Integrating energy labelling with quality assurance:

VAC systems A new quality seal for planning, installation and commissioning of

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Ventilation and Air-Conditioning (VAC)

- Hidden energy consumption in (non-residential) buildings
- Efficient VAC components do not automatically lead to an efficient VAC system!
- e.g. oversized systems
- e.g. inefficient operation





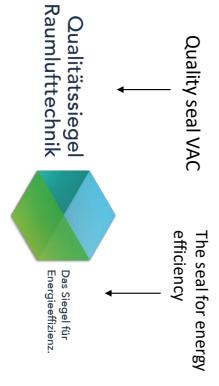




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Hidden energy consumption in (non-residential) buildings Ventilation and Air-Conditioning (VAC)

- Efficient VAC components do not automatically lead to an efficient VAC system!
- e.g. oversized systems
- e.g. inefficient operation
- Quality seal: quality assurance for energy efficiency
- check by independent auditor
- dialogue from planning to operation
- energy labelling improves communication





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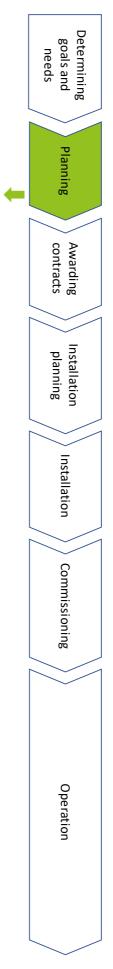
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with integrated energy labels A three step quality assurance process

Determining goals and needs
Planning
Awarding contracts
Installation planning
Installation
Commissioning
Operation

A three step quality assurance process with integrated energy labels

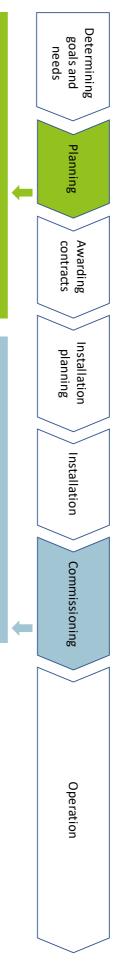


Planning check

e.g.

- Correct sizing and zoning?
- Possibility to adapt to changing
- Sufficient controls and sensors?
- Meters to visualize energy consumption?
- Good planning of commissioning?

A three step quality assurance process with integrated energy labels



Planning check

е. 6.

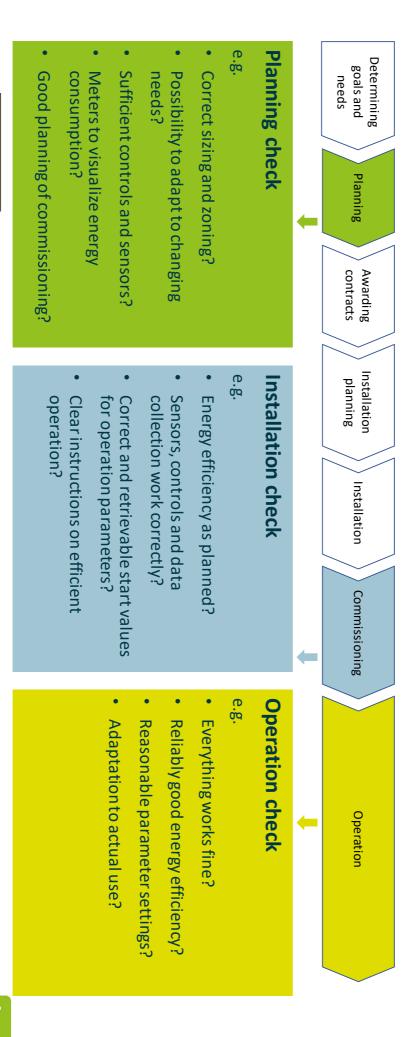
- Correct sizing and zoning?
- needs? Possibility to adapt to changing
- Sufficient controls and sensors?
- Meters to visualize energy consumption?
- Good planning of commissioning?

Installation check

e.g.

- Energy efficiency as planned?
- collection work correctly? Sensors, controls and data
- Correct and retrievable start values tor operation parameters?
- operation? Clear instructions on efficient

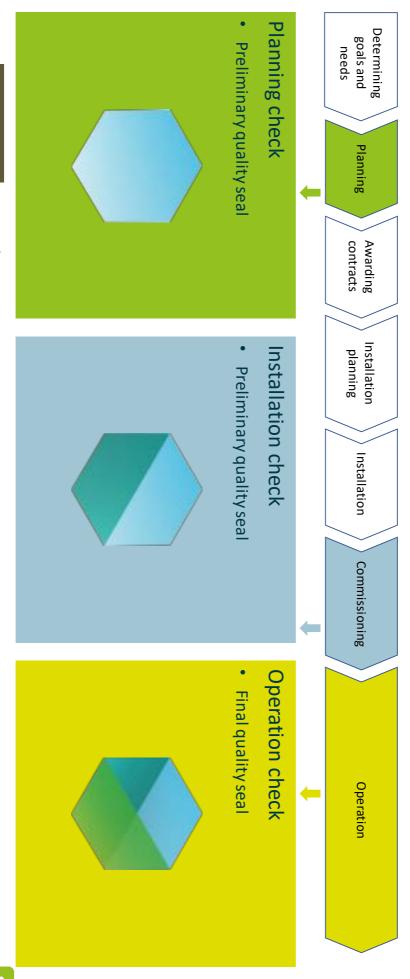
A three step quality assurance process with integrated energy labels



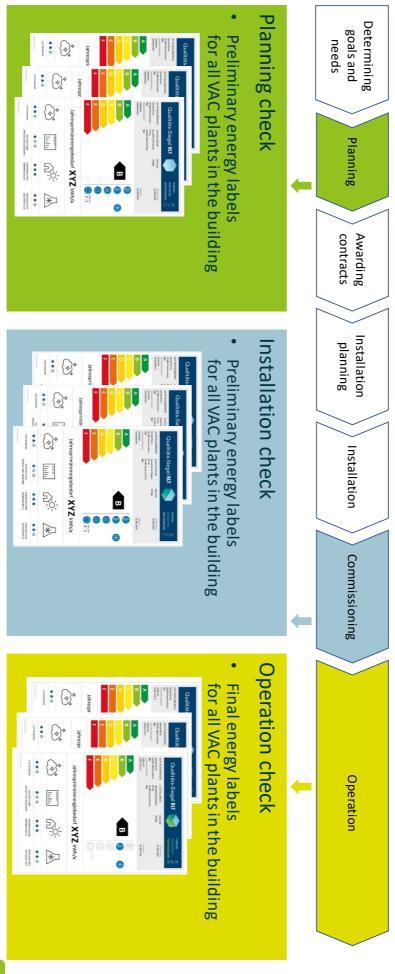


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with integrated energy labels A three step quality assurance process



A three step quality assurance process with integrated energy labels



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Energy label

Completed step of quality assurance process

Evaluation of energy efficiency

- Integral part of quality assurance process
- Issued with software for each evaluated VAC plant
- Header shows connection to quality seal
- VAC plant features
- Heating, cooling, cold generation

Efficiency class

- Humidity control
- Air filtering
- Additional information with icons
- Air hygiene
- Meter and sensor configuration
- Protection of the building against summer heat
- Ecological effects of refrigerant



Gebäude Gebäudeteil Musterfirma AUFTRAGGEBER(IN) *** LUFTHYGIENE Jahresprimärenergiebedarf **XYZ** kWh/a Qualitätssiegel Raumlufttechnik AUSSTELLER (IN)
Aussteller (in) Name AUSSTATTUNG ZÄHLER UND SENSORIK * 存存 SOMMERLICHER WÄRMESCHUTZ *** *** 3 1 1 25.08.2030 25.08.2020 ÖKOLOGIE DES *** * Heating Cooling Cold generation Air quality Dehumidification Humidification Planning Commissioning Operation

Assessment with up to three stars

A new quality seal for planning, installation and comissioning of VAC systems Helena Stange



Energy label

Evaluation of energy efficiency

- Integral part of quality assurance process
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- **Ecological effects of refrigerant**

Overview of all energy labels in a project



SKM01 (Absorber)	KKM02 (Turba)	KKM01 (Kolben)	Artage Bezeichnung	Kälteanlagen	RUIOS (Labor)	RLT04 (Labor)	RLTO3 (Hörsaal)	RUTO2 (Hotel)	RUTO1 (Būro)	Ariage Beteichnung
<	Expelienz	nicit ×	Segel- triterium		ausgleichbar	Excellens	erreids	nicht erreicht	mont ×	Siegel- Kriterium
D	8		Energieeffizienzklasse		0	•	8	Ti	0	Energieeffizienzklasse
100	600	250	Nenviesturg [kW]		15.000	25.000	15.000	7.000	5,000	Nenrvolumenstrom [m/h]
4.500	6,97	4,61	Effzierzkonwert sie Anlage [kWh/kWh]		0,38	8,85	2,9	11.7	8,18	Effizienzkennwert Ist-Anlage [kWh/[m³/h]]
4.18	5,36	4,62	Effizienzkennwert Referenz [kWn/kWh]		5,62	11,26	2,59	2,43	4,89	Effzienzkonnweit Referenz [KWh/(m/h)]
*	*	:	Bewertung Zähler und Semiorik		*	*	*	* *	*	Bewertung Zähler und Sensorik
* *	*	*	Bewertung Okologie des Kälternittels		*	*	*	*	*	Bewertung Lufthygiene
* *	* *	٠	Bewertung Sommerficher Wärmeschutz		ODAI - SUPI	ODA2 - SUP1	ODA2 - SUP2	ODA1 - SUP1	ODA2 - SUP3	Bewertung Luftqualität
SKM	KKM	KKN	Erzeugertyp		тни-сэ	тни-с4	тни-сз	тни-сз	тни-сз	Thermo- dynamische Funktionen
570	6,22	67,26	Jahresprimär- rnergiekedarf Raumkühlung MWhl		95,7	221,25	43,5	81,9	40,9	Jahresprinsar- rnergiebedarf [MWh]



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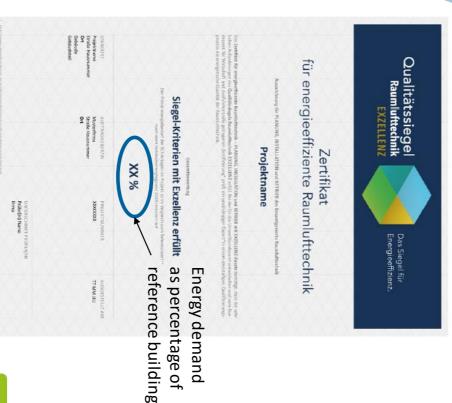




Confirmation of process and energetic quality Quality seal certificate

- Certifies successful quality assurance process
- Options for application
- all VAC plants in a building
- a single VAC plant
- Annual primary energy demand
- Software calculation based on DIN SPEC 15240
- Standard use conditions
- Sum of ventilation and air-conditioning plants
- Energy efficiency requirements
- Sum of all VAC plants better than reference
- All VAC plants at least "class B"
- "excellence" award with more ambitious requirements

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A new quality seal for planning, installation and comissioning of VAC systems



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How to apply the quality seal process Implementation and documentation

- Developed for the German Environmental Agency (UBA)
- Voluntary process
- Independent external auditor, paid by building owner
- Guidebook
- Explanation for building owners, planners and auditors
- Dialogue and cooperation between all stakeholders
- Emphasis on support for planners and building owners
- Software
- Energy efficiency class calculations
- Label and certificates
- Part of commercial building software









Implementation and documentation What's next?

commercial software Implementation in

release Official

Improving incentives for application

- Necessary requirement
- Expected this year

- Publication
- Press releases
- Articles
- Online seminars

- Under consideration by standardization committee (DIN)
- Desirable: requirement for subsidies
- Desirable: requirement for large new VAC systems











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