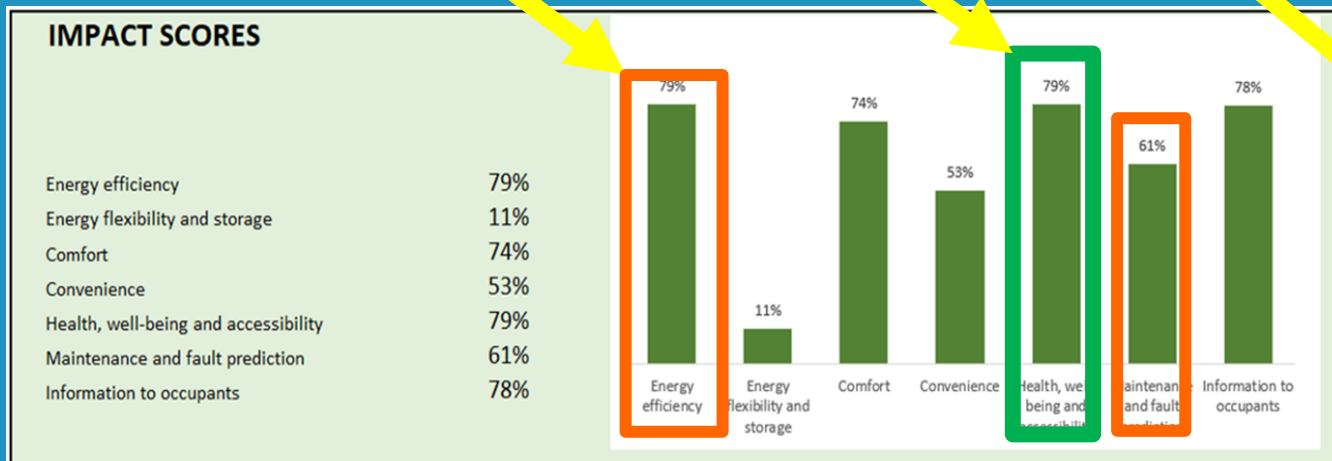
## 2. Increase the value of your real estate

### IMPROVEMENT POTENTIAL:

To increase the overall SRI score from **40%** to **70%**:

# All i need is **to know is what** the SRI is good for...

## 3. Basis for the ESG sustainability reporting



**IEQ = Swiss Labour Act**  
 Temp. 22-26C,  
**IAQ 1'000ppm CO2**  
**40-60% r.H**  
 Light 550 lx,  
 Akustik <65 dB(A)

# All i need is **to know** is the EN ISO 52120-1:2021

Service group: **Air flow control**  
Smart-ready-service: **Supply air-flow control at the room-level**

Standard : EN 15232



Planner



**Building owners and design engineers**, defining the functions to be implemented for a given new building or a renovated existing building.



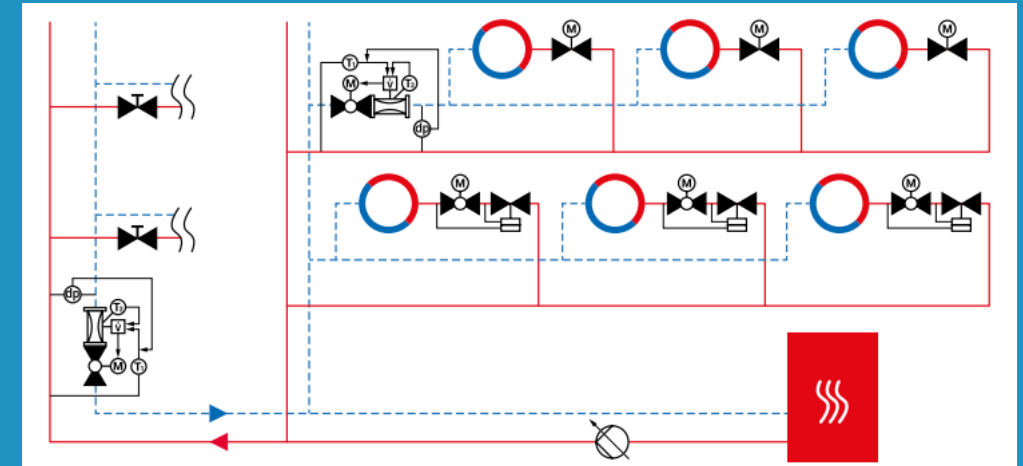
The SRI refers to the functions in EN 15232 **New EN ISO 52120-1:2021**

**Public authorities**, defining inspection procedures of technical systems as well as inspectors applying these procedures to check if the level of BACS and TBM functions implemented are appropriate.

# All i need is **to know** is the EN ISO 52120-1:2021

Table 6 — Function list and assignment to BAC efficiency classes

			Definition of classes										
			Residential				Non residential						
			D	C	B	A	D	C	B	A			
1.4.a	Hydronic balancing heating distribution (including contribution to the balancing to the emission side)												
	Hydronic balancing is applied to an emitter or a group of heat emitters greater than 10.												
	0	No balancing	x				x						
	1	Balanced statically per emitter, without group balance	x	x			x						
	2	Balanced statically per emitter, and a static group balance	x	x			x						
	3	Balanced statically per emitter and dynamic group balance	x	x	x		x	x					
	4	Balanced dynamically per emitter	x	x	x	x	x	x	x	x	x	x	x
1.5	Intermittent control of emission and/or distribution												



EN ISO 5210-1:2021 = For clarity



# All i need is **to get** the EN ISO 52120-1:2021



**Better  
today than  
tomorrow!**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

**EN ISO 52120-1**

March 2022

ICS 91.120.10

Supersedes EN 15232-1:2017

English Version

## Energy performance of buildings - Contribution of building automation, controls and building management - Part 1: General framework and procedures (ISO 52120-1:2021)

Performance énergétique des bâtiments - Contribution de l'automatisation, de la régulation et de la gestion technique des bâtiments - Partie 1: Cadre général et procédures (ISO 52120-1:2021)

Energieeffizienz von Gebäuden - Einfluss von Gebäudeautomation und Gebäudemanagement - Teil 1: Allgemeiner Rahmen und Verfahren (ISO 52120-1:2021)

This European Standard was approved by CEN on 3 December 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

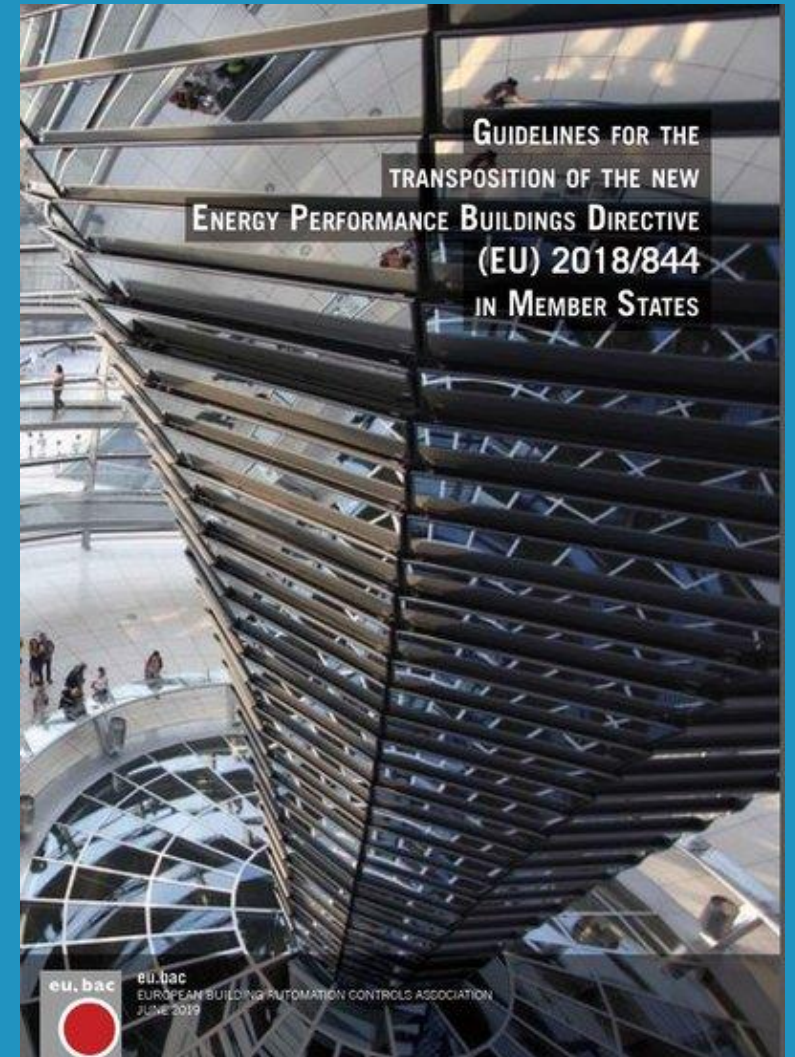
This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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# Support from eu.bac

## Eu.bac Guidelines

- elaborating on how to implement the measures at the national level focusing on eu.bac priority measures
- Two targets: national authorities + Commission's guidelines
- Publication depending on the Commission's timeline



# Support from eu.bac



## Eu.bac Verification Checklist

- A detailed checklist providing a step-by-step assessment of a building's compliance with the EPBD BACS measures
- A separate checklist for the residential sector
- Complemented by a selection of example buildings and their assessment reports

European Building Automation Controls Association

eu.bac european building automation controls association

### EPBD BACS COMPLIANCE VERIFICATION CHECKLIST

**STEP 1:** The BACS compliance verification shall be conducted only if the effective rated output for heating (Art.14)/air-conditioning (Art.15) systems or systems for combined space heating/air-conditioning and ventilation in the building is over 290kW.

ID	SELF-DECLARATION COMPLIANCE QUESTIONS (answered by Building Owner)	SELF-DECLARATION COMPLIANCE SUPPORTING RECORDS (provided by Building Owner)	COMPLIANCE VERIFICATION CHECKS (conducted by Building Inspector)	RESPONSE	Boundary Conditions / PREREQUISITES for the BACS capabilities to be effective
<b>I Information Section: 290 kW COVERAGE</b>					
I1	What is the effective rated output (calorific output as per EPBD) of the Heating equipment in the building Heating systems (output of all heat generators in the building including main Heating equipment in plantrooms, e.g. boiler, solar heat system, CHP and heat-generating terminal equipment in rooms, e.g. electric direct heater)?  NOTE: Every heat generator that adds heat to the building space regardless of its location (generation in main HVAC plant, distribution and emission in the room) should be added in the sum for the output.	PDF list of Heating system main equipment with indication of the maximum calorific output, expressed in kW, per piece of equipment	Check equipment nameplates of main Heating system equipment in main HVAC plant or the building Operation & Maintenance Manual.	<kW>	
I2	What is the effective rated output (calorific output as per EPBD) of the Air-conditioning systems in the building (output of all cold generators in the building including main cooling equipment in plantrooms, e.g. chiller, heat-pump, and cooling-generating terminal equipment in rooms)?  NOTE: Every cooling generator that adds cooling to the building space regardless of its location (generation in main plant, distribution and emission in the room) should be added in the sum for the output.	PDF list of Air-conditioning system main equipment with indication of the maximum calorific output, expressed in kW, per piece of equipment	Check equipment nameplates of main Air-conditioning systems equipment in HVAC main plant or the building Operation & Maintenance Manual.	<kW>	



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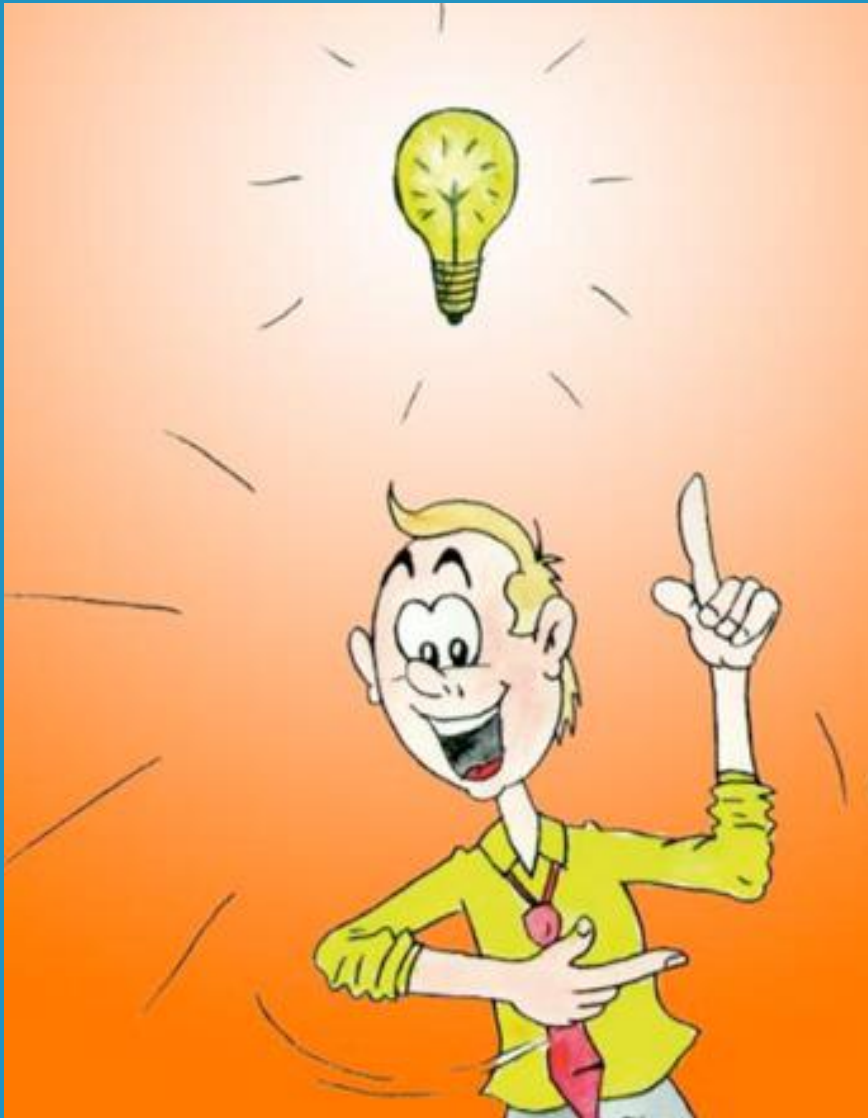
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**Knowledge is power, action  
makes winners.**

**Success is the result of  
action!**

**Good luck!**