



SERVICE LIFE OF ETICS - ENCOURAGING EXPERIENCES OR JUSTIFIED DOUBTS?

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The question about service life of buildings is not new



Source : Three little pigs

The idea of saving energy by thermal insulation is not really new.
It was invented thousands of years ago.



Ein Energiesparhaus
vor 3400 Jahren

Erhaltung bei Leinwandbild in der neuen Erfindung:
Hervorragende Wärmedämmung durch
zweischichtige Flechtwände mit Füllung aus
trockenem Gras.

Die Analyse der Flechtwände zeigt, dass die 1. Schicht aus Weiden
in der 2. Schicht aus Eschenholz gefügt wurde.

Energy saving wall construction
bronze age, 3400 years ago
 $U = 0,5 \text{ W}/(\text{m}^2\text{K})$

Austria:

Documented ETICS in Austria – applied in 1966, Lustenau, Vorarlberg:
After 50 years still in good shape ; painted in 1995



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Poland:

Residential Building in Warsaw – insulated in 1970 (only side wall) renovated in the early 2000 and meets all the requirements. In 2000 the test of insulation confirmed that all the parameters were stable.

© SSO



Germany :

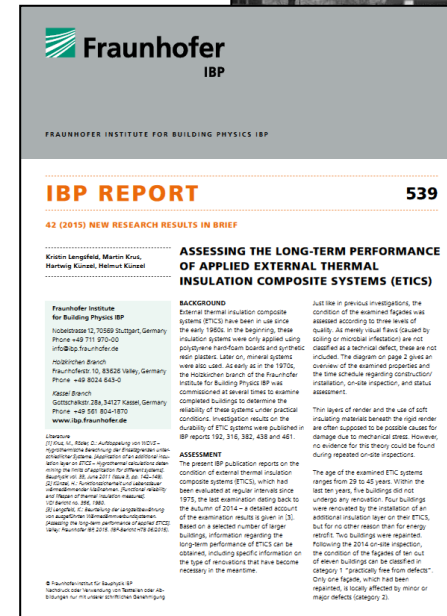
44 year-old project; 2008
new paint and
renovation of balconies



Monitoring a set of projects



The first aim is to approve the durability of ETICS, the second one is to probably learn about how to further improve the systems.





1983



1995



2004

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1975 ETICS facades of **93** buildings in Germany, Austria, and Switzerland were inspected

1983 Second inspection: **87** of those buildings

1995 Third inspection

2005 Assessment of 12 buildings taken from the first sample

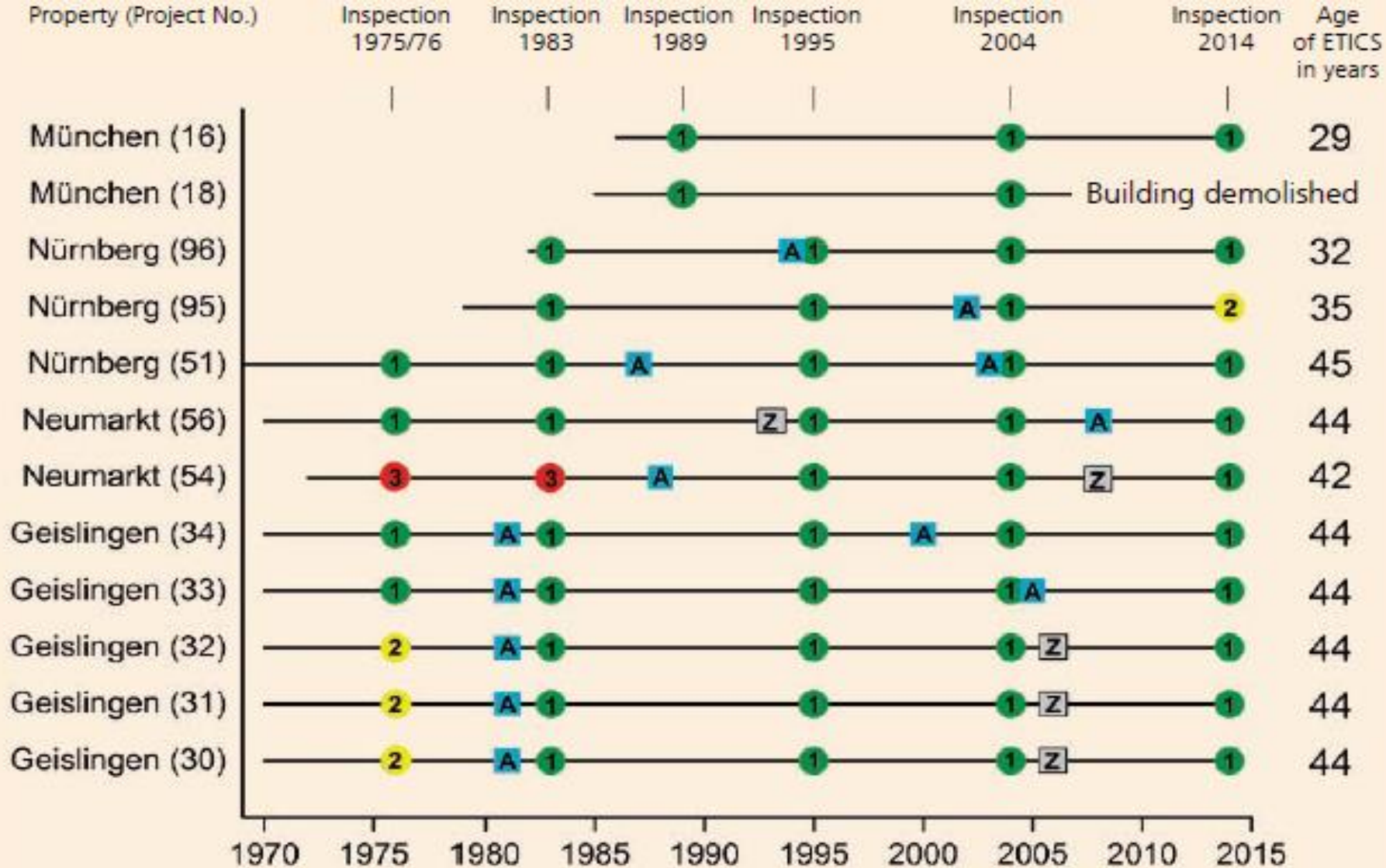
2014 Latest inspection (autumn)



Criteria for evaluation of performance

Projects were inspected on site by Fraunhofer IBP experts. According to their observations, the projects were categorized into three groups :

- **Group 1 - without defects**
- **Group 2 – with minor defects**
- **Group 3 – with major defects**



Assessment categories

- 1 practically free from defects
- 2 minor defects (occasional cracks at insulation panel joints or cracks at windows)
- 3 major defects (frequent or longer cracks, blistering, detachment of coating, clearly visible)

Renovation measures

- A New façade coating
- Z Application of an additional insulating layer with reinforced coating

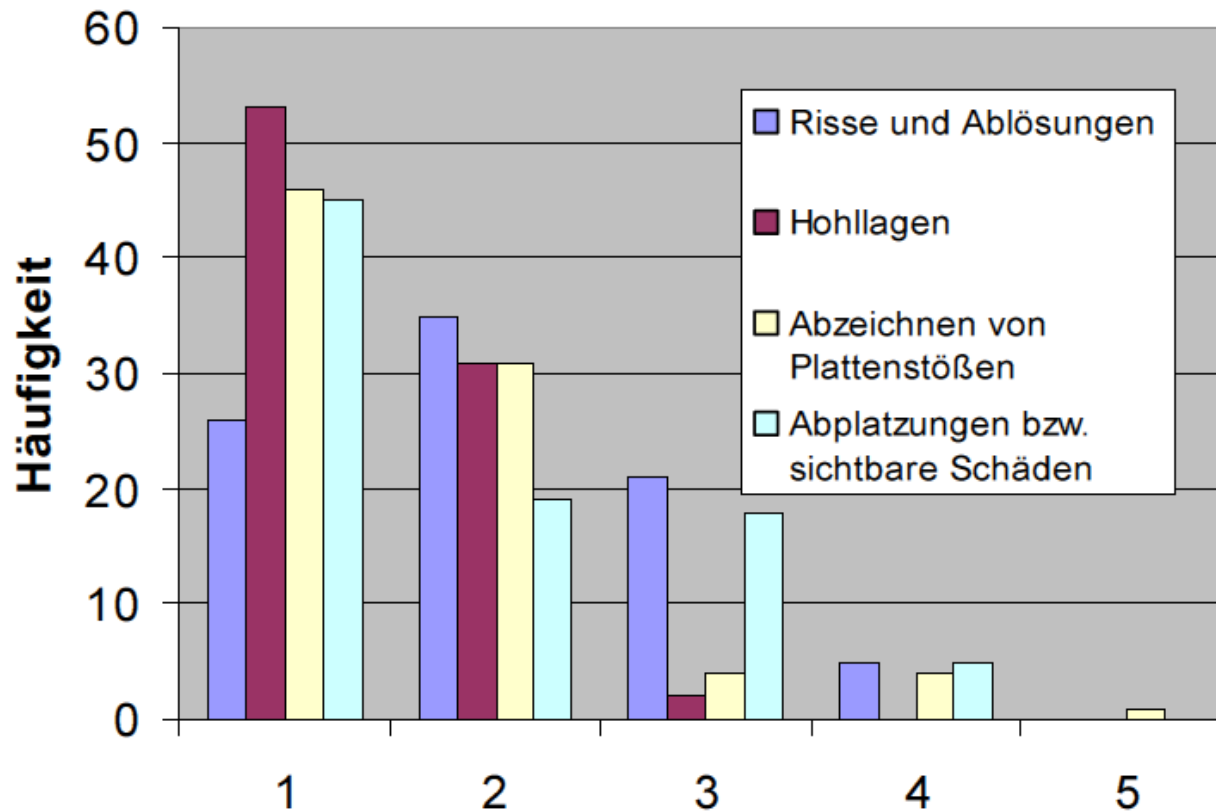
Example of the renovation of a building

2010

1995

1985





© MA 39

Blisters



© IBP

Cracks



© IBP



From beginner errors



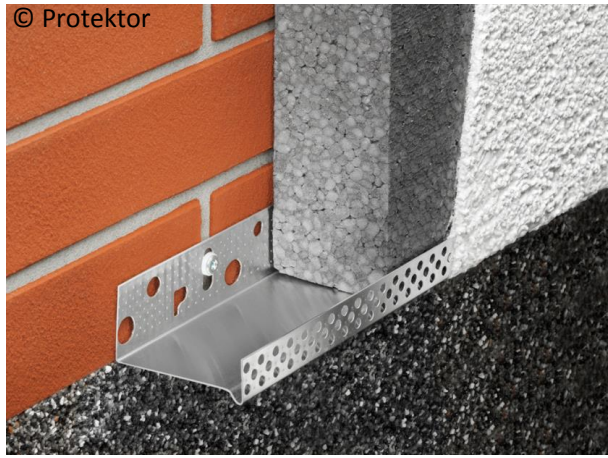
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To engineered solutions

© Schöck



© Protektor





Application Guideline EAE



algae and other microbial growth



© IBP



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ETICS – ETICS renovation

- lift older facades to latest energy efficiency requirements
- upgrade existing ETICS facades significantly in regards to design

2004



2014



© IBP

Object 54 Neumarkt in der Oberpfalz

2004



© IBP

2014



“Brunck-District” Ludwigshafen before refurbishment



© BASF



3-liter house after stock modernization



Technical condition after over 10 years

Original text of expert report (survey):

"After over 10 years, the facade is presented in a visually good condition; virtually no aging and no algae growth on the exterior render is apparent."



© BASF

ETICS-on-ETICS renovation

- Even **with increased insulation thickness** ETICS show a **positive long-term performance and durability**.
- **ETICS-on-ETICS renovation is a proper solution**, further improving the thermal resistance of buildings' envelopes and prolonging the life-cycle of the initial ETICS.

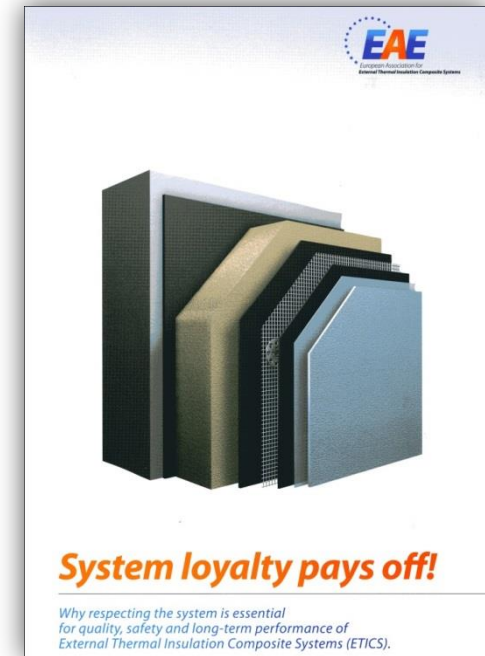


Key statements :

- The **ageing behaviour and maintenance costs for facades with ETICS** should **not** be assessed **differently to conventionally plastered exterior walls**;
- Damage to the facade is experienced **less frequently** than is the case with conventional plaster due to the **decoupling effect** of the insulating layer;
- New inspection in Germany **confirms the IBP forecast of a ETICS service life of 60 years** (Bauphysik 28 (2006) H.3, S. 153-163).
- **Esthetic upgrade with suitable facade paint or ETICS-on-ETICS renovation**, both are possible and will renew the facade meeting all actual requirements

That requires ...

- careful design and execution of ETICS
- compliance with the system and thus the delivery of all components of an ETICS from the authorisation holder.
- the regular care and maintenance of the ETICS.



The relevant reasons for „100 % compliance with the system can be found in the EAE brochure „System loyalty pays off“.

What especially needs to be considered?

- Coatings and plaster
- Connections and expansion joints
- Horizontal surfaces





In addition to environmental and technical aspects, we should also not forget "soft" factors. After all, with an external thermal insulation composite system, people are primarily buying convenience, cosiness, home comfort and thus a tool for improving their quality of life.



The responsibility in the **life cycle** of the thermal insulation composite system also includes the quality of **dismantling and recycling**.



Thank you for your attention!



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