

# Integrating energy labelling with quality assurance:

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

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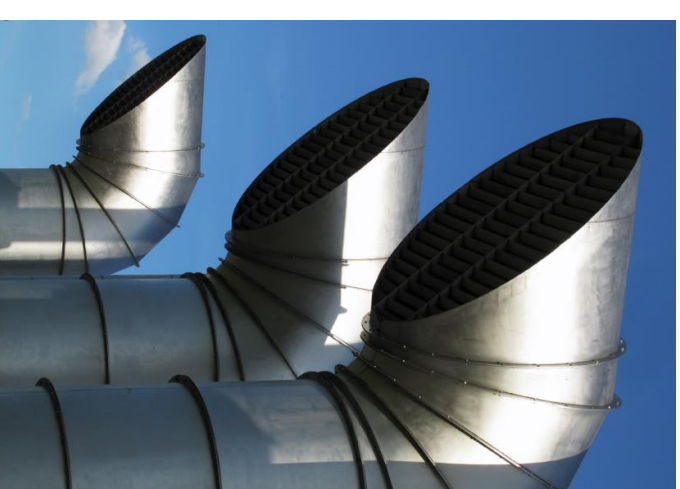
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# Ventilation and Air-Conditioning (VAC)

## Hidden energy consumption in (non-residential) buildings

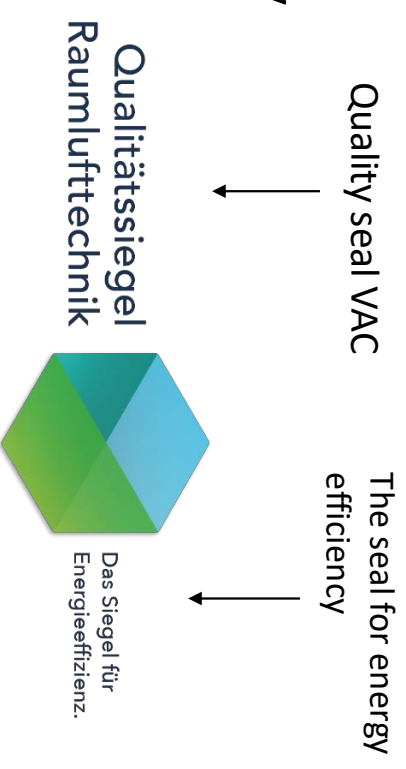
- Efficient VAC components do not automatically lead to an efficient VAC system!
  - e.g. oversized systems
  - e.g. inefficient operation



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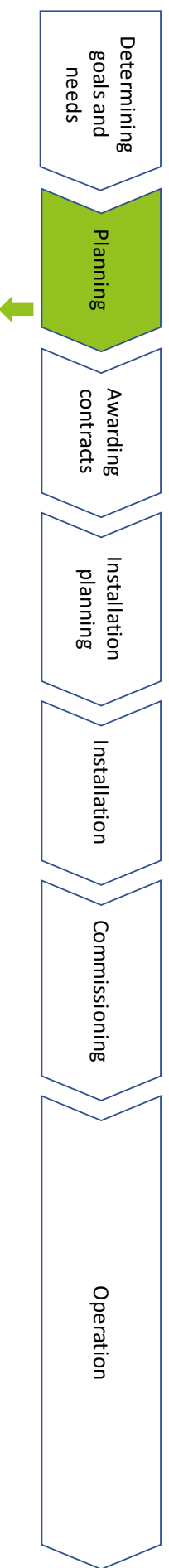
- Efficient VAC components do not automatically lead to an efficient VAC system!
  - e.g. oversized systems
  - e.g. inefficient operation
- Quality seal: quality assurance for energy efficiency
  - check by independent auditor
  - dialogue from planning to operation
  - energy labelling improves communication



# A three step quality assurance process with integrated energy labels



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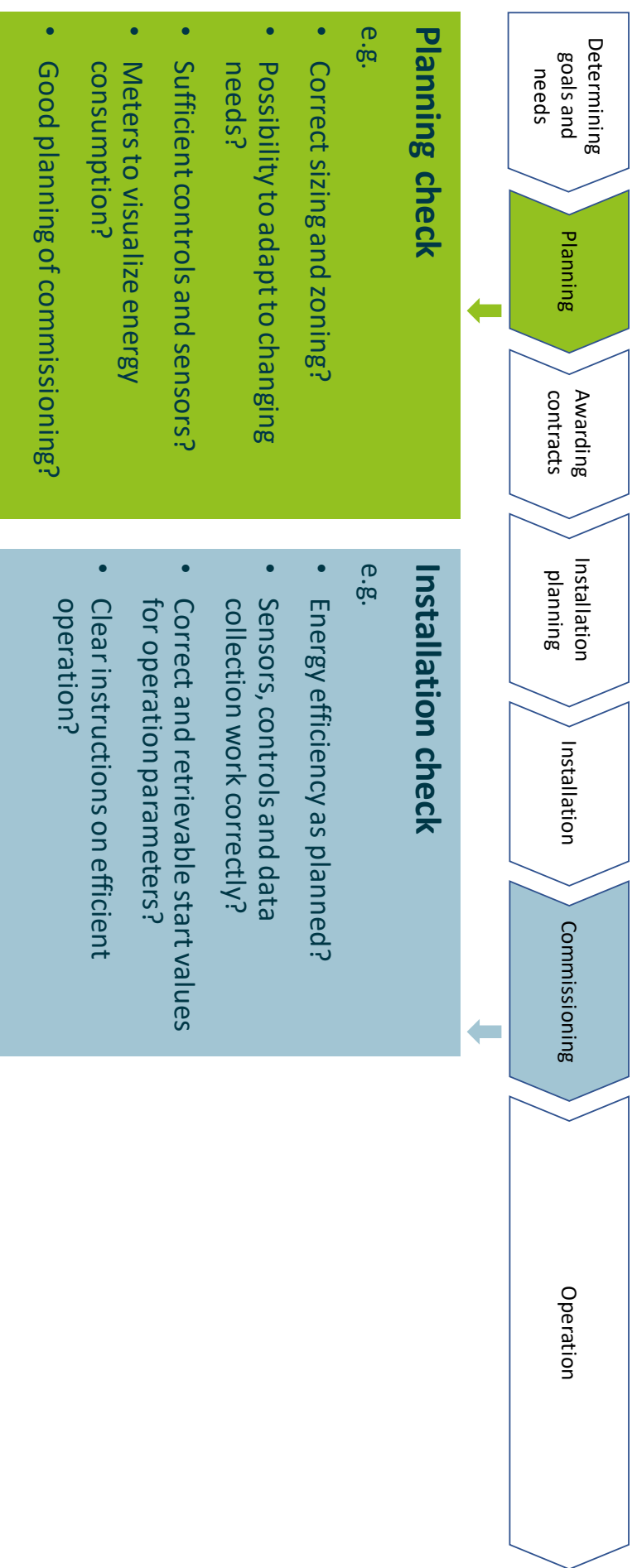


## Planning check

e.g.

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

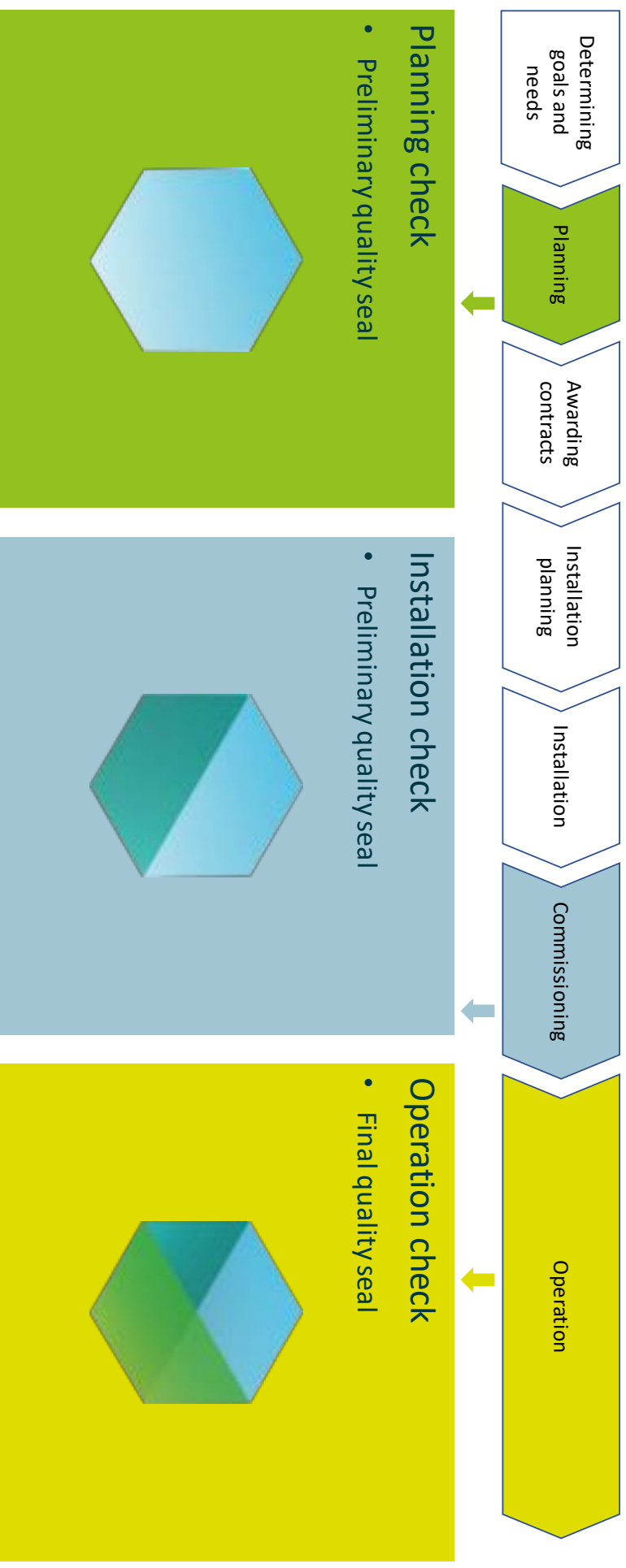
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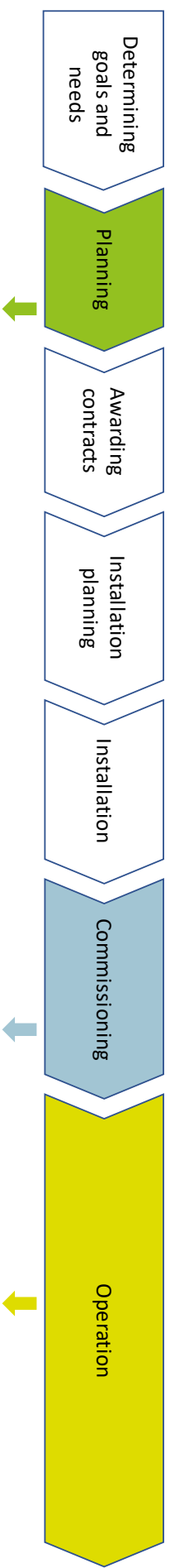


# A three step quality assurance process with integrated energy labels





# A three step quality assurance process with integrated energy labels



## Planning check

- Preliminary energy labels for all VAC plants in the building



## Installation check

- Preliminary energy labels for all VAC plants in the building



## Operation check

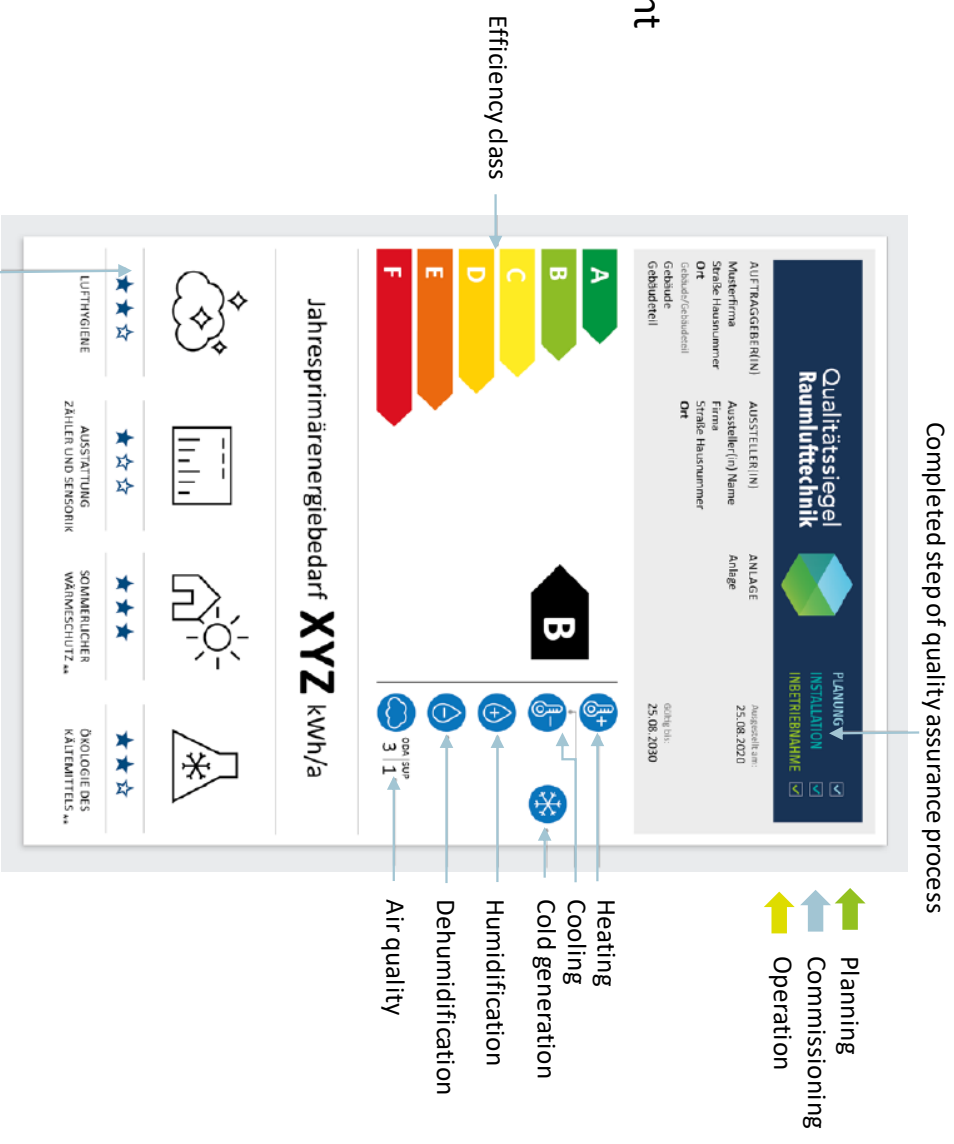
- Final energy labels for all VAC plants in the building



# Energy label

## 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
  - 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



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## Overview of all energy labels in a project

<div><div><div>Projektname</div><div>PROJEKTNUMMER</div><div>XXXXXXX</div></div><div><div>ANZAHL GEPRÜFTER ANLAGEN</div><div>8</div></div><div><div>GESAMTANLAGENS-PRÄMIENENERGIEDECKUNG</div><div>613,75 MWh</div></div></div> <div><div><div>STANDORT</div><div>Projektname</div><div>Stadte Hausnummer</div><div>Ort</div><div>Gebäude</div><div>Gebäudeeteil</div></div><div><div>AUßERLAGERUNG</div><div>Musterfirma</div><div>Stadte Hausnummer</div><div>Ort</div></div><div><div>PRÜFER/IN</div><div>Auswerter(in) Name</div><div>Firma</div><div>Stadte Hausnummer</div><div>Ort</div></div></div> <div><div>Qualitätstechnologie</div><div>Raumklimatechnik</div><div>Das Original für Energieeffizienz.</div></div>											
Raumklimatische Anlagen											
Anlagebezeichnung	Signalfunktion	Energieeffizienzkategorie	Nennleistung [kW]	Effizienzbeiwert [kW/(m³/h)]	Effizienzbeiwert [kW/(m³/h)]	Beurteilung Sensordat.	Beurteilung Lüftungseff.	Beurteilung Lüftungseff.	Thermische Leistung	Umweltfreundlichkeit	Umweltfreundlichkeit
RU01 (Retro)	✗ nicht erreicht	D	5.000	8,18	4,89	*	*	ODN2 - SUP3	THM-C3	40,9	40,9
RU02 (Hotel)	✗ nicht erreicht	F	7.000	11,7	2,43	***	**	ODN1 - SUP1	THM-C3	81,9	81,9
RU03 (Wisslab)	✓ erreicht	B	15.000	2,9	2,99	**	**	ODN2 - SUP2	THM-C3	42,5	42,5
RU04 (Labor)	✓ erreicht	B	25.000	8,85	11,26	**	**	ODN2 - SUP1	THM-C4	221,25	221,25
RU05 (Labor)	✓ erreicht	B	13.000	9,38	3,82	+	***	ODN1 - SUP1	THM-C3	95,7	95,7
Kälteanlagen											
Anlagebezeichnung	Signalfunktion	Energieeffizienzkategorie	Nennleistung [kW]	Effizienzbeiwert [kW/(m³/h)]	Effizienzbeiwert [kW/(m³/h)]	Beurteilung Sensordat.	Beurteilung Lüftungseff.	Beurteilung Lüftungseff.	Thermische Leistung	Umweltfreundlichkeit	Umweltfreundlichkeit
KRM01 (Kühler)	✗ nicht erreicht	E	250	4,61	4,82	**	*	*	KNV	67,26	67,26
KRM02 (Turbo)	✓ erreicht	B	600	6,97	5,16	**	**	***	KNV	6,12	6,12
SKM01 (Kühler)	✓ erreicht	B	100	4,58	4,18	*	***	***	SKM	57,01	57,01

## Confirmation of process and energetic quality

- [illegible]

# Implementation and documentation

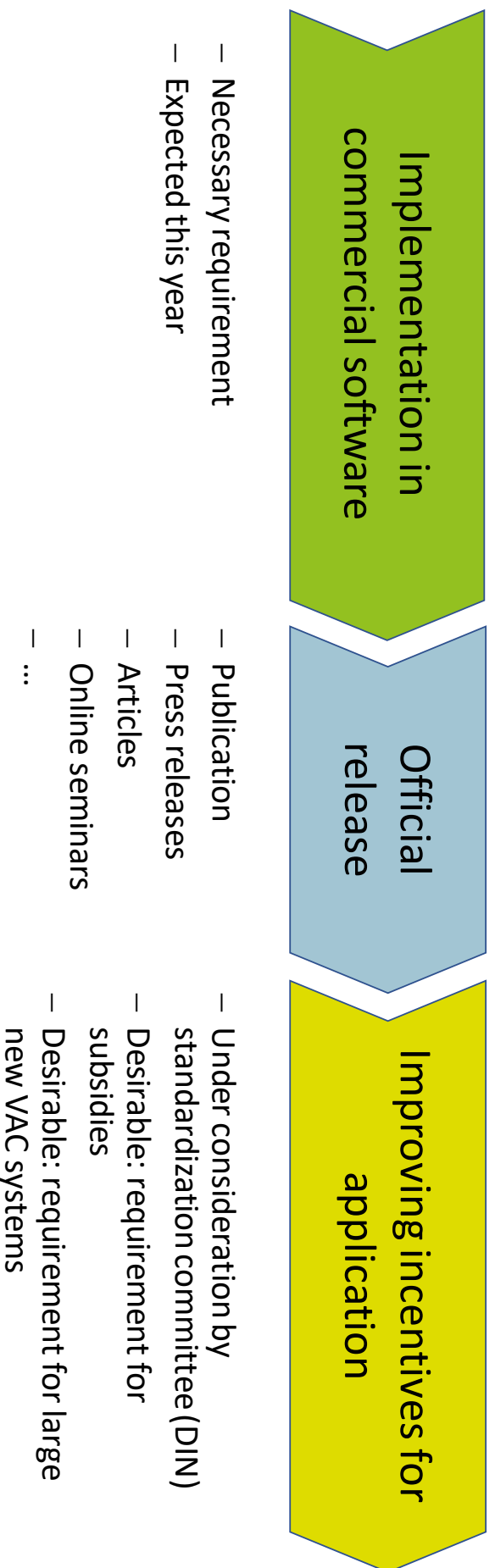
## How to apply the quality seal process

- 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?





Thank you for your  
attention!

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Ronny Mai, Susanne Walter

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