



Klimaskaerm

Competent tester scheme in Denmark

Status and trends

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Side 1



What is Klimaskaerm?

- The Danish association for testing of building performance especially Air Tighness Testing and Measurement
- Independent non profit association with limited resources
- Founded 2006
- 50 member companies (surveyeig companies, testing equipment suppliers, manufacturers, institutes)
- Platform and society for the testing of building envelope with blowerdoor and/or infared camera
- Located at the Danish Construction Association in Copenhagen, Denmark
- Homepage www.klimaskaerm.dk

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Side 2

Klimaskaerm - Areas of interest



- Building performance
- Airtightnes mesurement and dokumentation
- Infrared mesurement, interpretation and dokumentation
- Thermal performance of buildings
- Leakages in buildings
- Performance and protection of the envelope as a whole
- Quality Assurance of testing

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Side 3

Klimaskaerm - Main activities



- Give third party information on building airtightness, thermal performance and testing as a whole
- Seminars, trainingcourses and education of testers
- Member metings
 - Communicate experience regarding testing
 - Forum for discussion and exchange of views and ideas to improve testing and quality of testing
 - Yearly held conference
- Develop tools (guidelines) for the administration of tests and quality assurance

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Side 4

Klimaskaerm – Mission



- To achieve and promote the highest standards of air tightness testing in DK
- Platform for testing procedure, methodologies and information exchange
- Undertake training of testers
- Provide Good Practice testing and technical guidance
- Give information regarding airtightness testing for the public, builders, contractors, consultants, designers (architects) etc
- Platform for the registration and accumulation of airtightness data of buildings in DK

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Side 5

What have Klimaskaerm achieved 2014?



- Paradigms (guidelines) prepared for
 - Quality assurance manual for the surveyer company
 - The testing with Blowerdoor in compliance with EN13829 for small buildings, large buildings and passive houses (3 paradigms incl. common test reporting)
 - Local Authority handling of tested building airtightness and reports
- Prepared and executed a education programme for the certification of testers
- Prepared and promoted qualification and qualification procedures
- Prepared system for the registration and reporting of tests done and providing a database

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Side 6

How to become a certified leakage tester



- Certification of air tightness testing is possible in DK through Byggeriets Kvalitetskontrol, Danish Standard Certification (DNV GL Business Assurance Denmark) or Bureau Veritas
- The tester company need to establish a quality system (manual) specific for testing in accordance with EN 13829
- The tester is certified on basis of
 - Proof of knowledge (certificate)
 - Examination of practical competence (knowdlege and experience)
 - Proof of equipment calibration

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Side 7

What is Byggeriets Kvalitetskontrol?



- The Quality Assurance & Certification for Building and Construction in Denmark certifies businesses within the Danish building and construction sector.
- The certification is conducted in accordance with either ISO-standards or Danish national regulations and encompasses:
 - Authorisations
 - Voluntary quality schemes
 - Schemes for energy marking or review reports for buildings, e.g. air tightness tests

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Side 8



The Certification process

- The company contact the an accredited auditor and enter a written certification agreement
- The company prepare a Quality Assurance System targeted for certification of air tightness testing in accordance with EN 13829
- The company submit its Quality Assurance System to the auditor
- The auditor evaluates the company Quality Assurance System and when appropriate, an audit of the company is executed
- When the Quality Assurance System is implemented an certification audit of the company, the testers knowledge, experience and equipment calibration and evaluation of selected reports will take place
- A certificate with a validity of 3 years shall be issued to companies that implement certification audit with a positive result

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Surveillance audit and recertification

- Within the next two years a conducted surveillance audit of the company will take place at intervals of 12 months
- After 3 years a full recertification of the company is nessesary

Note

The certification is voluntary and therefor not mandatory in Danish Building Regulation

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Side 10

Kilmaskaerm - Training of testers is the key



To become a certified tester

- A tester must attend 2 day intensive course to understand the teoretical background of air tightness, building performance and testing
- A tester need to pass
 - a multichoise test to prove his understanding of air tightness
 - a practical test to prove his ability to perform a test in the right way and to handle his own equipment for the testing
- A tester must attend a recertification course and pass a new multichoise test every 3 years

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Side 11

Status



- Paradigms established to support the EN 13829
- Courses prepared and executed with succes
- 30 of 50 members have by now atended basic courses
- 10 members have been audited and are certified by 3rd party e.g. The Quality Assurance & Certification for Building and Construction in Denmark
- Discussions with Danish Energy Agency and Danish Building Research Institute on how to improve the quality of the testing of air tightness

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