



LIFETIME ENGINEERING

of Buildings and Civil Infrastructures



Objectives of NATIONAL DISSEMINATION GROUPS in Thematic Network Lifetime: National information, demonstration, education and training of lifetime engineering

Demonstration project of lifetime engineering in GERMANY : TUCHER castle in Feucht

Repair of a castle (cultural heritage) - building automation in a pilot project

Type of construction: masonry castle

Owner: A. Stuhl

Project manager: Stuhl Regelsysteme

Duration of the construction phase: about 10 years

Cost of the project: 2 000 000 Euro

The building was built as summer residence for the Tucher family. Its present view is dating back to the years 1590-91. During its Lifetime the castle had been changed for several times, once a fire nearly destroyed it completely. In its high and closed way of building the castle is typical for the regional Renaissance architecture. The three main floors and the floor in roof level had always been used for housing. They were further used for housing, as offices and as restaurant.

Since 1999 an ambitious plan has been realized. In the historic ambience an exemplary project combining building automation and high value interior design has been realized. Over a period of about ten years the castle was a "work in progress" that developed constantly.



Together with manufacturers new components had been worked out and integrated in a digital building control system. Highly important was not to create singular solutions but to be using serial products, that were modified and developed for modern building automation.

"Intelligent Building" is a very modern term of building industry in the 21st century. We need artificial intelligence – i.e. building automation – for living comfortably and still resource preserving in a building. The future of building will be mostly modernisation or repair. The repair of the castle took into account ecological aspects for building materials. The project tries to compete against prejudices, combining a 400 year old building with advanced modern technique. Building automation should not be preserved for special facility assets while any building, including residences will profit of it. In the Tucher castle today's available techniques are presented. They are available as serial products.



Seminar room



Kitchen

The project is extending the use of building automation to so far "untypical" elements providing them with sensors and actors. Cupboards and wardrobes can be worked as paternoster elevators. Electronic devices (oven, fridge, sauna,...) can be activated via mobile phone. Of course the traditional elements like ventilation, floor and wall heating are integrated in the automation system. Lighting, window shading and heating are part of the system, that allows to regulate each room separately. A fire protection system is set up, including web cams and automatic warning devices. A permanent contact between building and mobile person can be installed, using SMS, Internet or Fax and providing high building security.

Principal contractors of Thematic Network LIFETIME:

- VTT Technical Research Centre of Finland, FI
Coordinator Prof. Dr. Asko Sarja, asko.sarja@vtt.fi
- Taylor Woodrow Construction Ltd, UK
- CSTB Centre Scientifique et Technique du Bâtiment, FR
- Imperial College of Science Technology and Medicine, UK
- Universität Karlsruhe (TH), TMB/Facility Management, DE



Thematic Network LIFETIME in figures:

- Working period: 1/6/2002 - 31/5/2005
- Participation: 96 partners from 28 countries
- Plenary workshops: 2002 Norway, 2003 Finland and 2005 France
- 25 National Dissemination Groups
- Funding from 5th Framework Programme:
Competitive And Sustainable Growth (GROWTH) Programme