2013/14 Appropriations, Authority Work Priorities and EECA work programme

Submission Closing Date: 2 November 2012 @ 5.00 pm.

Date

23 October 2012

From

KNX National Group

Author

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Green Buildings
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Partners / Universities spread all over the world).

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Offer - (Introduction)

Green Buildings
KNX National Group New Zealand

The entire content of this introduction part is available in three languages as a downloadable DVD / movie from the Internet.
www.knx.org/fileadmin/movies/en.html

"As we are today aware, the life cycle costs of Buildings are after 15-20 years as high as the construction costs. Furthermore, the life cycle costs are continuous, we should build in such a way that the life cycle costs are not too high for the next generation. Otherwise we will not be able to operate these buildings anymore". The sustainability is in three areas: society, the world of business and the environment.

Introduction:

Buildings that are energy efficient, planned and operated are no longer unique. Even the description "an intelligent building" is beginning to lose its exotic nature. Both trends are presently revolutionising the increasingly ambitious architecture and setting a course in the worldwide fight against climate change.

The driving force behind KNX is the KNX Association, a group of leading companies active in many fields of home and building control. Currently, KNX Association has more than 200 members, accounting for more than 80% of the home and building control devices sold in Europe. As a common goal, these companies promote the development of building installation systems in general and KNX as the world's only open STANDARD for home and building control. Worldwide KNX Association has partnership agreements with more than 30,000 installer companies in 100 countries, more than 60 technical universities as well as over 150 training centres.

The networking of all electrical functions in a single installation bus system provides the opportunity for optimal coordinated control. The operation of heating, air-conditioning, lights and blinds for example can be aligned with external climate conditions and be controlled from an interface. Energy consumption is thereby kept

within minimal boundaries. Since all electrical driven equipment and installations can be flexibly combined with one another and can be controlled by touch panels or by public networks (telephone, Internet), in the area of design and comfort this opens up almost unlimited possibilities.

Problems or breakdowns can, therefore, quickly be resolved. Additionally, KNX reduces hard wiring requirements by approx. 60% and the associated risk of fire. The bus technology can be correctly implemented from the beginning compensating for its own costs. The investment alone can be written off after a short period of time as a result of reduced energy and operating costs, increased income from rents, additional comfort and optimal security. Higher cost-effectiveness with higher yields results in increased market opportunities, especially when reselling **International Manufacturer Association.**

The creativity of the designer is now called upon, thereby bringing closer the goal of creating expressive and thrilling architecture which is both ecological and profitable. One thing is clear: **We control climate change!**

In reality, energy conservation in the building sector has, to a great degree, become a trend and has slowly become an everyday concept for architects as well as for building constructors. Due to the recently recurring annual natural disasters, both large and small, we can see the impact of the increasing imbalance. We are, therefore, forced to look to the future and take responsibility for the actions of our society.

The sustainability is in three areas: **society,** the world of **business** and the **environment.** The situation here is that we behave in such a way that the next generation can live in these three areas. The central point is most certainly the well-being of the people who live in these buildings. When a person feels good, when cosiness is present, then that person will look after it and everything will belong to society's sustainability.

As we are today aware, the life cycle costs are, after 15-20 years, as high as the construction costs. Furthermore, the life cycle costs are continuous. And here the principle of provision is applicable: we should build in such a way that the life cycle costs are not too high for the next generation. Otherwise we will not be able to operate these building anymore. The life cycle costs are, of central importance in regard to economics. If we were to now try to reduce the subsequent costs, life cycle costs, then we may possibly have a slightly higher investment but there will be less maintenance costs.

During the construction of a building, as well as during its operation, large amounts of energy are used, for this reason targeted usage in this area is especially effective. This does not necessarily mean the ultimate goal should be a "zero-energy house" alone the intelligent networking of all devices to a decentralised complete system brings unforeseen savings.

Flexibility in Usage

Often during construction planning the subsequent usage and future modified space requirements are not considered. This negligence can rapidly become costly as subsequent alterations usually involve enormous costs. This is where the KNX standard offers a high level of flexibility. The bus system can be simply reprogrammed with little expense. A property can thereby quickly be altered to accommodate new demands or completely new uses can be introduced.

The Strengths of the System

While in operation the strengths of the system are clearly visible: be it through higher operating reliability; almost unlimited possibilities in building control; due to increasing communication demands; or security and energy efficiency. KNX intelligently solves issues dealing with the reduction of energy requirements: the goal being the individual room control of heating, air-conditioning and lighting control.

KNX regulates and controls global temperatures in connection with individual rooms and time periods. In non-occupied rooms the temperature is reduced, resulting in a maximum of energy savings. Lighting and sun blinds also work together: either the blinds block the sun to prevent the room from overheating or they allow the sun's warmth to heat the room to save heating energy. The lighting would also be dimmed dependent on the sun blinds' position.

Also, the position of the windows, whether open or closed, as well as the number of people in the room would be detected influencing the control of both heating and lighting. In terms of the integrated building system technology a security system can be installed via KNX. Over the bus it would be indicated if doors or windows were closed, if equipment was switched off, if unwanted guests were in the building or if a fire had broken out.

Besides being used in lighting, sun blinds, heating, audio/video, metering, security and energy management, KNX can also be implemented for the building's own internal communication system. Designer touch panels cover all relevant home and building states are indicated. Additionally, data can be transmitted externally via an interface to a superior control system for security or maintenance services.

Over 280 member companies worldwide from different application domains have almost 8000 **KNX** certified product groups in their catalogues. The **KNX** Association has partnership agreements with more than 30,000 installer companies in 100 countries.

KNX Association is the creator and owner of the **KNX** technology – the worldwide STANDARD for all applications in home and building control, ranging from lighting control to various security systems, heating, ventilation, air conditioning, monitoring, alarming, water control, energy management, metering as well as household

appliances, audio and shutter control, and lots more. The technology can be used in new as well as in existing home and buildings.

KNX Offer:

To Assist New Zealand Authorities, Decision Makers, Standard Committees, with, Government Buildings Projects, Hospitals, Schools, Council Buildings, and Residential Buildings, Architects, Electrical Consulting Engineers, and Electrical Contracting Companies acting as "Installers", in terms of Electrical Energy Savings and Green Building Project (Electrical) Design and implementation.

KNX National Group of New Zealand, offer to: EECA, BRANZ, Green Building Council of New Zealand, and Victoria School of Architecture and or Bodies / Individuals that are involved in research on the topic, an Intelligent Building Control System that reduces energy consumption and the associated operating costs of a Building many times over, a KNX System, open to more than 200 Manufacturing Companies Products, and that can be seamlessly integrated into one single Building Project or System, on the same open KNX Protocol.

We Offer our Guidelines and assistance, in creating a KNX Standard in New Zealand, for Commercial Buildings, Government Buildings, etc. There is a huge amount of KNX Information available; we cannot include it all in this document / Offer: Only some Guidelines - We offer to do a Lecture on the Topic for all Role Players and Decision Makers in EECA, BRANZ, Green Building Council, Victoria School of Architecture, etc.

With Reference to : July 2012 Document: BEES Seminar – BRANZ Ltd Michael Donn – Victoria University of Wellington Christchurch CBD Energy Modelling Shaan Cory, Michael Donn, and Tavis Creswell-Wells Victoria University of Wellington Centre for Building Performance Research ►Energy Performance must be early goal ►Hierarchy when Designing Net ZEBs: – Passive Design → Energy Efficiency Systems → Renewable Energy - Possible Solutions.

In order to transfer control data to all building management components, a system is required that does away with the problems of isolated devices by ensuring that all components communicate via one common language: in short, a system such as the manufacturer and application domains independent KNX Bus.

This standard is based upon more than 20 years of experience in the market, amongst others with predecessor systems to KNX: EIB, EHS and BatiBUS. Via the KNX medium to which all bus devices are connected (twisted pair, radio frequency, power line or IP/Ethernet), they are able to exchange information. Bus devices can either be sensors or actuators needed for the control of building management equipment such as: lighting, blinds / shutters, security systems, energy management, heating, ventilation and air-conditioning systems, signalling and monitoring systems, interfaces to service and building control systems, remote control, metering, audio / video control, white goods, etc. All these functions can be controlled, monitored and signalled via a uniform system without the need for extra control centres.

The KNX IP protocol combines the advantages of the Internet with those of KNX and opens up new areas of KNX multi-vendor applications in one single project and place particular emphasis on IP integration. For this reason KNX is in actual fact increasingly being combined with communication over Ethernet and Internet.

KNX is approved as an International Standards: http://www.knx.org/knx-standard/standardisation/

KNX is the worldwide approved **INTERNATIONAL STANDARD** for home- and building control.

KNX is approved as:

- International Standard (ISO/IEC14543-3)
- European Standard (CENELEC EN50090 and CEN EN 13321-1 and 13321-2)
- Chinese Standard (GB/Z 20965)

- ANSI/ASHRAE Standard (ANSI/ASHRAE 135)

KNX is fit for use in any application domain.

From an industry to an international standard:

• The predecessor specifications to KNX, Batibus, EIB and EHS, came into being in the early 1990s. At that time nobody could foresee their individual future. These three highly important home-grown European solutions for home and building control initially tried to develop their markets separately and tried to find their own places in European standardisation. Batibus did particularly well in France, Italy and Spain, whereas EIB enjoyed success in the German speaking and north European countries. EHS was the preferred solution for manufacturers of white and brown goods.

• In 1997, the three consortia in charge of the above mentioned specifications decided to join forces to develop the market for intelligent homes with the agreed goal to develop a new, common industrial standard that could also be proposed as an international standard. The KNX specification was published by the newly set-up KNX Association in the spring of 2002. It is based on the EIB specification, supplemented with new configuration mechanisms and communication media originally developed by Batibus and EHS.

• In December 2003, the KNX protocol as well as the two media, TP (twisted pair) and PL (power-line) was approved by the European national committees and ratified by the CENELEC Bureau Technique as the EN 50090 European Standard. The KNX Radio Frequency communication medium was approved in May 2006.

• As KNX increasingly provides specifications that are not only used for the automation of electrical installation equipment but also for HVAC applications, the KNX Association proposed its specifications to CEN for publication as a European standard for building automation control systems. CEN accepted the proposal and the KNX specifications were published by CEN as EN 13321-1.

In view of the large interest in KNX compatible products outside European countries and its proven technology, the KNX association also initiated the necessary steps to have the KNX standard approved on an international level. Countries active in CENELEC proposed the European EN 50090 norm for standardization by ISO/IEC at the end of 2004. In November 2006 the KNX protocol, including all transmission media (TP, PL, RF and IP) was approved for publication as the ISO/IEC 14543-3-x International Standard. This makes KNX the only worldwide open standard for home and building control.

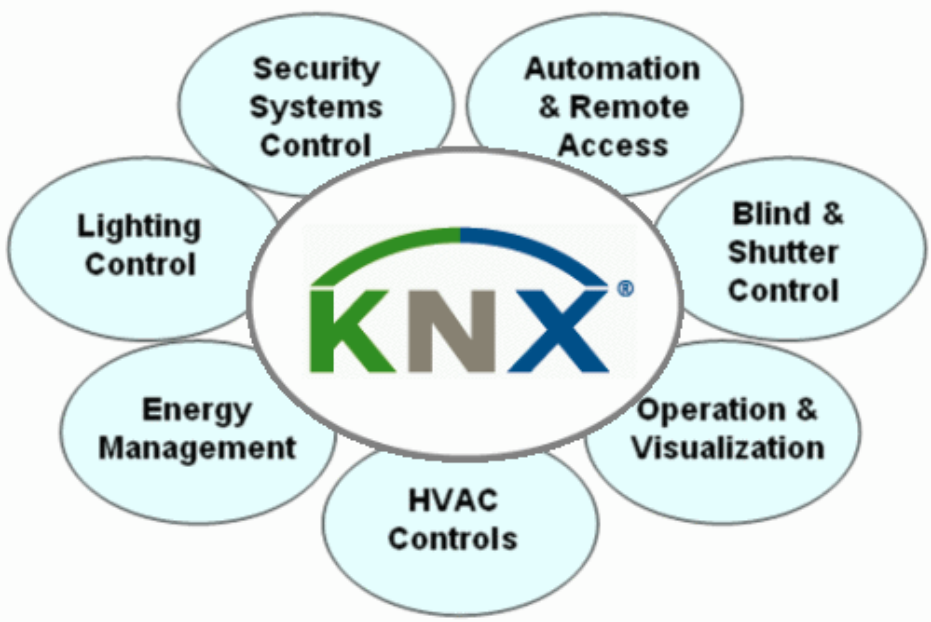
Advantages:

• This set of International Standards will encourage users and planners to implement intelligent controls in homes and functional buildings worldwide. Thanks to the published standard, appropriate guidance is now available for parties interested in the use of home and building control. The KNX association expects the publication of its specifications by ISO/IEC to accelerate the development of the market for intelligent home and building controls considerably and offers its services to researchers, suppliers, installers and users worldwide.

• Non-European suppliers offering products based on ISO/IEC 14543-3-X will benefit from the well-developed European KNX market for products that meet these specifications and will be able to sell their KNX specified products to a well-established customer base. At the same time, suppliers and installers outside Europe will be able to develop their home markets since they are able to offer a wide range of applications from the start.

• By joining the KNX Association, companies from all over the world can benefit from the transfer of know-how and licenses within the association, have the opportunity to include their products in the manufacturer and product independent design and commissioning tool, ETS (Engineering Tool Software) and participate in the partnerships and research programs of the KNX Association.

KNX in Commercial Buildings



KNX is Energy Management

- Peak Demand Monitoring
- Current Detection
- Network Monitoring
- Load Shedding
- Metering
- Energy Pulse Counting
- Data Logging
- Visualisation

KNX is Lighting Control

- Switching & Dimming
- Automatic Lighting
- Constant Light Control
- Timed Control
- Light Scenes
- DALI Gateway

KNX is Heating, Ventilation & Air Conditioning Control

- Individual Room Control
- Central & Automatic Control
- Timed Operation Modes
- Safety Programs
- Valve Drive Control
- Floor Heating

- Fan Coil Units
- Electrical Heating

KNX is Operation and Visualisation

- Switches / Push Buttons
- Touch Panels & Display Panels
- IR Remote Control
- PC Visualisation
- Web Servers
- WAP
- PDA

KNX is Automation and Remote Access

- Logical Functions
- Timed Functions
- System Supervision
- Internet Access
- Remote Control
- Remote Programming
- Messaging

KNX is Blind and Shutter Control

- Group & Central Control
- Preset Positioning
- Sun Tracing (GPS)
- Automatic Programs
- Climate Enhancement
- Wind and Rain Protection
- Safety Modes
- SMI Gateway

KNX is Security and Safety

- Intrusion
- Smoke Detection
- Technical Faults
- Door Access
- Preventive Technologies
- Presence Simulation
- Fault Monitoring
- Supervision

KNX in Residential Buildings

KNX is Lighting Control

- Central lighting controlled in the house and garden.
- Choice of different lighting scenarios or individual dimming available.

KNX is Blind and Shutter Control

- Control of blinds and shutters with regards to wind, brightness and rain.
- Put the control of blinds and shutters on a time schedule.

KNX is Heating, Ventilation & Air Conditioning Control

- Automatic and optimised heating control according to room usage or the needs of the inhabitants.
- Windows will be opened according to requirements.
- The ventilation system reacts to the presence of people in the room.

KNX is Audio/Video Control

- Remote control of music from everywhere within the house.
- Remote control for every single room.

KNX is Operation and Visualisation

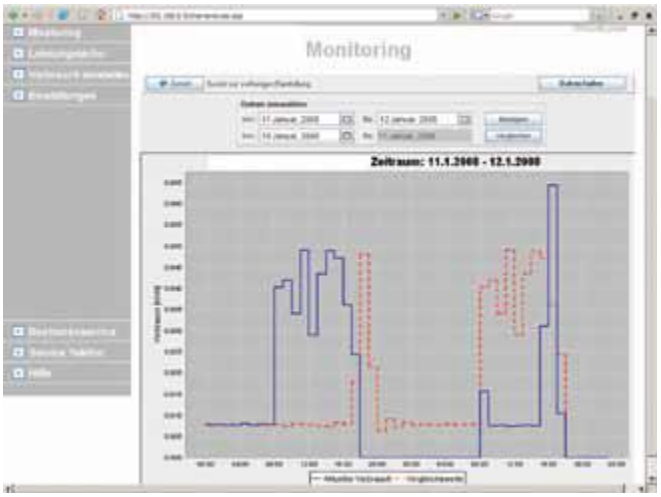
- Presentation and operation of all systems in the house via a wall mounted display.
- Easy visualisation and integration of audio-systems and monitoring cameras.

KNX is Security and Safety

- Reporting of open or broken windows and doors, burglary, smoke emission etc.
- Camera monitoring of the entrance.
- Deterrence of potential break-ins by switching on the entire home lighting system (panic mode).
- Simulation of an occupied home through control of lighting and blinds set on a timer.

Smart Metering with KNX

The significant standard for remote reading of meters in Europe is the EN13757-x „Communication Systems for Meters and Remote Reading of Meters" (the so called M-Bus-Standard) The standard defines wired and wireless (868 MHz) remote reading of meters. The M-Bus to KNX device is already being applied in practice by several KNX members and is in development for different devices.



http://www.knx.org/fileadmin/downloads/09%20-%20Various/02%20-%20Flyer/English/KNX%20Smart%20Metering_Screen%20DE-EN.pdf

The wireless M-bus in accordance with EN 13757-4 is also an associated KNX-standard, which was described in Vol. 10 part 3. Vol. 7 part 60 of the KNX standard describes the mapping of M-bus metering information to the KNX. The physical layer and the link layer are designed as KNX metering in compliance with the respective parts of EN 13757. Rules for the exchange of information between EN13757 and KNX at the application layer are currently under preparation. A data exchange at the physical level is already possible now. On this basis it is now possible to make a KNX product that can receive both M-bus telegrams (EN13757) as well as KNX telegrams with a single receiver.

Transparency

One key element for achieving more selective energy consumption patterns by consumers in buildings is to make it possible for them to monitor their on-going energy consumption as directly as possible. For a long time now we have had fuel consumption indicators in cars that show our current consumption: when we press the accelerator impulsively or drive with 'a heavy foot', we can see immediately

how our fuel consumption jumps up or stays high. It could be the same in buildings. But unfortunately, only very few are as yet equipped with such metering devices. This method, also called 'smart metering', provides intelligent metering and display of the energy consumed. One can only make more economic choices with one's use of energy, such as turning off appliances or shifting uses to cheaper tariff time zones, obviously this can only be achieved when and where and what is currently using energy.

Legal requirements

When consumers are able to see their consumption patterns, for example for electricity in residential buildings, commercial units or in industrial premises, this simple fact can heighten their awareness of the energy consumed. People who are confronted with their energy costs while consumption takes place can quickly take appropriate measures to reduce that consumption. For this reason, even policy makers discuss the introduction of intelligent electricity meters (smart meters) for the sake of greater transparency in electricity consumption. Legal requirements stipulate that the utility company installs new energy meters at the customers' premises, which carry out an interval-controlled energy consumption metering which is read either remotely or directly at the meter and make the results available to customers in suitable ways. Possible options are to inform customers about their energy consumption via written notice, via internet access to the utility company, or directly. The advantage for customers is that they obtain information about their energy consumption patterns based on selectable intervals rather than having to wait for the annual energy bill and being informed about their estimated energy consumption costs by extrapolation from the previous year's meter readings.

However, this hoped-for advantage for customers is reduced by the fact that the legal requirement only stipulates energy readings for daily intervals and is also confined to the metering of electrical energy. The disadvantages are, firstly, that customers will not obtain much useful information from daily energy consumption curves and will not be able to draw any conclusions for the consumption patterns of individual appliances and, secondly, where electricity is not used for space heating, energy costs refer more to fuels such as gas, oil or district heating.

A task for KNX

Also we have to question the usefulness of customers being informed about their heating costs when they do not get any information about the temperature in their rooms, the ventilation status of their windows or the occupation status of the apartment/house. How useful is it for customers to be informed about the cost of

electricity supply when they do not know the settings of their various appliances or whether rooms are occupied or not? Customers will be able to draw better conclusions about consumption patterns and potential savings or about optimising their usage patterns when they have information about the temperature in their rooms, the ventilation status of their windows and the occupation status. For this situation, KNX offers visualisation and automation solutions that can be combined with the metering of energy data. The result of this implementation is an active energy management, which can be used by customers to obtain information and, more importantly, will highlight any necessary changes of user pattern shown on the visual display.

Conclusion

In the concept for introducing Smart Metering the ROI (return on investment) or cost neutrality is of great importance. The investment is offset by increases in efficiency through on-line meter reading and billing and, particularly, by cost reductions in energy consumption. Any remaining 'cost gaps' can be closed by additional services. Possible options are continuous user information, monitoring devices, e.g. smoke detectors, glass breakage sensors, room heating controls, monitoring facilities for the vital functions of occupants etc. An important prerequisite for these services is the compatibility of the metering devices and instruments with the KNX world.

Arguments for Investors

KNX is an agreement between a huge number of large manufacturers that have developed a open bus structure, with which all the systems in your home can be regulated, linked and controlled. http://www.knx.org/knx-members/list/

Sustainable design with KNX

Unlimited scope for design in lighting, higher energy efficiency and reduced life cycle costs due to the only open worldwide standard for home and building systems technology.

Low Energy Consumption

There is a constant rise in the prices of oil and energy. But this offers opportunities for automation.

By correctly adjusting the parameters of heating, lighting, shutter control, etc… and the communication between them, you can drastically reduce your energy consumption.

Worldwide Standard http://www.knx.org/knx-standard/introduction/

This standard is based upon more than 20 years of experience in the market including its predecessors, EIB, EHS and BatiBUS. Over 200 member companies

worldwide from different application domains have almost 7000 **KNX** certified product groups in their catalogues. The **KNX** Association has partnership agreements with more than 30,000 installer companies in 100 countries and more than 60 technical universities as well as over 150 training centres.

International Standard, therefore future proof. KNX Technology has been approved as: International Standard ISO/IEC 14543-3, European Standard EN 50090, EN 13321-1 & EN1332-2, Chinese Standard GB/Z 20965 and US Standard ANSI/ASHRAE 135.

Open System

KNX is a Standard and over 200 companies bet on us.

You have an enormous and wide range of choice for the design of the components. Every taste can be catered for.

High Quality & Certified Products

KNX stand for high product quality: KNX Association requires a high level of production and quality control during all stages of the product life. Therefore all manufacturing members have to show compliance to ISO 9001 before they even can apply for a KNX product certification. And moreover, each device has to pass the test of the KNX test labs.

Facility Management

All appliances can be networked and integrated into the KNX systems.

Switch actuators switch all appliances, current sensors record operating states, water deteriation, detect leakages and report them...

All possible applications

KNX can be used for all possible functions / applications in home and building control ranging from lighting, shutter control to security, heating, ventilation, air conditioning, monitoring, alarming, water control, energy management, metering as well as household appliances, audio and lots more

Durability

The KNX system has been on the market for about 20 years, but even components of the first generation are still compatible with the present product line.

More so, those components are still in first-rate condition and do their work properly.

Flexibility

KNX supports all communication media, such as: Twisted Pair, Power Line, Radio Frecuency & IP/Ethernet.

KNX can be used in both new and existing buildings. Therefore KNX installations can be easily extended and adapted to the new needs as they arise.

Certification of products http://www.knx.org/knx-certification/of-products/

In order to establish the KNX Trademark as a token for quality and interoperability of home and building system engineering products (based on the KNX standard), *KNX Association* runs its certification scheme for products.

Requirements

If you, as a **member of KNX Association** wish to label a developed **KNX** product with the **KNX trademark**, one shall prove compliance to the following requirements:

- Quality system according to ISO 9001.
- European standard EN 50090-2-2 (covering such aspects as EMC, electrical safety, environmental conditions, of bus products) and an appropriate product standard. Compliance can be shown to ***KNX Association*** by the submission of a CE declaration.
- Volume 3 and Volume 6 of the **KNX** Specifications, the former being a toolbox of the **KNX** protocol features, the latter listing the allowed profiles of the **KNX** stack based on the toolbox as mentioned before.
- **KNX** Interworking requirements as regards standardised data types and (optionally) agreed functional blocks.

Procedure

For registration (entry of the product data in the central database of the ETS software tool for project design and commissioning) and certification, the applicant will have to contact **KNX Association's Certification Department**.

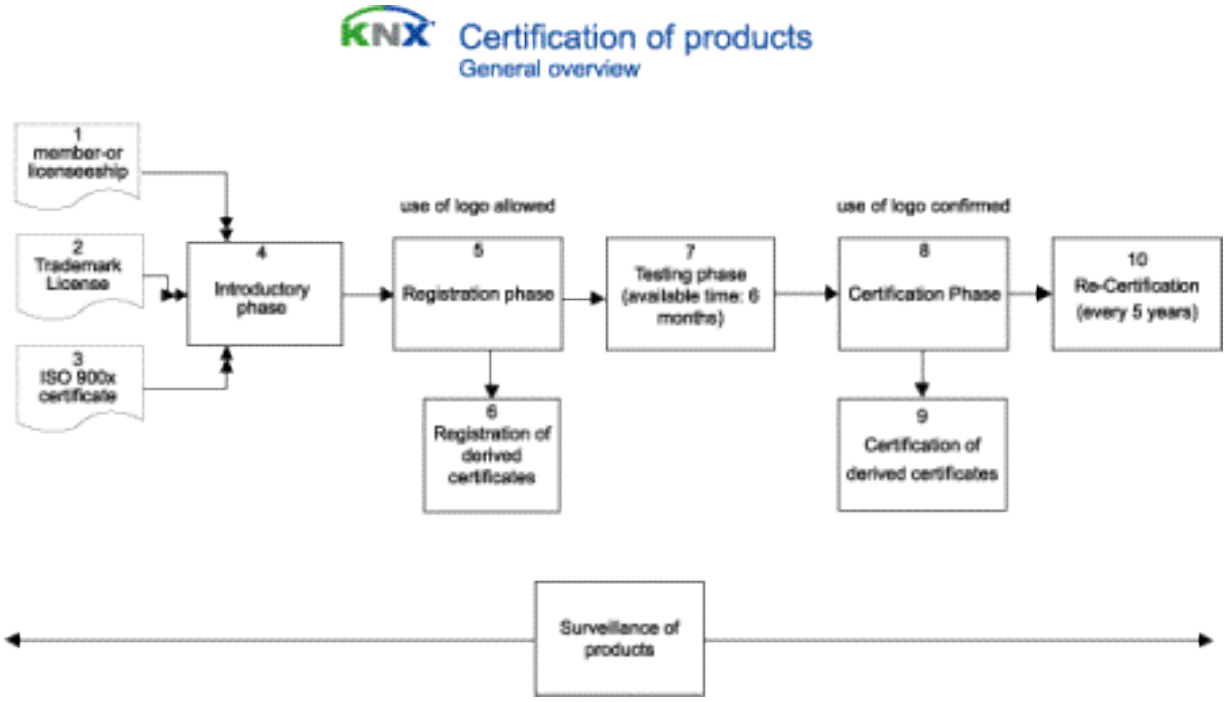
In order to allow a speedy market entrance, **products can be branded with the KNX trademark after Registration**. After that, the applicant has a maximum of 6 months to complete the testing of his products.

For **software testing**, the applicant has the choice of a number of **KNX** accredited test labs, authorised to carry out third party **KNX** system and interworking testing. For hardware testing, the applicant either has the various testing facilities at his premises or takes recourse to a test lab of his choice.

During software testing, emphasis is put on testing of uncertified parts only. As an example, a product based on an already tested **KNX** bus access unit (of which compliance to the system specifications has already been proven) must merely be submitted to the interworking tests.

A uniform test tool ensures that the manufacturer is able to prepare much of the software test campaign at his premises and provide this preparation as input for third party testing.

As soon as our certification department has received all test reports as regards system and interworking conformity together with the CE declaration for the hardware, a **certificate is issued confirming the use of the trademark** on the tested product.



Companies making Product Certified to use on a KNX Building Project

The complete list of Companies can be found here at knx.org

The KNX Association has partnership agreements with more than 30,000 installer companies in 100 countries and more than 60 technical universities as well as over 150 training centres.

Company	Country	Website
3Atel S.A.	Spain	www.3atel.es
3E s.r.l.	Italy	www.3e-srl.com
ABB Oy, Drives	Finland	www.abb.com/drives
ABB S.p.A.	Italy	www.abb.com/it
ABB Schweiz CMC Low Voltage	Switzerland	www.levyfils.ch
ABB Stotz-Kontakt GmbH	Germany	www.abb.de/stotzkontakt
ABUS Security-Center GmbH & Co. KG	Germany	www.abus-sc.com
ACX GmbH	Germany	www.acx-gmbh.de
Adiutec AG	Switzerland	www.adiutec.com
Advanced Digital Design, S.A.	Spain	www.advanceddd.com
AEM Spa	Italy	www.aem.net
AGC Glass European R&D center	Belgium	www.agc-glass.eu
Agenor automatika d.o.o.	Croatia	www.agenor.hr
Agentilo GmbH	Germany	www.agentilo.biz
AGFEO GmbH & Co. KG	Germany	www.agfeo.de
Airmaster A/S	Denmark	www.airmaster.dk
Albrecht Jung GmbH & Co. KG	Germany	www.jung.de
Altenburger Electronic GmbH	Germany	www.altenburger.de
Alton Electronics & Electricals Pvt. Ltd.	India	
Altra Corporacion Empresarial S.L.	Spain	www.altracorporacion.es
Alzinger & Vogel Softwareentwicklung GmbH	Germany	www.alzinger-vogel.de
AMBER wireless	Germany	www.amber-wireless.de
ambiHome GmbH	Germany	www.ambihome.de
AMX LLC	United States of America	www.amx.com
Apricum d.o.o.	Croatia	www.apricum.com
APT GmbH	Germany	www.apt.de
arcus-eds GmbH	Germany	www.arcus-eds.de
Ardan Smart Home L.P.	Israel	www.ardansh.com
Armour Home Electronics Ltd.	United Kingdom	www.armourhe.co.uk
ATEIS Middle East FZCO	United Arab Emirates	www.ateis.ae
Company	**Country**	**Website**
Aug. Winkhaus GmbH & Co. KG	Germany	www.winkhaus.com
AV Stumpfl GmbH	Austria	www.avstumpfl.com
b.a.b-technologie GmbH	Germany	www.bab-tec.de
b+b Automations- und Steuerungstechnik	Germany	www.bb-steuerungstechnik.de

GmbH		
Bachmann GmbH & Co. KG	Germany	www.bachmann.com
Balmart Sistemas Electronicos y de Comunicaciones S.L.	Spain	www.balmart.es
Basalte bvba	Belgium	www.basalte.be
Becker-Antriebe GmbH	Germany	www.becker-antriebe.com
Belden Wire & Cable B.V.	United Kingdom	www.belden-emea.com
Berker GmbH & Co. KG	Germany	www.berker.com
Bertelli & Partners	Italy	www.bertelli-partners.it
beyerdynamic GmbH & Co. KG	Germany	www.beyerdynamic.de
Bilton International	Austria	www.bilton.at
Bischoff Elektronik GmbH	Germany	www.bischoff-elektronik.de
BitWise Controls, LLC	United States of America	www.bitwisecontrols.com
Bleu Comm' Azur EURL	France	www.proknx.com
Blucasa s.r.l.	Italy	www.blucasa.it
BMS - Building Management Systems	Germany	www.bms-solutions.de
Bosch & Siemens Hausgeräte GmbH	Germany	www.siemens-hausgeraete.de
Bosch Thermotechnik GmbH	Germany	www.bosch.com
Brück Electronic GmbH (B.E.G.)	Germany	www.beg.de
Bticino s.p.a.	Italy	www.bticino.it
Bubendorff	France	www.bubendorff.com
Busch - Jaeger Elektro GmbH	Germany	www.busch-jaeger.com
CALAO Systems	France	www.calao-systems.com
Carel Industries S.p.A.	Italy	www.carel.com
CD Innovation LTD	Israel	www.cdinnovation.com
Ce2 GmbH	Austria	www.multicon.at
CIAT	France	www.ciat.fr
CILLICHEMIE ITALIANA s.r.l.	Italy	www.cillichemie.com
Colorado vNet	United States of America	www.coloradovnet.com
COMM-TEC Vertriebsgesellschaft für Communication Technology mbH	Germany	www.comm-tec.de
Condev-Automation	Germany	www.condev-automation.de
Control4 EMEA Limited	United Kingdom	www.control4.com
CONTROLtronic GmbH	Germany	www.controltronic.com
Coster Tecnologie Elettroniche S.p.A.	Italy	www.coster.eu
Crestron International	Belgium	www.crestron.eu
Company	**Country**	**Website**
Cytech Technology Pte Ltd.	Singapore	www.cytech.biz
CYTEL Technology AG	Germany	www.cytel.de
Daikin Industries Ltd	Japan	www.daikin.com

Dallmeier electronic GmbH & Co. KG	Germany	www.dallmeier-electronic.com
Data Design System GmbH	Germany	www.dds-cad.de
Datec Electronic AG	Switzerland	www.datec.ch
Dätwyler Cables	Switzerland	www.daetwyler-cables.com
Dehn + Söhne GmbH & Co. KG	Germany	www.dehn.de
Delta Dore S.A.	France	www.deltadore.com
Denro AG	Germany	www.denro.com
der Kluth GmbH	Germany	www.derkluth.de
DGA - Gebäudeautomation Deutschland GmbH	Germany	www.dg-automation.com
Dialogic Systems GmbH & Co. KG	Germany	www.home-cockpit.eu
Digital Elektronik Ges. m.b.H.	Austria	www.digital-elektronik.com
Dinuy S.A.	Spain	www.dinuy.com
Distech Controls SAS	France	www.distech-controls.eu
DIVUS GmbH	Italy	www.divus.eu
DKX S.L.	Spain	www.dkx-tech.com
Domatica - Global Solutions S.A.	Portugal	www.domaticasolutions.com
Domotica Labs S.r.L.	Italy	www.domoticalabs.com
DOMOTIK	Spain	www.domotik.cat
DUOTECNO bvba	Belgium	www.duotecno.be
Durable Technologies Ltd.	United Kingdom	www.knxbuildingcontrols.com
EAE Enerji Aydinlatma Elektrik San. ve Tic. A.S.	Turkey	www.eaeaydinlatma.com
EAS SYSTEMS GmbH	Germany	www.eas-systems.de
easyMOBIZ mobile IT solutions GmbH	Austria	www.ayControl.com/knx
Eaton Industries (Austria) GmbH	Austria	www.moeller.net
Eberle Controls GmbH	Germany	www.invensys.com
ECE Wurmitzer GmbH	Austria	www.wurmitzer.at
Eelectron srl	Italy	www.eelectron.com
EIBMARKT GmbH	Germany	www.eibmarkt.de
Elaborated Networks GmbH	Germany	www.elabnet.de
ELAN Home Systems	United States of America	www.elanhomesystems.com
ELDAT GmbH	Germany	www.eldat.de
Electrak	United Kingdom	www.electrak.co.uk
Electrium Sales Limited	United Kingdom	www.electrium.co.uk
Electroacustica General Iberica S.A.	Spain	www.egiaudio.com
Electrónica Integral de Sonido S.A.	Spain	www.eissound.com
Company	**Country**	**Website**
elero GmbH	Germany	www.elero.de
ELKA-Elektronik GmbH	Germany	www.elka.de

ELMOS Semiconductor AG	Germany	www.elmos.de
Elsner Elektronik GmbH	Germany	www.elsner-elektronik.de
ELSON Electronica S.A.	Spain	www.sminn.com
Elster SAS Division CORONIS	France	www.coronis.com
Embedded Systems, SIA	Latvia	www.openrb.com
Emcom Technology Inc.	Taiwan	www.emcom.com.tw
Enertex Bayern GmbH	Germany	www.enertex.de
EnOcean GmbH	Germany	www.enocean.com
ER Systems SA	Switzerland	www.ersystems.ch
ERGO3	Switzerland	www.ergo3.ch
ESA elettronica S.p.A.	Italy	www.esahmi.com
Esylux GmbH	Germany	www.esylux.com
Eutelsat SA	France	www.eutelsat.com
Exor International Inc.	United States of America	www.exorint.net
F.W. Oventrop KG	Germany	www.oventrop.com
FB S.r.l.	Italy	www.fbsrl.eu
Feller AG	Switzerland	www.feller.ch
FieldServer Technologies	United States of America	www.fieldserver.com
Fineline	United Kingdom	www.fineline.uk.com
Flexible & Specialist Cables (Caplink Ltd)	United Kingdom	www.fscables.com
FLXT GmbH	Germany	www.flxt.com
Fujitsu General Limited	Japan	www.fujitsu-general.com
function Technology AS	Norway	www.function-technology.com
GDS Digital Systems Ltd.	Greece	www.gds.com.gr
GECA s.r.l.	Italy	www.gecasrl.it
GePro Gesellschaft für Prozeßtechnik mbH	Germany	www.eib-tab.de
GEVA automation GmbH	Germany	www.geva.de
Gewiss S.p.A.	Italy	www.gewiss.com
GFR-Gesellschaft für Regelungstechnik und Energieeinsparung mbH	Germany	www.gfr.de
GFS GmbH	Germany	www.gfs-gmbh.de
Gira Giersiepen GmbH & Co. KG	Germany	www.gira.de
GLP Tronics GmbH	Germany	www.glp-tronics.com
Gorenje d.d.	Slovenia	www.gorenje.com
Griesser Electronic AG	Switzerland	www.griesser.ch
Guangzhou Hedong Electronics Co. Ltd. (HDL)	China	www.hdlchina.com
Guangzhou Tantron Electronic Co. Ltd.	China	www.tantron.com.cn
Company	**Country**	**Website**
Hager Holding GmbH	France	www.hager.com

Company	Country	Website
HEP Tech. Co. Ltd.	Taiwan	www.hepgroup.net
Herbert Waldmann GmbH & Co. KG	Germany	www.waldmann.com
Herholdt Controls srl	Italy	www.hhcontrols.com
HighDom S.L.	Spain	www.highdom.com
Home Systems Consulting SpA	Italy	www.homesystemconsulting.com
Honeywell Customized Comfort products	The Netherlands	www.honeywell.nl
Hugo Müller GmbH & Co. KG	Germany	www.hugo-mueller.de
Hunter Douglas Europe BV	The Netherlands	www.hunterdouglascontract.com
ibs intelligent building services gmbh	Germany	www.macmyhome.de
ICONAG-Leittechnik GmbH	Germany	www.iconag.de
IDOM Concept	France	www.idomconcept.eu
iKNiX	Germany	www.empure.de
Illumination Network Systems GmbH	Austria	www.illuminetsys.com
Infineon Technologies AG	Germany	www.infineon.com
Ingenium Ingeniería y Domótica S.L.	Spain	www.ingeniumsl.com
InnoTeam bv	The Netherlands	www.innoteam.nl
Insta Elektro GmbH	Germany	www.insta.de
Insys Microelectronics GmbH	Germany	www.insys-tec.de
Intesis Software s.l.	Spain	www.intesis.com
IPAS GmbH	Germany	www.ipas-products.com
IRCA SpA - Zoppas Industries	Italy	www.zoppas.com
iRidium Mobile Ltd.	Russia	www.iridiummobile.net
ise Individuelle Software-Entwicklung GmbH	Germany	www.ise.de
IT Gesellschaft für Informationstechnik mbH	Germany	www.it-gmbh.de
JoongAng Control Co., Ltd.	South Korea	www.joas.co.kr
Kalpa srl	Italy	www.kalpa.it
Kellendonk Elektronik GmbH	Germany	www.kellendonk.de
KNX1	The Netherlands	www.knxone.com
KomfortKlik	Slovenia	www.comfortclick.com
KOMTECH GmbH	Germany	www.komtech.de
LDS Intelligence Technology Co. Ltd.	China	www.lds-china.com
Legrand S.A.	France	www.legrandelectric.com
LIFEDOMUS	France	www.lifedomus.com
Lingg & Janke OHG	Germany	www.lingg-janke.de
Lite-Puter Enterprise Co. Ltd.	Taiwan	www.liteputer.com.tw
Lithoss	Belgium	www.lithoss.com
LOYTEC electronics GmbH	Austria	www.loytec.com
Lutron Electronics Co., Inc.	United States of America	www.lutron.com/knx

M. Züblin AG	Switzerland	www.zublin.ch
Macostar Hong Kong Ltd	China	www.macostar.com
MACTECH Co. Ltd.	Kingdom of Saudi Arabia	www.mactech-knx.com
Makel Elektrik Malz. San. Tic. A.S.	Turkey	www.makel.com.tr
Matrikon	Canada	www.matrikonopc.com
MBS GmbH	Germany	www.mbs-software.de
MDT technologies GmbH	Germany	www.mdt.de
Mecel s.l.	Spain	www.mecel.es
Merten GmbH & Co. KG	Germany	www.merten.com
Mnextec Inc	South Korea	www.mnextec.com
Möhlenhoff GmbH	Germany	www.moehlenhoff.de
MTC maintronic GmbH	Germany	www.maintronic.de
mySmart CTI	Australia	www.mysmartcti.com.au
Nagel Elektroanlagen	Germany	www.nagel-kandel.de
Nanjing Tiansu Automation Control System Co. Ltd.	China	www.tiansu-china.com
NanoSense	France	www.nano-sense.com
Nautibus electronic GmbH	Germany	www.nautibus.de
Nechi Ingenieria s.l.p.	Spain	www.nechiingenieria.com
NETxAutomation Software GmbH	Austria	www.netxautomation.com
Newron System	France	www.newron-system.com
Ningbo Dooya Mechanic & Electronic Technology Co., Ltd.	China	www.dooya.com
Nomos System AG	Switzerland	www.nomos-system.com
Nordwestdeutsche Zählerrevision GmbH & Co. KG	Germany	www.nzr.de
Normalux	Spain	www.alumbradointeligente.com
NuVo Technologies LLC	United States of America	www.nuvotechnologies.com
NWC - Network Concept, Soluções Tecnologicas, Ltda	Brazil	www.isimplex.com
ON Semiconductor	Belgium	www.onsemi.com
Opternus Components GmbH	Germany	www.opternus.com
Panasonic Corporation	Japan	www.panasonic.net
PEAR Automation GmbH	Austria	www.pear-automation.at
Philips	Australia	www.dynalite-online.com
Pipelife Nederland B.V.	The Netherlands	www.pipelife.com
PKC Electronics Oy	Finland	www.pkcgroup.com
POOHCO Miroslaw Michalski	Poland	www.poohco.pl
preussen automation GmbH	Germany	www.preussen-automation.eu
Pulse Technologies FZ-LLC	United Arab Emirates	www.pulseliving.com

Company	Country	Website
QEES	Denmark	www.qees.eu
Rademacher Geräte Elektronik GmbH & Co. KG	Germany	www.rademacher.de
Radiocrafts AS	Norway	www.radiocrafts.com
Remeha B.V.	The Netherlands	www.remeha.com
Renson Ventilation NV	Belgium	www.renson.eu
Research & Production Association "SEM"	Russia	www.okb.nposem.ru
Revox GmbH	Germany	www.revox.de
Ritto GmbH & Co. KG	Germany	www.ritto.de
S-SYS bvba	Belgium	www.batec.biz
S. Siedle & Söhne, Telefon- und Telegraphenwerke OHG	Germany	www.siedle.de
Savant Systems, LLC	United States of America	www.savantav.com
SBS S.p.A.	Italy	www.sbs-power.com
Schenker Storen AG	Switzerland	www.storen.ch
Schneider Electric Denmark A/S	Denmark	www.lk.dk
SCHNEIDER Electric Industries S.A.	France	www.schneider-electric.com
Schüco International KG	Germany	www.schueco.com
se Lightmanagement AG	Switzerland	www.se-ag.ch
Sensio AS	Norway	www.sensio.no
Seyoung Electronics (Guangzhou) Co., Ltd.	China	www.iisfree.com.cn
Shanghai LongChuang Automation Control System Co., Ltd.	China	www.longchuang.com
Shenzhen Fanhai Sanjiang Electronics Co., Ltd.	China	www.fhsjdz.com
Shenzhen Huayuan Display Co., Ltd.	China	www.huayuanlcd.com
Siemens AG	Germany	www.siemens.com
Siemens Schweiz AG	Switzerland	www.sbt.siemens.com
Simon S.A.	Spain	www.simon-sa.es
Sinapsi srl	Italy	www.sinapsitech.com
SIRLAN Technologies	France	www.sirlan.com
Smart-Solution Group Limited	China	www.smarthomebus.com
SMARVIS GmbH	Germany	www.qundis.com
Somfy GmbH	Germany	www.somfy.com
Sommer Antriebs- und Funktechnik GmbH	Germany	www.sommer.eu
Steinel GmbH	Germany	www.steinel.de
STG-BEIKIRCH GmbH & Co. KG	Germany	www.stg-beikirch.de
T2M2 GmbH	Germany	www.easyKNX.de
TA Heimeier GmbH	Germany	www.heimeier.com
Tapko Technologies GmbH	Germany	www.tapko.de

Company	Country	Website
Targa GmbH	Germany	www.targa.de
tci GmbH	Germany	www.ambiento.de
Techem Energy Services GmbH	Germany	www.techem.de
TECHNO-TREND	Austria	www.techno-trend.at
Texas Instruments	United States of America	www.ti.com
Theben AG	Germany	www.theben.de
Theben HTS AG	Switzerland	www.theben-hts.ch
THERMOKON Sensortechnik GmbH	Germany	www.thermokon.de
tisco GmbH	Austria	www.tisco.at
TOKKA SP. z o.o.	Poland	www.tokka.pl
Top Services	Austria	www.top-services.at
Tridium Europe Ltd	United Kingdom	www.tridiumeurope.com
Tridonic GmbH & Co. KG	Austria	www.tridonicatco.com
trivum technologies GmbH	Germany	www.trivum.com
Universal Remote control, Inc. (URC)	United States of America	www.universalremote.com
Uponor corporation	Finland	www.uponor.com
Vaillant GmbH	Germany	www.vaillant-group.com
VANTAGE EMEA nv	Belgium	www.vantage-emea.com
VELUX A/S	Denmark	www.velux.com
Vestamatic GmbH	Germany	www.vestamatic.com
Viatron GmbH	Germany	www.viatron.de
Video-Star Electronics Co. Ltd.	China	www.video-star.com.cn
VIDEOCOM Elektronik ve Bilgisayar A.S.	Turkey	www.videocom.com.tr
Viega GmbH & Co. KG	Germany	www.viega.com
Viessmann Elektronik GmbH	Germany	www.viessmann.com
VIKO Elektrik Elektronik End. San. Ve Tic A.S.	Turkey	www.thea.com.tr
Vimar SpA.	Italy	www.vimar.it
VISAM GmbH	Germany	www.visam.de
Vitheia AS	Norway	www.vitheia.com
VITY	France	www.vity.com
Wago Kontakttechnik GmbH	Germany	www.wago.com
Walther Werke	Germany	www.walther-werke.de
WAREMA Renkhoff SE	Germany	www.warema.de
Weinzierl Engineering GmbH	Germany	www.weinzierl.de
Wieland Electric GmbH	Germany	www.wieland-electric.com
Wilhelm Huber + Söhne GmbH & Co. KG	Germany	www.whd.de
Wilhelm Rutenbeck GmbH & Co.	Germany	www.rutenbeck.com
WindowMaster A/S	Denmark	www.windowmaster.com

Woertz AG	Germany	www.woertz.ch
Yönnet Bilisim Egt. ve Dan. Hizm. Ltd. Sti.	Turkey	www.yonnet.com.tr
Company	**Country**	**Website**
Zennio Avance y Tecnología s.l.	Spain	www.zennio.com
ZET Technology	Turkey	www.zetteknoloji.com
ZF Friedrichshafen AG	Germany	www.cherry.de
Zumtobel AG	Austria	www.zumtobel.com

Reference Projects

Gateway to new China

Press release **KNX Association cvba**

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Olympic gold for KNX

The largest airport building in the world (Terminal 3 at Beijing Airport) are all controlled using KNX technology. Terminal 3 covers an area of around 1.3 million square meters, making it the world's largest building to date. That said, the entire Terminal takes up 17 present more floor space than all five Heathrow terminals.

Olympic venues and the world's largest airport building realised with KNX technology

More than 11,000 KNX devices went into the construction of Terminal 3 at Beijing Capital International Airport. They regulate the lighting, air-conditioning and heating systems, and transmit error messages. Beijing Airport' Terminal 3, which boasts an area of 986,000 square metres, is the largest airport building in the world. It opened in February 2008. **That means that China's two most important airports – Shanghai and Beijing – are now both equipped with KNX technology.**

At present 35 million passengers pass through the airport every year and planners expect this number to reach 50 million in 2012. Terminal 3 already has the dimensions to handle this volume of traffic, indeed it is designed for up to 60 million passengers a year. With numbers like this it is vital that environmental sustainability play a major role.

Now that the Olympic Games in China are over, the athletes are not the only ones who are celebrating: a gold medal goes to KNX technology too!

It came through its Olympic debut with flying colours.

The Olympic stadium (the "Bird's Nest"), the Olympic swimming arena (the "Water-Cube"), the main arenas used at the Olympic Games in Beijing, are automated with KNX technology.

In the spectacular "Bird's Nest", for example, operating data from all electrical components are gathered and monitored via KNX. And the entire lighting system is controlled by KNX. That includes the stunning lighting displays which were enjoyed by billions of viewers around the globe at the opening and closing ceremonies of the 29th Olympic Games.

The same goes for the world's largest aquatics centre, in which the organisers of the Games invested 100 million euro. This building, too, conceals no shortage of KNX technology, for example for time control and regulation of energy consumption. The wide-ranging lighting effects in the building envelope of the swimming arena are also created using KNX. In short: KNX is fully "Olympic-tested"!

Terminal 5 Heathrow in London

The most innovative airport in the world (at time of opening - then came Beijing, and Shanghai airports, done with KNX Systems)

Terminal 5 is designed to receive more than 30 Million passengers in a year. Its infrastructure needs to be well lit and safely maintained. After careful evaluation the BBA decided to use

KNX for the bus system, which offers safety, stability and interoperability: The de-central location of KNX device massively reduces the amount of necessary wiring. 64,000 DALI- light fixtures are integrated through KNX-DALI gateways. The KNX systems are connected through KNX-IP-Gateways over the Campus IP network to the central management system.

Terminal 5, developed by Richard Rogers and officially opened in 2008 goes a long way to ease the load for the London Heathrow hub. Moreover, the prize-winning building offers attractive views thanks to its glass roof construction and interiors flooded with light.

Originally planned to handle 40 million passengers, in 2007 some 67 million passengers squeezed their way through the four halls of London Heathrow's arrival and departure terminals. Even minor hitches could trigger a whole chain of delays. Terminal 5 is the biggest building construction project in England which spreads over several kilometres. The new expansion was launched from the British Airports

Authority BAA and will make Heathrow one of the largest and probably most innovative airports in the world. The project includes two main halls, an energy centre, parking areas, service tunnels, a train network, VIP areas, an airport control tower and several other areas.

The undulating roof of the main building – Europe's largest freestanding building – soon became the terminal's trademark. At a height of 37 meters, a protective glass hull envelops Terminal 5 from the entrance to the runway and gives passengers the feeling they have already come a little closer to the skies.

A category 6 IP network which offers double redundancy and additional backup strategies for a reliable and secure network was installed for Terminal 5. In addition the entire system was split up in so-called "IP worlds" – every world connects a certain number of KNX lines. This project includes a total of 236 KNX gateways which are connected to more than 910 lines.

This prevents an overload on the bus and offers 20% extra capacity for future expansion. All the KNX components were delivered on pre-wired control panels for rational installation.

One of the BAA demands was the monitoring and operating of all sub systems from a single building management system. The KNX systems are integrated via OPC-Server (OPC = OLE for Process Control, software interface for windows-based automation systems).

***KNX* is successfully improving the quality of life and work in thousands of buildings all over the world.**

Airport / Rail Station / Underground, Apartment / Condominium, Banks, and more. See Project Profiles by clicking on the Reference

(Click on reference name for further details. Click on table title to sort list.)

Reference	Building Type	Country
MS Stuttgart	Other	Germany
Airbus A380 Final Assembly Hall	Industrial / Manufacturing Complex	Germany
ABB Tooling Shop	Industrial / Manufacturing Complex	Germany
Cologne-Bonn Airport	Airport / Rail Station / Underground	Germany
HOB-Center	Event / Leisure Facility	Germany
Mozarteum	School / University	Austria
Office Park 1	Commercial Office Building	Austria

Hotel Minsk	Hotel	Belorussia
Hospital Bielefeld	Hospital / Clinic / Care Home	Germany
Private House Familie Ederle	Private House / Villa	Germany
Private House Familie Schilder	Private House / Villa	Germany
Frauenkirche Dresden	Church / Museum / Library	Germany
Al Azher Park	Event / Leisure Facility	Egypt
Artok Villa	Private House / Villa	Egypt
Burj Al-Arab International Stadium	Event / Leisure Facility	Egypt
Four Seasons Hotel	Hotel	Egypt
Nile City Towers	Commercial Office Building	Egypt
Sharm El Sheikh Airport	Airport / Rail Station / Underground	Egypt
Kotsovolos Megastore	Retail Shop / Shopping Centre	Greece
Lemonis	Commercial Office Building	Greece
Residential Villa in Athens	Private House / Villa	Greece
Ancient Olympia Museum	Church / Museum / Library	Greece
RC Tech	Commercial Office Building	Greece
Thessaloniki Airport Makedonia	Airport / Rail Station / Underground	Greece
Blue Spa	Hotel	Greece
Reference	**Building Type**	**Country**
Captain's House	Hotel	Greece
Georgiadis	Retail Shop / Shopping Centre	Greece
Private House Family Savia	Private House / Villa	Switzerland
Top of City	Apartment / Condominium	China
ShiMao SheShan Villa	Apartment / Condominium	China
Beijing Airport Terminal 1	Airport / Rail Station / Underground	China
Triemli Spital	Hospital / Clinic / Care Home	Switzerland
ShenZhen Airport	Airport / Rail Station / Underground	China
Chengdu Shuangnan Ito Yokado	Retail Shop / Shopping Centre	China
Golden Chicken Lake Hotel	Hotel	China
Le Reve Tower	Apartment / Condominium	U.A.E
Seven Star Conference Palace Hotel	Hotel	U.A.E
Villa Kataria	Private House / Villa	U.A.E

Marina Mall Abudhabi	Retail Shop / Shopping Centre	U.A.E
Al Raha Beach Hotel & Shopping Mall	Hotel	U.A.E
Al Areen Beach Resorts & Spa, Bahrain	Hotel	Bahrain
Khalifa Stadium and Sports Hall	Event / Leisure Facility	Qatar
Grand Cineplex	Event / Leisure Facility	U.A.E
Tianjin Museum	Church / Museum / Library	China
Terrassenhaus Wollerau	Private House / Villa	Switzerland
TechHome	Private House / Villa	Switzerland
VZM Ittigen	Commercial Office Building	Switzerland
Wehrliweg	Private House / Villa	Switzerland
Aquapura	Hotel	Portugal
Hotel Ipoint	Hotel	Italy
IO-1	Commercial Office Building	Poland
Alfanar Company	Commercial Office Building	Saudi Arabia
Villa Sager	Private House / Villa	Saudi Arabia
Francescat Head office	Commercial Office Building	Italy
Hospital Steyr	Hospital / Clinic / Care Home	Austria
Bio-Security Center	Industrial / Manufacturing Complex	Germany
Mercedes Pappas	Other	Austria

Reference	Building Type	Country
Raiffeisen Central Bank	Bank / Credit Institute	Austria
Salzburg Airport	Airport / Rail Station / Underground	Austria
Secondary Modern School	School / University	Austria
Townhall Linz	Municipal / Public Building	Austria
Prague Sazka Stadium	Event / Leisure Facility	Czech Republic
Prague-Ruzyne Airport	Airport / Rail Station / Underground	Czech Republic
Alpine hotel Bitschnau	Hotel	Austria
Car Dealership Geigner	Other	Austria
Treehouse	Private House / Villa	Austria
Helmut List Hall	Event / Leisure Facility	Austria
Hotel Zimba	Hotel	Austria
Monastry	Church / Museum / Library	Austria

Hotel Stubai	Hotel	Austria
Private House Molzegg	Private House / Villa	Austria
Private House Seebenstein	Private House / Villa	Austria
AZ Football Stadium	Event / Leisure Facility	Netherlands
Museum of Adra	Church / Museum / Library	Spain
Eibar Town Hall	Municipal / Public Building	Spain
Hotel Puerta America	Hotel	Spain
Hotel Villapidierna	Hotel	Spain
Parlament Narvarra	Municipal / Public Building	Spain
Ted Baker House	Private House / Villa	United Kingdom
Ericsson	Commercial Office Building	Spain
Villa in Prague	Private House / Villa	Czech Republic
National Commercial Bank	Bank / Credit Institute	Saudi Arabia
Abbott Office	Commercial Office Building	Pakistan
Comprehensive School Werne	School / University	Germany
School Center Neckargemünd	School / University	Germany
Scholz Machine Construction	Commercial Office Building	Germany
Wümme School Ottersberg	School / University	Germany
ABB Office Building Odense	Commercial Office Building	Denmark
Modern Art Museum Rovereto	Church / Museum / Library	Italy

Reference	Building Type	Country
Faculty for Engineering, Trento	School / University	Italy
Rondo / Marienmühle	Apartment / Condominium	Austria
Fire Station Antwerp	Municipal / Public Building	Netherlands
Steelcase Tower Malaysia	Commercial Office Building	Malaysia
Sakalski Building Krakow	Commercial Office Building	Poland
Nursing Home Cham	Hospital / Clinic / Care Home	Switzerland
Vodafone Administration Istanbul	Commercial Office Building	Turkey
Head Office Ceska Pojistovna	Commercial Office Building	Czech Republic
Head Office CSOB	Commercial Office Building	Czech Republic
Secondary School Bezau	School / University	Austria
National Library Singapore	Municipal / Public Building	Singapore

Condominium Iten Family	Apartment / Condominium	Switzerland
Exibition Spaces Hans Hassler AG	Retail Shop / Shopping Centre	Switzerland
Grand Hotel Kempinski Geneva	Hotel	Switzerland
Ferrari Shop Geneva	Retail Shop / Shopping Centre	Switzerland
Private House Stutz	Private House / Villa	Switzerland
RIWAG Türen	Industrial / Manufacturing Complex	Switzerland
Adult education centre, Zug	School / University	Switzerland
Private House Family Schmidt	Private House / Villa	Germany
Shanghai International Port Group	Commercial Office Building	China
Maintenance Center of the German Federal Railway	Industrial / Manufacturing Complex	Germany
Music Centre Helsinki	Event / Leisure Facility	Finland
Princess Noura University for Women	School / University	Saudi Arabia
Mövenpick Hotel Riyadh	Hotel	Saudi Arabia
ABB Central Research Center	Commercial Office Building	Switzerland
Palazzo Regione Molise	Municipal / Public Building	Italy
Accenture Headquarter	Commercial Office Building	Italy
Kingkey 100	Commercial Office Building	China

http://www.knx.org/knx-partners/scientific/list/

KNX Association is the creator and owner of the **KNX** technology – the worldwide STANDARD for all applications in home and building control, ranging from lighting control to various security systems, heating, ventilation, air conditioning, monitoring, alarming, water control, energy management, metering as well as household appliances, audio and shutter control, and lots more. The technology can be used in new as well as in existing home and buildings.

University	Division/faculty/extra	Department	Country
AGH University of Science and Technology	Faculty of Management		Poland
AGH- University of Science and Technology	Faculty of Electrical Engineering	Institute of Electric Drives Automation and Industrial Equipments	Poland
Brno University of Technology	Faculty of Electrical Engineering & Communication	Dept. of Electrical Engineering	Czech Republic
Carl von Ossietzky Universität Oldenburg	Department of Environmental Computer Science		Germany
CITEA- UPC	ETSEIB		Spain
Dublin Institute of Technology	Dept. of Electrical Services Engineering	School of Electrical Energy Systems, Faculty of Engineering	Republic of Ireland
Edith Cowan University	School of Engineering		Australia
EPITECH European Institute of Technology	EPITECH Innovative Projects		France
Fachhochschule Deggendorf. University of Applied Sciences			Germany
Fachhochschule Dortmund	University of Applied Sciences & Arts	FB3, Informations- und Elektrotechnik	Germany
Fachhochschule Emden/Leer	University of Applied Science	Fachbereich Technik, Abt. E+I	Germany
University	**Division/faculty/extra**	**Department**	**Country**
Fachhochschule Konstanz	University of Applied Science	Technische Informatik	Germany
Fachhochschule Nordwestschweiz	Hochschule für Technik	Institut Power and Signal Processing	Switzerland
Fachhochschule Südwestfalen	Fachbereich Elektrotechnik und Informationstechnik		Germany
Fachhochschule Westküste	Hochschule für Wirtschaft und Technik	Facult.: Elektro- und Informationstechnik	Germany

Fraunhofer Institute for Secure Information Technology SIT	Secure Processes & Infrastructure		Germany
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.	Fraunhofer IMS Duisburg		Germany
Gdansk University of Technology	Faculty of Electrical and Control Engineering		Poland
Guarda Polytechnic Institute	School of Management & Technology		Portugal
Hochschule Bremen		Institut für Informatik und Automation - IIA	Germany
Hochschule für Angewandte Wissenschaften Hamburg	Fakultät Technik und Informatik		Germany
Hochschule Mannheim	University of Applied Sciences	Fakultät für Elektrotechnik	Germany
Hochschule Merseburg (FH)	University of Applied Siences	FB Informatik und Kommunikationssysteme	Germany
Hochschule RheinMain	University of Applied Science		Germany
Hochschule Rosenheim	ANG		Germany
Hogeschool Utrecht	Faculteit Natuur & Techniek		The Netherlands
IES Antonio José Cavanilles	Departamento de Electricidad y Electrónica		Spain
IES El Palmeral	Electrical & Electronics Department		Spain
IES Pedro Cerrada	Departamento de Electronica		Spain
University	**Division/faculty/extra**	**Department**	**Country**
INS La Garrotxa	Electrical & Electronics Department		Spain
Italian National Research Council	CNR - Istituto di Scienza e Tecnologie	Domotics Lab	Italy

	dell'Informazione		
KaHo Sint-Lieven	Department Gent, Electro technique		Belgium
KATHO		Departement Technologie en informatica - VHTI	Belgium
Katholieke Hogeschool Kempen	Technologie Geel		Belgium
Lessius Mechelen	Campus De Nayer	Association Catholic University Leuven	Belgium
Lucerne University of Applied Sciences and Arts	CEESAR - iHomeLab	iHomeLab	Switzerland
Lycée des Métiers Charles de Gaulle		Section Technicien Supérieur en Domotique	France
Lycée du Grésivaudan de Meylan	BTS IRIS		France
National University of Singapore	Dept. of Building		Singapore
Northumbria University	School of Computing, Engineering and Information Sciences	Ellison Building, Room E002	United Kingdom
Otto-von-Guericke-Universität Magdeburg	Institute für Mikro- und Sensorsysteme	Lehrstuhl Halbleitertechnologie	Germany
Pamukkale University	Energy Research & Application Centre		Turkey
Politecnico di Bari	I Facolta di Ingegneria	Dipartimento di Elettrotecnica ed Elettronica	Italy
Politecnico di Torino	Dipartimento di Automatica e Informatica		Italy
Polytechnic Institute of Castelo Branco	School of Technology		Portugal
Republic Polytechnic	School of Engineering		Singapore
University	**Division/faculty/extr**	**Department**	**Country**

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Sivitanidios Public School of Arts and Crafts			Greece
Slovak University of Technology in Bratislava	Faculty of Electrical Engineering and Information Technology	Institute of Control and Industrial Informatics	Slovakia
Staatliche Studienakademie Bautzen		Studienrichtung Elektrotechnik	Germany
Swiss Federal Institute of Technology , Lausanne		Laboratory of Solar Energy & Building Physics (LESO-PB)	Switzerland
Technical University of Denmark	Photonics Engineering Department	Networks and Services Group	Denmark
Technical University of Lodz		Computer Centre	Poland
Technical University of Prague	Faculty of Electrical Engineering	Dept. of Control Engineering	Czech Republic
Technische Fachhochschule Georg Agricola zu Bochum	Labor für Gebäudeautomation		Germany
Technische Universität Darmstadt	Fachgebiet Regenerative Energien		Germany
Technische Universität München	Heinz-Nixdorf Lehrstuhl für Medizinische Elektronik		Germany
Technological Educational Institute of Western Macedonia	School of Technological Applications	Dept. of Electrical Engineering, Renewable Energy Sources Lab.	Greece
Tomas Bata University in Zlin	Faculty of Applied Informatics		Czech Republic
Universidad Carlos III de Madrid	Departamento de Ingeniería Electrica		Spain
Universidad de León	Instituto de Automatica y Fabricacion	Area de Automatica y Control (AAF-IAF)	Spain
Universidad Ort Uruguay	Engineering Faculty		Uruguay

Universidad Politécnica de Madrid	Escuela Técnica Superior de Telecomunicaciones	Office D108	Spain
Universidad Politécnica de Madrid	Centro de Domotica Integral		Spain

University	Division/faculty/extra	Department	Country
Universidad Politecnica de Valencia (UPV)	Instituto de Aplicaciones de las Tecnologias de la informacion y las Comunicaciones Avanzadas (ITACA		Spain
Universidad Pública de Navarra	Departament de Ingeniería Eléctrica y Electrónica	E.T.S. de Ingenieros Industriales y de Telecommunicación	Spain
Universität Dortmund	Fakultät für Elektrotechnik und Informationstechnik	Lehrstuhl für Datenverarbeitungs systeme	Germany
Université de Rennes 1	Ecole supèrieure d'ingénieur de Rennes		France
Université Joseph Fourier	Laboratoire d'Informatique de Grenoble	Multicom team	France
Université Paris Sud	IUT Cachan	Dépt. Génie Electrique et Informatique Industrielle	France
University of Applied Sciences Biberach	Building Services Engineering		Germany
University of Applied Sciences Technikum Wien	Department of Embedded Systems		Austria
University of Bath		Bath Institute of Medical Engineering	United Kingdom
University of Belgrade	Faculty of Mechanical Engineering	Innovation Centre of Mechanical Engineering Faculty	Serbia
University of Catania	Faculty of Engineering	Dept. of Computer & Telecommunication	Italy

University of Hong Kong	Dept. of Mechancial Engineering		Hong Kong
University of Las Palmas G.C.		Centro de Tecnologia de los Sistemas y la Inteligencia Artificial (CETSIA)	Spain
University of Turku	Dept. of Information Technology,	Electronics Productization Research Group	Finland

University	Division/faculty/extra	Department	Country
Upper Austria University of Applied Sciences	School of Informatics/Communication/Media	Degree Program Mobile Computing	Austria
Växjö Yrkeshögskola	Styrning av intelligenta hus		Sweden
Vienna University of Technology		Automation Systems Group	Austria
VSB-Technical University of Ostrava		Dept. of Measurement and Control	Czech Republic
Warsaw University of Technology		Institute of Electrical Power Engineering	Poland
Warsaw University of Technology	Institute of Telecommunications		Poland
Westsächsische Hochschule Zwickau (FH)		Fachbereich Elektrotechnik	Germany
Wroclaw University of Technology	Institute of Electrical Power Engineering		Poland

Thanks for your Time,

The KNX New Zealand National Group