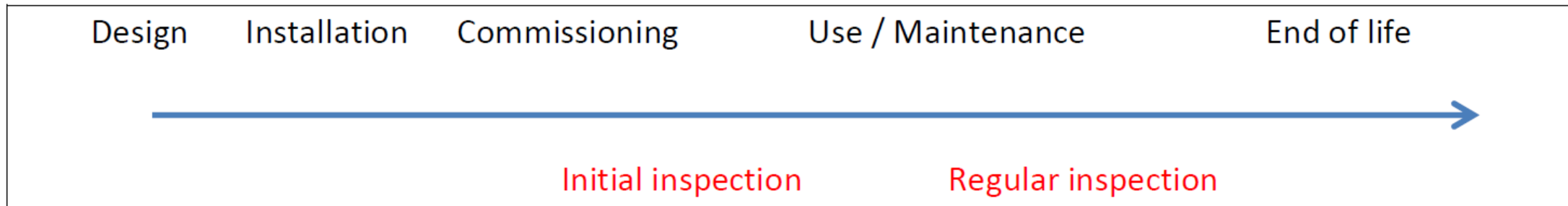


Existing regulations, guidelines and standards on the inspection of stand-alone ventilation systems

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Inspection

- Visiting/looking at a system to check that everything is correct
 - EN 16798-17: "Examination of a technical building system including at least collection of documents, on-site visual checks, and a report with recommendations"
- Mandatory or voluntary
- Resulting from legislative measures or not
- Various possible operators:
 - installers, designers, maintenance staff, independent inspectors, others



Our scope

- Stand-alone ventilation systems,
 - i.e. systems whose sole function is to ventilate a building;
 - The inspection of combined heating and ventilation systems, and of combined air-conditioning and ventilation systems is covered by articles 14 and 15 of the EPBD (amendment 2018)
- Examples:
 - In our scope: balanced ventilation system with heat recovery
 - Out of our scope: air handling unit with heating/cooling coils
- All types of stand-alone ventilation systems:
 - mechanical, natural, hybrid together with their controls

Our scope (cont.)

- Ventilation systems in residential and non-residential buildings, except industrial buildings
- Newly-installed ventilation systems and systems already installed and in operation
- Initial or regular inspection
- Various inspection objectives:
 - Good operation, ductwork airtightness, air flow rates, energy efficiency, indoor air quality, system cleanliness, thermal comfort, noise level, etc.
- Various levels of inspection: from simple visual check to detailed measurements

Out of our scope

- Protocols that only measure indoor air quality without looking at the ventilation system
- Commissioning not including an inspection part: for example, procedure that would only require to adjust position of air dampers
- Maintenance not including an inspection part: for example, procedure that would only require to clean the fan and replace filter
- Airing (i.e. natural ventilation by window opening)
- Inspection of systems for smoke exhaust in case of fire

Existing regulations, standards and guidelines

- 81 items identified and analysed (EU and outside EU)
 - Few documents dedicated to inspection; inspection often described in documents on installation, commissioning, maintenance
- Regulations
 - Regulations make inspection mandatory in Belgium (Region of Flanders), Finland, Ireland (recently published), Sweden
 - Other regulations require checking of ventilation systems (or parts of them) in France, Poland, Portugal, United-Kingdom
 - Regulations on the inspection of ventilation systems in workplaces in several countries

Existing regulations, standards and guidelines

- Standards
 - 11 EN standards (including 6 for ductwork)
 - Some national standards
- Guidelines
 - 47 guidelines
 - Austria, Belgium, Finland, France, Germany, Ireland, Netherlands, Poland, Sweden, United Kingdom, Switzerland, Turkey, USA

Focus on guidelines (47)



- Mainly for initial inspection.
- Only a few for non-residential systems.
- Most cover whole ventilation system or ductwork alone.
- Visual checks, limited measurements or a complete set of measurements.
- Mainly measurements of airflows.
Some measurements of fan consumption and ductwork airtightness.
Measuring indoor air quality parameters and noise is rare.
- Some guidelines describe or focus on measuring instruments and the way to use them.
- Most of the guidelines intended to be used by installers.
- Reporting of the inspection not always described.

Other initiatives that can reduce the need for inspection

- Improving the quality of installed systems:
 - Certification of product performances and easy access to the product data (database, increasing use of BIM)
 - Clear procedures for design, installation and commissioning of systems
 - Training/qualification/certification of the competence of professionals

➡ interesting examples in several countries

- Occupants' awareness increase, so that they can perform simple maintenance, identify defects, avoid inappropriate actions on the system
- Smart ventilation systems: can provide information to building owners, occupants, managers and a signal when the system needs maintenance or repair

Existing regulations, standards and guidelines

- This information will be used in the next parts of the study to:
 - Define a broad range of possible approaches for the inspection of stand-alone ventilation systems
 - Assess the potential impacts of some of these possible approaches