A QUALITY ASSURANCE MANAGEMENT SYSTEM FOR RETROFITTING WITH GOOD INDOOR ENVIRONMENT AND ENERGY EFFICIENCY

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Background:

To establish means of control which will assure good indoor environment

A certified labelling system

Quality assurance of indoor environment

Moisture assurance
Indoor climate
IAQ
Choice of material
Radon
Ventilation
Air tightness
Sound
Lighting
Tap water temperatures
Cleaning

Specific predefined requirements

Scope

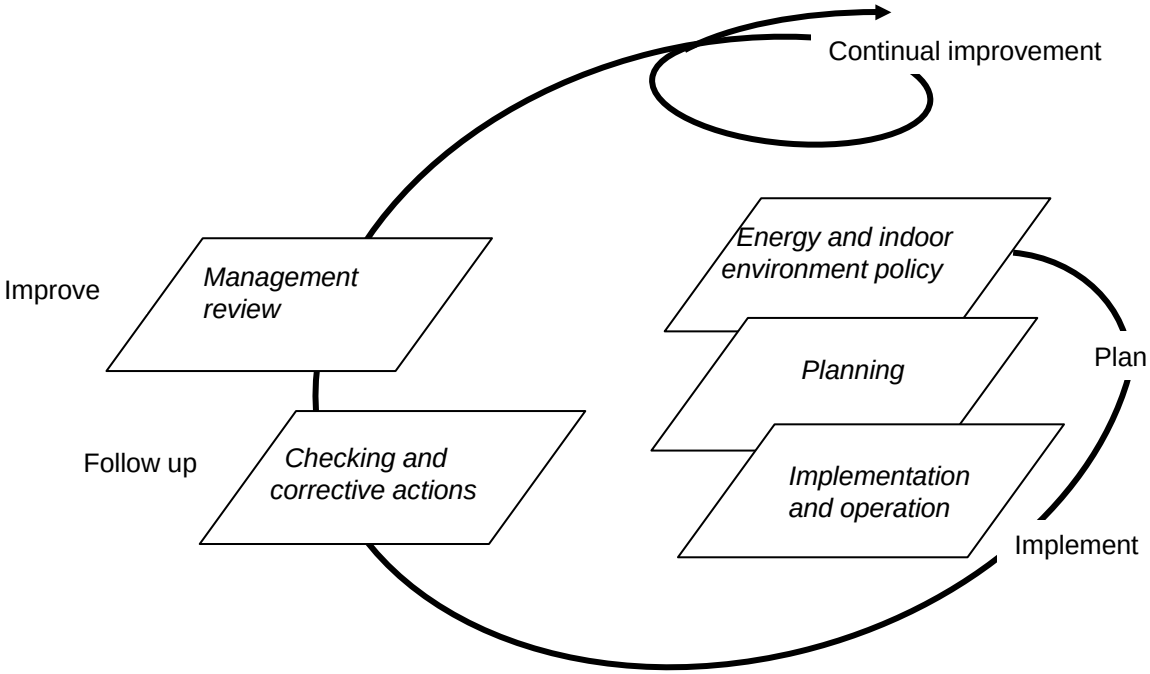
New construction

Retrofit

Existing buildings

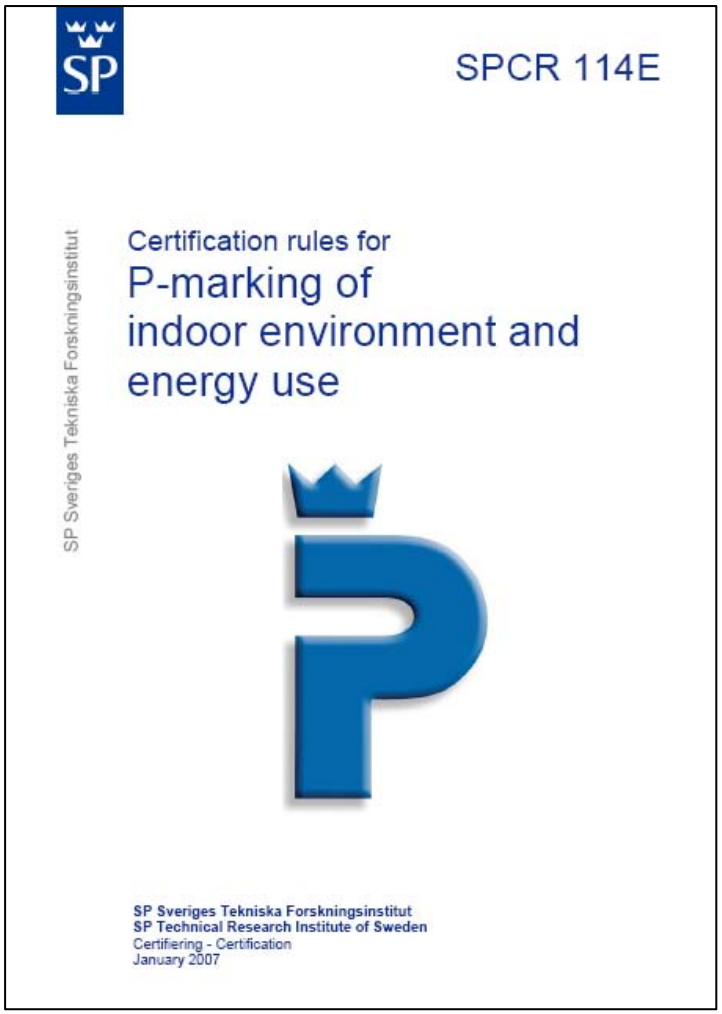
Schools
Kindergartens
Multifamily houses
Offices
Hospitals

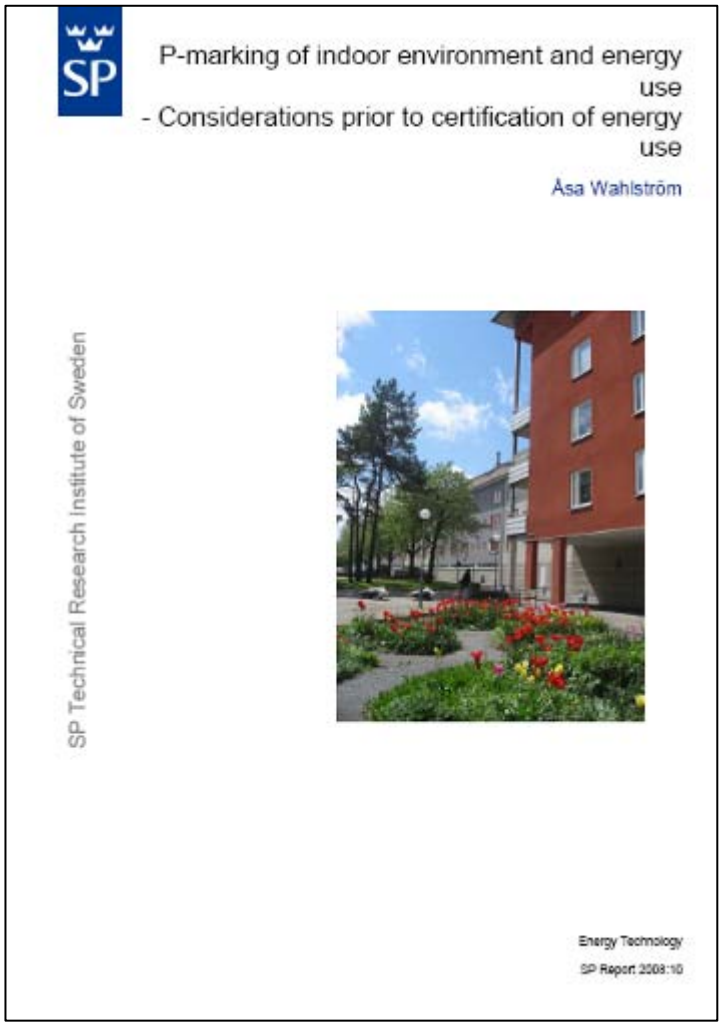
The P labelling system has now been extended to also include an Energy Management system



QA-system: SPCR 114E

Handbook





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When extended to also include energy
⇒ two different types of criteria to meet

Effective energy use ⟺ Adequate indoor climate

-

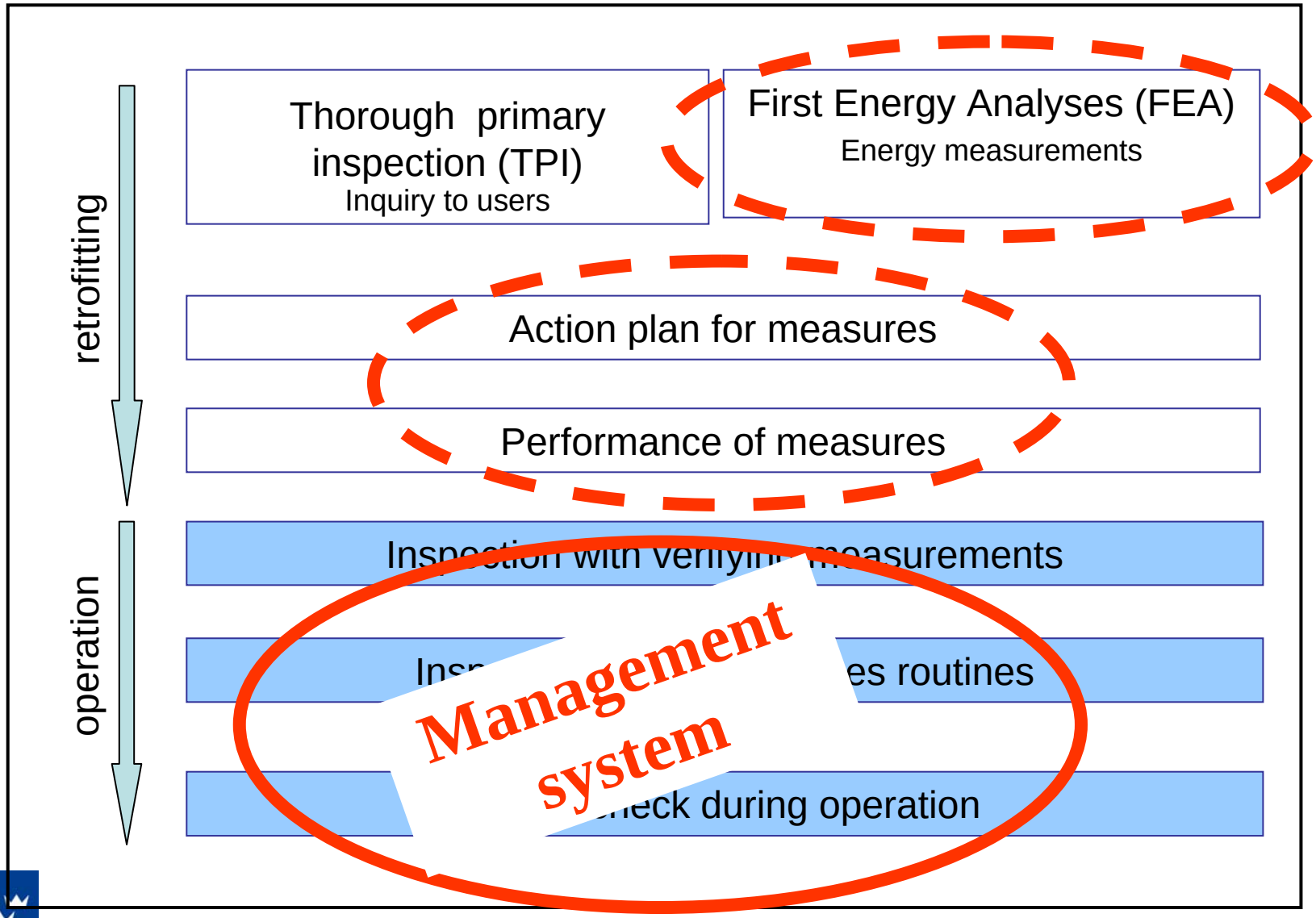
How do we set the targets for an existing building?
… or for a building to be retrofitted?

Target determination of energy use : First Energy Analyse

- Energy status (the envelope and services, climate)
- Energy aspects (category, activity)
- Energy performance (before any retrofit)
- Present organisation

- building categories and
- property management organisations

Quality assurance system



Objective

- Exchange knowledge and develop energy improvement measures for **retrofitting of social housing**
- Adopt and develop an QA system for indoor environment and energy use
  - during retrofitting and operation
  - in each country with their different conditions
  - and **use the existing P certification system as a starting point**

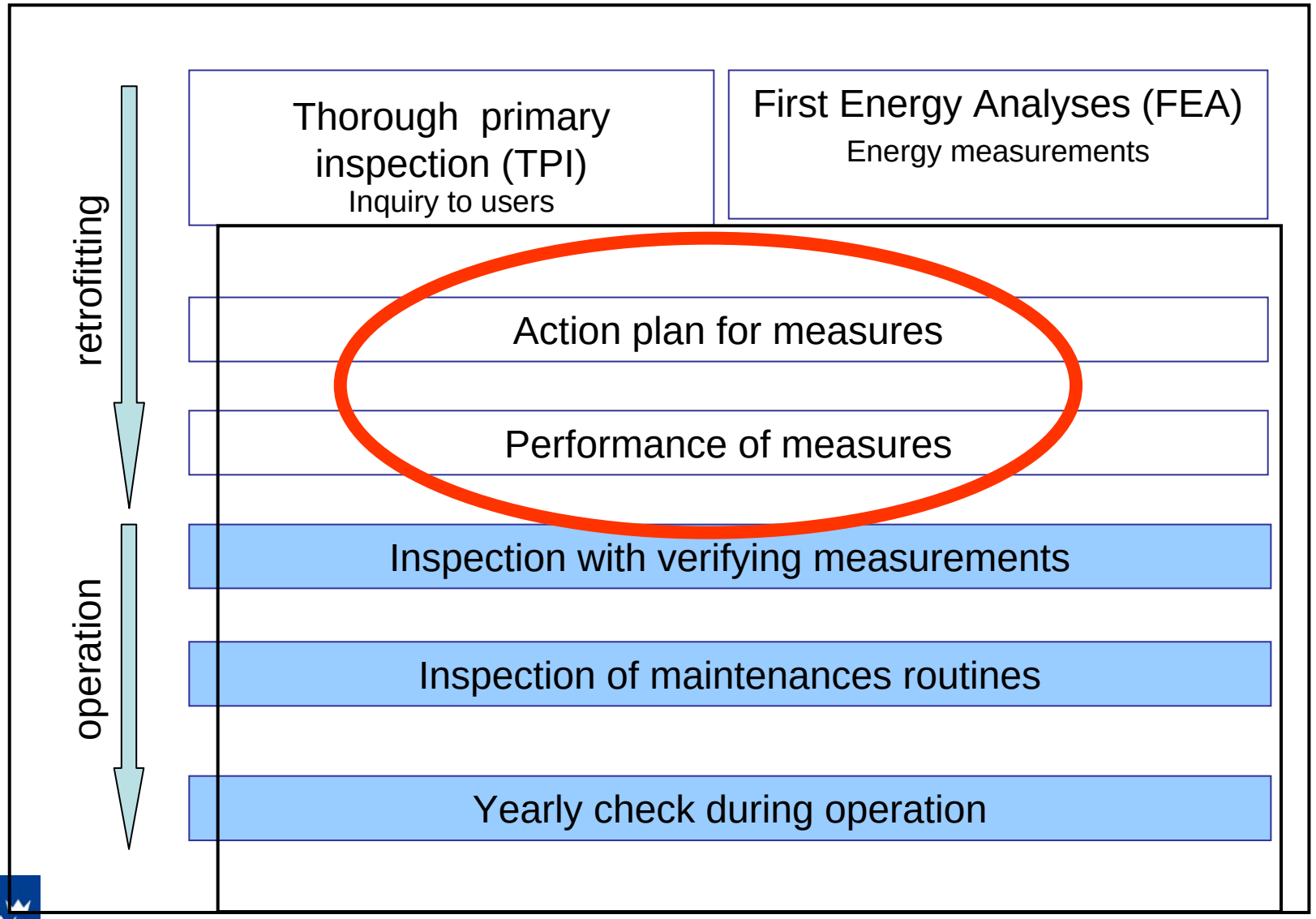
- Demonstrate actions in **pilot projects**

	Participant	Short name	Country
1	SP Technical Research Institute of Sweden	SP	Sweden
2	Trama Tecno Ambiental S.L.	TTA	Spain
3	Helsinki University of Technology	TKK	Finland
4	AEE - Institute for Sustainable Technologies	AEE INTEC	Austria
5	Trecodome	Trecodome	The Netherlands
6	Energy Agency of Plovdiv	EAP	Bulgaria
7	AB Alingsåshem	Alingsåshem	Sweden
8	POMAA S.L.	POMAA	Spain
(9)	*VVO*		Finland
(10)	*GIOWOG*		Austria

Why “energy upgrade” of residential building stock?

- several million residential buildings in the EU
- many were built before the oil crises and has high energy use
- many years of neglected maintenance (both the building envelope and building services)
- the retrofit provides an opportunity for cost-effective energy measures
- since social housing stocks consist of many similar buildings, the measures can be replicated

Quality assurance system



Routines and means of control for clients, architects, builders, consultants

- Responsible persons are selected for all actions
- Competence and education need is defined for all actions
- Communication and information routines
- Documentation of the routines

Pilot projects

Sweden, Alingsås

Spain, Barcelona

Austria, Graz

Finland, Helsinki

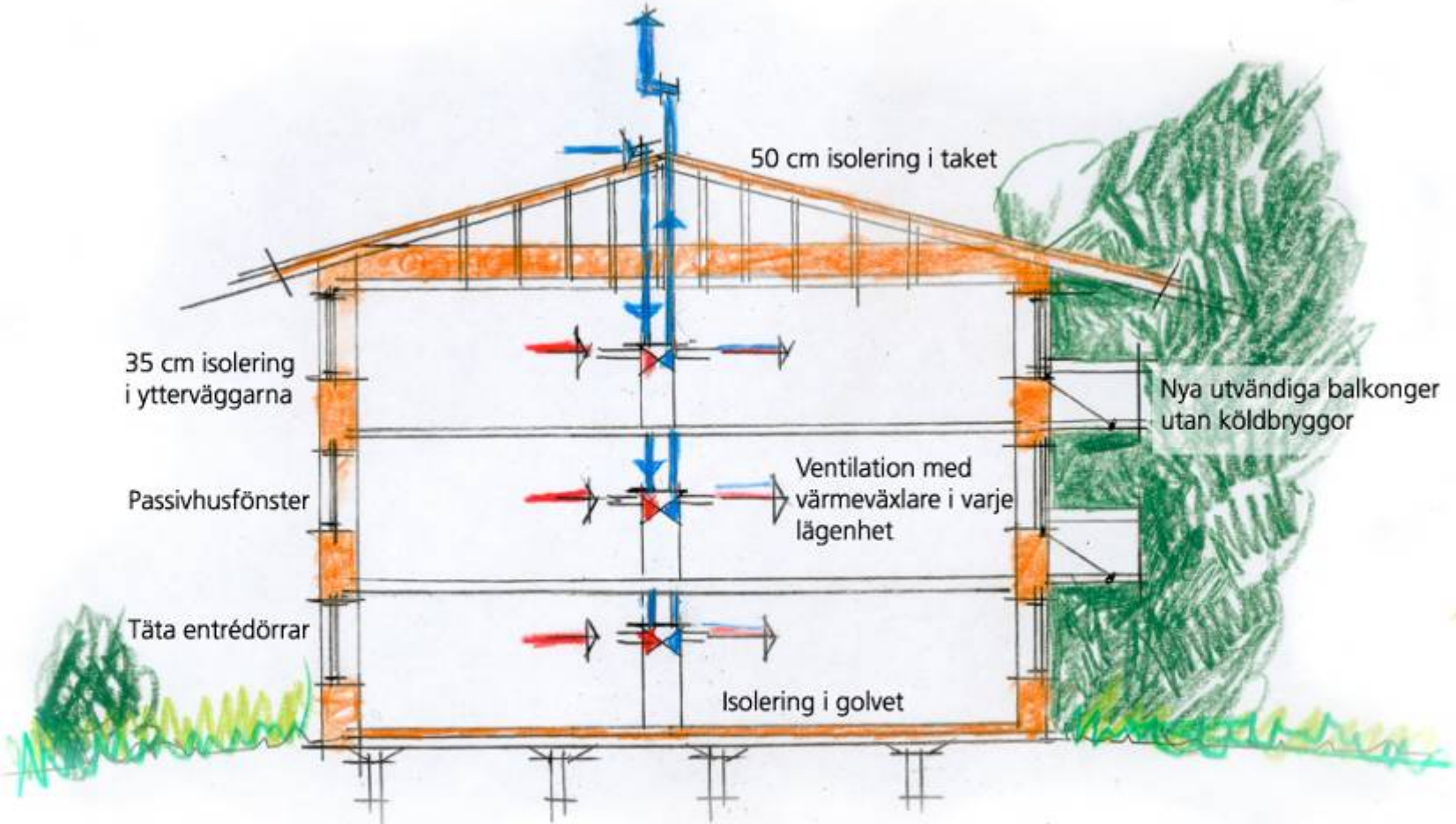
The Swedish pilot project: Alingsåshem - Brogården

- typical houses from the ”million program” (300 apartments)

The goal is to retrofit almost to passivhouse standard

- Insulations of walls, balconies, attics and basements
- Thermal bridges (balcony)
- Tight doors
- Passive house windows
- Solar collectors
- District heating (biomass)

The retrofitting of Brogården in Alingsås



Energianvändning: (kWh/kvm år) 22° inomhustemperatur	Före renovering	Efter renovering
Uppvärmning:	115	27
Varmvatten:	42	25
Hushållsel:	39	27
Fastighetsel (trappljus, tvättstuga etc):	20	13
Summa:	**216**	**92**

Why this combined Quality Assurance system?

Because, especially for Passive houses,

- It is very important that the calculated values are met,

  both regarding energy use and indoor environment!

- **There are no oversized heating system that can compensate for faults in design and construction**

  Only a few ”backlashes” may give the whole passive house concept a bad reputation, and halt it from fully entering the market!