

Department of Information Technology and Electrical Engineering of the University of Applied Sciences Dortmund at the Light & Building 2004 in Frankfurt

Following the statement „Comfortable building control systems in child's hands“ the department of Information Technology and Electrical Engineering presents several exponents at the Light&Building at the meeting point „Future“ of 8 universities in hall 4.2 as a result of 7 diploma thesis and one competition work of „Jugend forscht“.

Unter dem Titel „Komfortable und energiesparende Automatisierung von Gebäuden mit Gebäudebussystemen ist kinderleicht ! / Projekt im Rahmen von Jugend forscht (Sparte Technik)“ präsentiert die Schülerin Christina Aschendorf Ihren diesjährigen Beitrag bei Jugend forscht „Comfortable and energyoptimizing automation of building bus systems in child's hands !“

Project of the Jugend forscht competition / field technology

Under Sponsoring of the companies Rutenbeck and Christina Aschendorf took part at the competition Jugend forscht. Christina Aschendorf built a house with two floors for taking part in Jugend forscht in field technology.

This house was totally automated using the building bus of the company Contronics and was fulfilled using a telecontrol of the company Rutenbeck. Using the building bus homeputer now boring works like pressing light switch may get into the house, check in and then set the house into „left“-state by pressing a switch at the entrance of the house. Pressing the second switch the whole way to the target room (kitchen or sleeping room) is lighted and automatically switched off and all socket outlets in the target room are switched on. Leaving the house the whole house except everytime used systems are switched off and the house is set into „House is left“-state. Beneath other technical highlights such as automatic without wings opened windows and elevator the house has a teleswitch of the company Rutenbeck. Using the teleswitch the house can be controlled und technical problems can be send to a service person. When the house is left and a thief presses a light switch the teleswitch automatically informs the service or police and tells „A thief is in the house !“, but also the switching of the bell at the door can be send. As an answer to the alarm message of the teleswitch the outer lights of the house or other components may be switched on. But also for the normal holiday problem „Is the iron switched off ?“ Christina has an answer. Using the handy the state of the iron may be checked and in uncorrect case switched off. With this beautiful and functional project Christina Aschendorf was the winner of the regional competition of Jugend forscht in Dortmund.

Representatives:

Prof. Dr. Bernd Aschendorf

Dipl.-Ing. Sandra Stahlberg



Christina Aschendorf stellt ihr Projekt zur Jugend forscht-Sponsoring bei der Schule...

Preisgekröntes Puppenhaus

Firma Rutenbeck sponsert Schülerin bei Landeswettbewerb „Jugend forscht“

SCHWELMERS • Durch ihr Sponsoring hat die Schülerin Christina Aschendorf ein kleines, komplett automatisiertes Puppenhaus gebaut. Christina Aschendorf hat das Haus mit einem Handy steuern lassen. Das Haus ist ein Modell eines Hauses, das sie im Rahmen der Jugend forscht-Wettbewerb gebaut hat. Das Haus ist ein Modell eines Hauses, das sie im Rahmen der Jugend forscht-Wettbewerb gebaut hat. Das Haus ist ein Modell eines Hauses, das sie im Rahmen der Jugend forscht-Wettbewerb gebaut hat.

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Christina Aschendorf
University of Applied Sciences Dortmund
Department of Information Technology and Electrical Engineering
Sonnenstr. 96
Germany D-44139 Dortmund
Tel. 0049 231 9112 202
Fax 0049 0231 9112 283
E-Mail: aschendorf@fh-dortmund.de

Virtual programming and presentation of building control systems using OPC and Cosimir

The EIB is the most used building control system in small-, middle- and large-buildings. Cause of the opened standard, the large component count and the large number of producters the marketposition is very good. On the other hand the EIB has a big problem due to the complicate and complex programming and projecting process. Based on the duty and wish-list of the building owner with respect to the selected

building system components the project pro-gramming within the ETS starts. After finishing the project programming the setup operation within the building and the testing starts. Within the next and last step on base of the ETS-project the defined datapoints together with the tele-gramms on the bus the visualisation is done. Very late the functionalities may be presented to the building owner and changed if not correct or wrong.

This sequential and time intensive process of project management was optimized at the university of Applied Sciences Dortmund in a pilot project on base of a diploma

thesis in cooperation with the institute of robot research at the university of Dortmund. On base of the construction plans of the building and the first defined functionalities of the building owner a virtual threedimensional building fulfilled with building control components and furniture is prepared. Within the next step the building control components will be programmed with component and group addresses

as done in the ETS to project the functionalities. Real life within the virtuell house is possible by coupling the OPC-servers of the threedimensional virtual building simu-lation software Cosimir with the OPC-server based on the real EIB-ETS-project. So it is possible to virtually describe, show and present the wishes of the building owner, to test the real building control components connected to the OPC-Server in the virtual world and to start the visualisation project very early. The biggest effort for building owners in small building projects is to show and present wished, new or unknown functionalities at the building project of the building owner, but also for large buildings the preparation of virtual demonstration rooms is possible, so the documentation of functionalities is possible for certification.

The university of Applied Sciences Dortmund presents this project on the example of an one family house with engineering office in virtual reality at a canvas and in reality with a 1:10-scaled model with functionalities.

The university of Applied Sciences Dortmund wants to continue this innovative project and to include other building control systems.

Industrial partners and sponsors are welcome !

Representative:

Prof. Dr. Bernd Aschendorf
Dipl.-Ing. Nils Eckardt
University of Applied Sciences Dortmund
Department of Information Technology and Electrical Engineering
Sonnenstr. 96
44139 Dortmund
Tel. 0231 9112 202
Fax 0231 9112 283
E-Mail: aschendorf@fh-dortmund.de

EIB-functionalities demonstrated at the 1:10 scale model of an one family house with engineering office

The practical sessions of the lecture Electrical building control technologies of the study course building system technology at the university of Applied Sciences Dortmund are boring although known electrical installation wirings using EIB are trained, but the reference to the building is missing. To optimize this situation the lecture a two floored one family house with engineering office and cellar was built

in scale 1:10 and installed with electro installation such as lights, switches, socket outlets, in process is a simulated heating system, a photovoltaic and thermal system and a centralized automation. Cause of the scale 1:10 it was im-possible to directly include the bus coupling units in the house. So the total building control system technology is connected to the house via an interface connector.

This makes it possible to work with separate training groups together in separated building units and to install and test the system. Benath the EIB the SPS-systems Siemens S7-300 and Siemens Logo may be connected to the house, in preparation are Siemens S7 200 and Contronics homeputer.

Cause of the modular concept the training systems can be used as base for the different steps within a building construction process, these are construction, plans, write out, component selection, programming, installation, test and visualisation.

Visualisation is done using WinSwitch and BCON.

The modular concept also allows the analysation and test of gateways. The different media and building control systems on the different floors are linked together by media converters or gateways. So redevelopment, enlargement and extension is possible.

Ansprechpartner:

Prof. Dr. Bernd Aschendorf
Cand.-Ing. Peter Tonk,
Fachhochschule Dortmund
Fachbereich Informations- und Elektrotechnik
Sonnenstr. 96
44139 Dortmund
Tel. 0231 9112 202
Fax 0231 9112 283
E-Mail: aschendorf@fh-dortmund.de

Demonstration of the functionalities of the automation-systems Siemens Logo und S7-200 in connection with EIB, tested in case of a one family house with engineering office in scale 1:10

The EIB is the most used building control system since the last years. Although the market share is large in the large-buildings cause the ETS-functionalities fulfill the needs, the EIB has problems in the small-building-market cause the working process of the electro installateurs is much different from that of project management in EIB. Help may bring the integration of SPS-automation-systems in subparts of the building control system, connected to the high prioritized EIB-System via small gateways.

Within the scope of a diploma thesis the functionalities of Siemens S7-300-, S7-200- and Logo-systems are analyzed for the tasks of building control systems. The compatibility of big and small SPS-automation-systems with EIB-installations using gateways is analyzed too.

The functionalities of the subsystems are presented using an one family house with engineering office in scale 1:10.

Representatives:

Prof. Dr. Bernd Aschendorf

Cand.-Ing. Yeganathan

University of Applied Sciences Dortmund

Sonnenstr. 96

44139 Dortmund

Tel. 0049 231 9112 202

Fax 0049 231 9112 283

E-Mail: aschendorf@fh-dortmund.de

Visualisation of building-functions of an one family house with engineering office and a weather report station using ICONAGs BCON and UMTS-modems and handy from vodafone

Beneath increasing comfort, ecology and economy in buildings to increase the efficiency the integration of information- and telecommunication technology into and around the building comes up. Visualisation of the functions of the building on all medias is wanted. The users wants to visualise and control building functions on normal displays but also PDAs, handy and on the internet. Modern visualisation systems like WinSwitch, BCON or homeputer grant a view into the building and their control. No problem is the used media and the locality of the user, that may be the house, the car or from far away.

The scope of two diploma thesis is the analysation and usage of visualisation systems using the medias internet and handy.

The diploma thesis of Cand.-Ing. Peter Tonk works on the visualisation of a one family house with engineering office using BCON and a garden railway using homeputer. The used medias are internet and handy. The PC is connected to the internet via vodafone-UMTS-connect-card.

The diploma thesis of Cand.-Ing. Kai Gröne works on the visualisation of a weater service station using BCON and internet, the measured data is logged into a database.

Representatives:

Prof. Dr. Bernd Aschendorf

Cand.-Ing. Peter Tonk
Cand.-Ing. Kai Gröne
University of Applied Sciences Dortmund
Department of Information Technology and Electrical Engineering
Sonnenstr. 96
44139 Dortmund
Tel. 0231 9112 202
Fax 0231 9112 283
E-Mail: aschendorf@fh-dortmund.de

Optimized projectmanagement for small-buildings under usage of building-control-systems in order to decrease time and costs

Representatives:

Prof. Dr. Bernd Aschendorf
Cand.-Ing. Daniel Außendorf
University of Applied Sciences Dortmund
Department of Information Technology and Electrical Engineering
Sonnenstr. 96
44139 Dortmund
Tel. 0231 9112 202
Fax 0231 9112 283
E-Mail: aschendorf@fh-dortmund.de