

# **Reference List**

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## Reference List

Below is listed a selection of the projects for which perpendo GmbH or its founders in a previous function were mainly responsible. In total concepts and detailed solutions have been developed for more than 400 projects. This reference list is structured as follows:

<b>1</b>	<b>Energy management</b> .....	<b>1</b>
<b>2</b>	<b>Efficiency analyses of existing buildings</b> .....	<b>7</b>
2.1	Trade and Industry .....	7
2.2	Administration buildings .....	14
2.3	Other buildings .....	15
<b>3</b>	<b>Energy design for new buildings / redevelopment</b> .....	<b>16</b>
3.1	Trade and Industry .....	16
3.2	Administration buildings .....	19
3.3	Other buildings .....	24
<b>4</b>	<b>Research &amp; Development</b> .....	<b>27</b>
<b>5</b>	<b>Other</b> .....	<b>29</b>
5.1	Carbon Footprint .....	29
5.2	Energy auditing of medium-sized enterprises .....	29
5.3	PIUS-Check .....	32

# 1 Energy management

## **Energy management system of Sanner GmbH at Bensheim (Consulting & Support, 2015 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 at the main site Bensheim leading to successful certification, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the formulation of energy policy and energy targets, and assistance integrating the EnMS into existing management systems, setup of index of legal provisions and conducting internal audits

Client..... Sanner GmbH, Bensheim

## **Energy management system for Aachen media house (Consulting & Support, 2015 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 for the scope of "operating publishing companies of all kinds, further processing of press products of all kinds, services and consulting in the field of telecommunications", drafting and development of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the formulation of energy policy and energy targets, setup of index of legal provisions, management of the project-related workshops to coordinate the appropriate organisational action and documentation, conducting internal audits, preparation of the management reviews, consultation during certification

Client..... Zeitungsverlag Aachen GmbH, Aachen

## **Energy management system according to DIN EN ISO 50001 for the site Friedrichshafen of the Airbus Defence and Space GmbH (Consulting, 2015)**

Development and implementation of an energy management system according to DIN EN ISO 50001 at the site Friedrichshafen, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the formulation of energy policy and energy targets, assistance integrating the EnMS into existing management systems, expansion of the internal energy knowledge in the context of the standard, conducting internal audits

Client..... Airbus Defence and Space GmbH, Friedrichshafen

## **Trelleborg Automotive Germany GmbH in Breuberg (Conception, 2015)**

Drawing up of functional specifications for building up an effective energy controlling system, defining the requirements for the software system and the data communication concept, preselection of suitable suppliers, monitoring the selection and contract award process

Client..... Trelleborg Automotive Germany GmbH, Breuberg

## **Energy management system of Abbott Laboratories GmbH (Consulting & Support, 2014 - 2016)**

Preparation for and consulting during the introduction and certification of an energy management system according to German standard DIN EN ISO 50001 for the scope of "development, registration and support of established medicines" in Hannover and "manufacturing of pharmaceutical products" at the site in Neustadt am Rübberge, integration of EnMS in existing management structures, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency, management of the project-related workshops to coordinate the appropriate organisational action and documentation, conducting energy related training courses as well as internal audits and compliance audits, consultation during certification

Client..... Abbott Laboratories GmbH, Hanover

## **Energy management system of DIMENSION-POLYANT GmbH (Consulting & Support, 2014 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 for the scope of "Development, production and distribution of sailcloth and technical textiles for industrial applications", management of the project-related workshops to coordinate the appropriate organisational action and documentation, drafting of appropriate documents and instruments for the illustration of the energy management system, development of useful tools for monitoring and analysis of energy consumption, setup of index of legal provisions, conducting training courses as well as internal audits, consultation during certification

Client..... DIMENSION-POLYANT GmbH, Kempen

**Energy management system of WISCO Tailored Blanks GmbH  
(Consulting & Support, 2014 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 for the scope of "production of laser-welded body components" at the sites Duisburg-Hüttenheim, Duisburg-Beeck and Gelsenkirchen, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the formulation of energy policy and energy targets, expansion of the internal energy knowledge in the context of the standard, setup of index of legal provisions, development of the reporting for the documentation of the energy targets, conducting internal audits, consultation during certification

Client..... WISCO Tailored Blanks GmbH, Duisburg

**Energy management system of the Teutoburger Ölmühle GmbH and the Ölmühle Lehen GmbH  
(Consulting & Support, 2014 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 for the scope of "processing of conventional and organically grown seeds to high quality edible oils, as well as press cake for the feed and food industry" at the site Ibbenbüren, integration of the EnMS into existing management systems, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the formulation of energy policy and energy targets, setup of index of legal provisions, management of the project-related workshops to coordinate the appropriate organisational action and documentation, conducting internal audits and compliance audits, continuous consolidation of the management system, consultation during certification

Client..... Teutoburger Ölmühle GmbH, Ibbenbüren

**Energy management system according to DIN EN ISO 50001 at the Bäckerei Barbarossa GmbH & Co. KG  
(Consulting & Support, 2014 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 for the scope of "production and distribution of bakery products", management of the project-related workshops to coordinate the appropriate organisational action and documentation, drafting of appropriate documents and instruments for the illustration of the energy management system, development of useful tools for monitoring and analysis of energy consumption, setup of index of legal provisions, conducting internal audits, consultation during certification

Client..... Bäckerei Barbarossa GmbH & Co. KG, Kaiserslautern

**Fresh Start Bakery (FSB), site Duisburg (Consulting & Support, 2014 - 2016)**

Development and continued support of an energy management system according to DIN EN ISO 50001 for the scope of "production and sales of toast and soft rolls", drafting and development of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency, participation in energy team meetings, conducting internal audits and consultation during the management reviews and the certification

Client (Operator) ..... FSB Backwaren GmbH, Duisburg

**Energy management system according to DIN EN ISO 50001 for the Merzenich-Bäckereien GmbH  
(Consulting & Support, 2014 - 2016)**

Development and implementation of an energy management system according to DIN EN ISO 50001 for the scope of "production and sales of bakery products of all kinds", management of the project-related workshops to coordinate the appropriate organisational action and documentation, drafting of appropriate documents and instruments for the illustration of the energy management system, analysis of the energy consumption as part of the energy assessment, setup of index of legal provisions, conducting training courses and internal audits, consultation during certification

Client..... Merzenich-Bäckereien GmbH, Cologne

### **Energy management system of Ruhrverband (Consulting, 2014 - 2015)**

Preparation for and consulting during the introduction of a company-wide energy management system according to DIN EN ISO 50001 for the operation areas sewage treatment incl. electricity production from biogas, pumped storage and dams, storm water treatment facilities, administrative buildings & laboratory, development of appropriate templates and tools for the illustration of management processes including energy planning and monitoring as well as increasing efficiency, discussion of energy policy, energy objectives and energy performance indicators, setup of index of legal provisions, management of the project-related workshops to coordinate the appropriate organisational action and documentation, on-site training of future internal 50001 auditors, explanations on ISO 50001 using practical examples as well as the implementation of the EnMS of Ruhrverband, discussion of the central audit program, illustration of audit technique in an interview example  
 Client..... Ruhrverband, Essen

### **Energy management system of VACUUMSCHMELZE GmbH & Co. KG (Internal Audit, 2014 & 2015)**

Planning, implementation and evaluation of internal audits in accordance with DIN EN ISO 19011 for all German sites, documentation with energy related and organisational recommendations for advancing the energy management system  
 Client..... VACUUMSCHMELZE GmbH & Co. KG, Hanau

### **Huntsman P&A Germany GmbH (formerly Sachtleben Chemie) in Duisburg (Conception, 2014 - 2015)**

Development of the functional specifications for building up an effective energy controlling system for a total of about 4,500 data points, defining the requirements for a software system and the data communication concept, pre-selection of suppliers and monitoring the selection and contract award process  
 Client..... Huntsman P&A Germany GmbH, Duisburg

### **Energy management system of FSG Automotive GmbH (Consulting & Support, 2013 - 2016)**

Development and implementation of a procedure for energy assessment, determination of the energy basis case as well as the evaluating energy performance indicators in the context of the implementation of an energy management system according to DIN EN ISO 50001, implementation and improvement of the predetermined procedure for assessing energy, evaluation of the objectives within the framework of the energy management system according to DIN EN ISO 50001, development of a measurement concept for the future expansion of the meter-based energy data recording  
 Client..... FSG Automotive GmbH, Oelsnitz / Erz Mountains

### **Energy management system of Kuchenmeister GmbH (Consulting, 2013 - 2016)**

Preparation for and consulting during the introduction and certification of an energy management system according to German standard DIN EN ISO 50001 for the scope of the "production and distribution of confectionery and bakery products" at sites in Soest, Duingen and Mettingen, integration of EnMS in existing management structures, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring, development of the internal energy knowledge in the context of the German standard, setup of index of legal provisions, development of energy management reporting to document energy related performance  
 Client..... Kuchenmeister GmbH, Soest

### **Energy management system of Sahnemolkerei H. Wiesehoff GmbH (Internal Audit & Support, 2013 - 2016)**

Planning, execution and evaluation of internal audits of the energy management system according to DIN EN ISO 50001, recommendations for action to ensure the conformity and further development of the EnMS, supply of customised tools and guidelines for the documentation of CIP actions and efficiency measures, support in the evaluation, the consideration of legal aspects, management review as well as the formulation of energy policy and energy targets  
 Client..... Sahnemolkerei H. Wiesehoff GmbH, Schöppingen

**Energy management system of KKT Kaller Kunststoff Technik GmbH  
(Consulting & Support, 2013 - 2016)**

Establishment of an energy management system according to international standard DIN EN ISO 50001 for the “production and printing of plastic containers and bottles” at the site Kall, setup of management structures, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the development of energy policy and energy targets, management of the project-accompanying physical workshops for the coordination of the appropriate organisation and documentation, internal audits and compliance audits, continuous consolidation of the management system, setup of index of legal provisions, consultation during certification  
Client..... KKT Kaller Kunststoff Technik GmbH, Kall

**Energy management system of Cerealien Bischheim GmbH  
(Consulting & Support, 2012 - 2016)**

Establishment of an energy management system according to international standard DIN EN ISO 50001 for the scope of “production and distribution of grain and malt products” at site Bischheim, Kirchheimbolanden and Mainz, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the development of energy policy and energy targets, management of the project-accompanying physical and telephone workshops for the coordination of the appropriate organisation and documentation, internal audits and continuous consolidation of the management system  
Client..... Cerealien Bischheim GmbH, Bischheim

**Energy management system of Universal Polythex Kunststoffe GmbH  
(Consulting, 2012 - 2014)**

Establishment of an energy management system according to international standard DIN EN ISO 50001 for the scope of “extrusion of plastics” at site Übach-Palenberg, setup of management structures, drafting of appropriate documents and instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency and the development of energy policy and energy targets, management of the project-accompanying physical workshops for the coordination of the appropriate organisation and documentation, internal audits and compliance audits, continuous consolidation of the management system, setup of index of legal provisions, consultation during certification  
Client..... Universal Polythex Kunststoffe GmbH, Übach-Palenberg

**Otto GmbH & Co. KG in Hamburg (Conception, 2012)**

Development of specifications for setting up an effective energy controlling system, definition of the requirements for a software system, development of a data communication concept, pre-selection of suitable providers, monitoring the selection process and the tendering phase  
Client..... Otto GmbH & Co. KG, Hamburg

**Energy management system of GoodMills Deutschland GmbH  
(Consulting & Support, 2011 - 2016)**

Since 2012: Continued development and consultation during certification of the group-wide uniform energy management system according to DIN EN ISO 50001 for the scope of "production & processing of flour products from cereals, pulses, rice, sugar and starches", development of suitable instruments for the illustration of management processes including energy planning and monitoring as well as increasing efficiency, energy related consultation including analysis of detailed energy efficiency related issues, management of the project-accompanying energy team workshops for the coordination of a group-wide organisation and documentation, preparation of training content, planning, conducting and evaluating internal audits, consolidation of the energy assessment, consultation during central management review and certification

2011 / 2012: Preparation for and consulting during implementation, certification and developing a group-wide uniform energy management system according to DIN EN ISO 50001 at all production sites including headquarters of GoodMills Deutschland GmbH (formerly VK Mills AG), project phase I with 8 grain mills (Aurora Mühle Hamburg GmbH, Kampffmeyer Mühlen GmbH, Rosenmühle GmbH), expansion project phase II with 4 sites (GoodMills Innovation GmbH formerly Kampffmeyer Food Innovation, Müller’s Mühle GmbH, Nordland Mühlen GmbH)

Client..... GoodMills Deutschland GmbH, Hamburg

**Energy management system for the paper mill Schoellershammer (Internal Audit, 2011, 2014, 2015, 2016)**

Planning, implementation and evaluation of the internal audit conforming to European standard DIN EN ISO 19011, results documentation with energy related and organisational recommendations, appraisal and development of a plan of action for the implementation of an energy management system conforming to European standard DIN EN 16001 (2011) – subsequently DIN EN ISO 50001 (from 2014)

Client..... Papierfabrik Schoellershammer  
Heinr. Aug. Schoeller Söhne GmbH & Co. KG, Düren

**Energy management system of Energie Food Town GbR at Duisburg (Consulting, 2011 - 2016)**

Preparation for and consulting during the introduction and certification of an energy management system according to German standard DIN EN ISO 50001 at site Duisburg, drafting of appropriate exemplary documentation for the representation of energy planning, monitoring and efficiency gain, management of the physical and telephone workshops, internal audits and continuous consolidation of the management system, support for the continued operation and the continuous development of energy controlling and monitoring system, consulting and support in the planning and implementation of numerous energy efficiency projects

Client..... Energie Food Town GbR, Duisburg

**Energy management system for the Hydro Aluminium Rolled Products GmbH (Internal Audit, 2011, 2012)**

Appraisal and development of a plan of action for the implementation of an energy management system conforming to German standard DIN EN 16001, internal audit according to DIN EN ISO 19011, Review of the energy management system with regard to conformity DIN EN ISO 50001

Client..... Hydro Aluminium Rolled Products GmbH, Bonn

**Fresh Start Bakery (FSB), site Duisburg (Implementation, 2011)**

Implementation of an energy controlling system based on a formerly compiled requirement specification, cost calculation, coordination of hardware installation, software configuration, start of operation and data validation as well as training of the personnel

Client (Operator) ..... FSB Backwaren GmbH, Duisburg

**VK Mühlen AG flour mills and Headquarters (Consulting, 2011)**

Preparation and attendance of the certification process for electricity-intensive enterprises according to §§ 40 et seqq. Renewable Energy Sources Act, EEG-2009, for 8 flour mills and the headquarters owned by the VK Mühlen AG (Aurora Mühle Hamburg GmbH, Kampffmeyer Mühlen GmbH, Rosenmühle GmbH), compilation of a technical report documenting the compliance with the requirements of certification, coordination with the certification authority

Client (Owner)..... VK Mühlen AG, Hamburg

**Energie Food Town GbR at Duisburg (Implementation, 2011)**

Implementation of an energy controlling system based on a formerly compiled requirement specification, cost calculation, call for tenders, support during the hardware installation, software configuration, start of operation and data validation as well as training of the personnel

Client (Operator) ..... Energie Food Town GbR, Duisburg

**TOTAL Deutschland GmbH (Conception, 2010 - 2011)**

Compilation of the call for tenders concerning the introduction of an energy management system focused on the definition of technical and organisational general requirements, technical steering of the award procedure and implementation up to the start of operation

Client..... Haus der Technik, Essen

**Fresh Start Bakery (FSB), site Duisburg (Conception, 2010)**

Development of requirement specification concerning the assembling of an effective energy controlling including the counters structure, data communication concept, reporting specifications and key figures development as well as requirement definition for an appropriate energy controlling system (software)

Client (Operator) ..... FSB Backwaren GmbH, Duisburg

**HAVI Global Logistics GmbH, site Günzburg (Conception, 2010)**

Development of requirement specification concerning the assembling of an effective energy controlling including the counters structure, data communication concept focused on the integration of local consumption data capture systems as well as conceptual design of a central energy controlling system (software)

Client (Operator) ..... HAVI Global Logistics GmbH, Günzburg

**Energie Food Town GbR at Duisburg (Conception, 2010)**

Development of requirement specification concerning the arrangement of an effective energy management system including the counters structure, elaboration of the organisational structure, data communication concept, reporting specifications and key figures development as well as requirement definition for an appropriate energy controlling system (software)

Client (Operator) ..... Energie Food Town GbR, Duisburg

**Haniel Group head office at Duisburg (Energy controlling, 2010 - 2011)**

Conceptual design and assembling of the counters fleet on-site, initial operation of the consumption data communication, arrangement of the energy controlling software, employees training, accomplishment of the continuous energy controlling for the head office location Franz-Haniel-Platz, periodic energy reporting

Client..... KoneX Energie GmbH, Dinslaken

**Energie Food Town GbR at Duisburg (Consulting, 2009, 2010, 2011)**

Preparation and attendance of the certification process for electricity-intensive enterprises according to §§ 40 et seqq. Renewable Energy Sources Act, EEG-2009, reconciliation for the administration request proceeding with the German Federal Office of Economics and Export Control (BAFA), organisation, preparation and attendance of the EEG-certification process according to BAFA for the primary site Duisburg and six secondary sites in coordination with the certification authority

Client (Operator) ..... Energie Food Town GbR, Duisburg

**Location Iglo in Reken (Consulting, 2009)**

Preparation and attendance of the certification process for electricity-intensive enterprises according to §§ 40 et seqq. Renewable Energy Sources Act, EEG-2009, reconciliation for the administration request proceeding with the German Federal Office of Economics and Export Control (BAFA)

Client (Operator) ..... MVV Energiedienstleistungen GmbH West, Reken

**Inside Hotel in Munich (Controlling, 2009)**

Verification of the utility costs billing from 2005 to 2008 with focus on the consumption dependent costs by cross-checking the technical supply structure and meter readings

Client..... Inside Hotel GmbH, Düsseldorf

**Inside Hotel in Frankfurt (Controlling, 2008)**

Verification of the utility costs billing from 2004 to 2007 with focus on the consumption dependent costs by cross-checking the technical supply structure and meter readings

Client..... Inside Hotel GmbH, Düsseldorf

**E.ON Energie AG Briennerstraße building complex in Munich (Consulting, 2006)**

Preparation and realisation of a workshop for the introduction of an energy management system, discussion of requirements of an IT-based energy management system with the aim of establishing corner stones for compiling a specification and making a pre-selection of eligible systems

Client..... E.ON Facility Management GmbH, Munich



## 2 Efficiency analyses of existing buildings

### 2.1 Trade and Industry

#### **Site Hüttenheim of WISCO Tailored Blanks GmbH (Operation optimisation, 2016)**

Detailed analysis of air conditioning systems using dynamic building and system simulation and development of concrete suggestions for improvements to increase energy efficiency of the ventilation and heating systems  
Client..... WISCO Tailored Blanks GmbH, Duisburg

#### **Distribution center of REWE Group in Neu-Isenburg (Operation optimisation, 2016)**

Development of a concept to ensure the thermal comfort in the summer months based on structural, technical and organisational measures  
Client..... REWE Markt GmbH, Neu-Isenburg

#### **Vahrenwalder Straße site of Vermögensverwaltungs GmbH in Hannover (Energy Performance Certificates, 2016)**

Preparation of energy demand certificates for different sites on the Vahrenwalder Straße in Hannover (buildings with mixed usage)  
Client..... ENGIE Deutschland GmbH, Essen

#### **Eleven Buildings of Infraser GmbH & Co. Höchst KG at the site Frankfurt on the Main (Optimisation of existing buildings, 2015 - 2016)**

Energy performance evaluation of eleven buildings with different usage types (administration, bathhouses, laboratory buildings), development and quantification of energy efficiency measures  
Client..... Infraser GmbH & Co. Höchst KG, Frankfurt on the Main

#### **Reutlingen Site of Robert Bosch GmbH (Operation optimisation, 2015)**

Detailed analysis of complex heat supply system consisting of boilers, CHP and various waste heat utilisation (TNV, compressed air production, etc.) by means of a dynamic simulation with the aim of optimising the operation of the overall system, to develop control strategies to prevent hydraulic problems and the possibility of evaluating an expansion of the system with other components (e.g. CHP) economically  
Client..... Robert Bosch GmbH, Reutlingen

#### **Energy demand analysis for the washing technology center in Berlin (Operation optimisation, 2015)**

Detailed analysis of the energy demand for the technology center (development and testing laboratories for washing machines and dryers), administration and related infrastructure, development of concrete proposals for improvements to reduce energy costs and CO<sub>2</sub>-emissions, determining the energy base line, concept development for the use of free cooling with existing cooling tower, adjusting the usage times, volume flows and humidity control of air conditioning systems, development of EnPI incl. corresponding measurement concept  
Client..... BSH Hausgeräte GmbH, Berlin

#### **Three international colour pigment factories in China and the USA (Optimisation of existing buildings, 2015)**

Walk-through energy analysis three international locations of a colour pigment manufacturer, analysis and evaluation of current energy situation, development of proposals for improvements to reduce energy costs, in particular in the areas of HVAC, processes, load management, lighting, refrigeration and heating supplies  
Client..... emation GmbH, Merenberg

#### **Sites Großpostwitz and Mayen of the Ontex Group (Optimisation of existing buildings, 2015)**

Consultation for workshops and internal audits, analysis and evaluation of current energy situation and data acquisition, development of proposals for improvements to reduce energy costs, in particular in the areas of vacuum, compressed air, heating and control engineering  
Client..... ONTEX Hygieneartikel Deutschland GmbH, Großpostwitz

**Debyestreet site of the Zentis GmbH & Co. KG**

**(Energetic inspection of air conditioning and ventilation systems according to § 12 EnEV, 2015)**

Compilation of data on the air conditioning unit and the central cooling plant on site, energetic evaluation of the system state, the current operational, boundary conditions of use and operation, suggestions for improvement

Client..... Zentis GmbH & Co. KG, Aachen

**Sankt Katharinen site of the Birkenstock Group (Optimisation of existing buildings, 2014)**

Detailed analysis of the energy demand for a production plant (shoe manufacture, drying of insoles), development of specific proposals for efficiency improvement and the reduction of energy costs and CO<sub>2</sub>-emissions, operation optimisation of the ventilation and heating systems, operation optimisation of drying plant

Client..... Birkenstock GmbH & Co. KG Services, Neustadt/Wied

**Real estate of RWE Service GmbH (Energy Performance Certificates, 2014)**

Compilation of demand dependent Energy Performance Certificates for the locations Euskirchen, Jülich, Mönchengladbach, Monschau, Niederzier and Zülpich

Client..... RWE Service GmbH, Essen

**Friedrichshafen site of Airbus Defence and Space GmbH (formerly Cassidian)  
(Operation optimisation, 2014)**

Detailed evaluation and analysis of the existing energy meter data for all media (> 200), to develop approaches for improvement and to define the need and areas for further investigation

Client..... Airbus Defence and Space GmbH, Friedrichshafen

**Nonantola site (MO, Italy) of Bosch Rexroth AG (Operation optimisation, 2014)**

Detailed analysis of the energy demand for a production plant (hydraulic components), administration and related infrastructure, development of specific proposals for efficiency improvement and the reduction of energy costs and CO<sub>2</sub> emissions, current state analysis, improvement of the control and regulation of the air conditioning systems, analysis of alternative energy supply concepts

Client..... Bosch Rexroth AG, Lohr on the Main

**Vezzano site Sul Crostolo (RE, Italy) der Bosch Rexroth AG  
(Operation optimisation, 2014)**

Rough analysis of the energy demand for a production plant (hydraulic components), administration and related infrastructure, development of specific proposals for efficiency improvement and the reduction of energy costs and CO<sub>2</sub> emissions, current state analysis, concept for the use of waste heat of test-stands, analysis of alternative energy supply concepts

Client..... Bosch Rexroth AG, Lohr on the Main

**Blaj site (Romania) of Bosch Rexroth AG (Operation optimisation, 2013)**

Detailed analysis of the energy demand of the production process (linear motion technology), administration and the related infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, current state analysis, development of a free-cooling concept, improvement of the control and regulation of the HVAC systems, analysis of alternative supply concepts

Client..... Bosch Rexroth AG, Lohr on the Main

**StatusCheck of process cooling for KKT Kaller Kunststoff Technik GmbH  
(Consulting, 2013)**

StatusCheck of the process cooling in accordance with the directive on the promotion of measures on commercial refrigeration equipment from 1.1.2009 including measurement of equipment efficiency and subsequent support in the application for funding for the modernisation of the refrigeration systems

Client..... KKT Kaller Kunststoff Technik GmbH, Kall

**StatusCheck of airconditioning for Zeitungsverlag Aachen GmbH  
(Consulting, 2013)**

StatusCheck of the airconditioning in accordance with the directive on the promotion of measures on commercial refrigeration equipment from 1.1.2009 including measurement of equipment efficiency

Client..... Zeitungsverlag Aachen GmbH, Aachen

### **Reutlingen site of Robert Bosch GmbH (Operation optimisation, 2013)**

Development of a control strategy for the cooling system of the site consisting of 13 chillers with a cooling capacity of 30 MW, improvement of the yield of the heat recovery from cooling, development of an optimised control strategy taking into account the heat recovery system by means of a simulation tool so that the chillers operate as frequently as possible in an efficient part load range and the annual energy demand is minimised  
Client..... Robert Bosch GmbH, Reutlingen

### **Fountain Inn site (USA) of Bosch Rexroth AG (Operation optimisation, 2012)**

Detailed analysis of the energy demand of the production process (mobile hydraulics), administration and the related infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, current state analysis, improvement of the control and regulation of the HVAC systems, analysis of alternative supply concepts  
Client..... Bosch Rexroth AG, Lohr on the Main

### **Bethlehem site (USA) of Bosch Rexroth AG (Operation optimisation, 2012)**

Detailed analysis of the energy demand of the production process (industrial hydraulics), administration and the related infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, current state analysis, improvement of the control and regulation of the HVAC systems, analysis of lighting retrofit, analysis of alternative supply concepts  
Client..... Bosch Rexroth AG, Lohr on the Main

### **Witten site of Bosch Rexroth AG (Operation optimisation, 2012)**

Detailed analysis of the energy demand of the production process (gear production), administration and the related infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, current state analysis, development of heat recovery concept from heat treatment, improvement of the ventilation systems, analysis of alternative supply concepts  
Client..... Bosch Rexroth AG, Lohr on the Main

### **Distribution Center Wustermark of the HAVI Logistics GmbH (Optimisation of existing buildings, 2012)**

Thermal and energetic analysis of the cool docks by means of dynamic building simulation, heating and cooling load calculation considering the influence of internal loads and sinks, identification and sensitivity analysis of the influence factors and development of the constructional and technical savings potential, evaluation and improvement of moisture protection  
Client..... HAVI Logistics GmbH, Duisburg

### **Distribution Center Duisburg of the HAVI Logistics GmbH (Optimisation of existing buildings, 2012)**

Evaluation and improvement of moisture protection of the cool docks and adjacent areas through targeted component simulation of critical connection details and development of measures for preventing condensation  
Client..... HAVI Logistics GmbH, Duisburg

### **Lohr site of Bosch Rexroth AG (Operation optimisation, 2012)**

Detailed analysis of the energy demand of a production plant (hydraulic, electric drives and controls), an iron foundry and related infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, prevention of draughts by reducing the air change rates, optimisation of natural ventilation  
Client..... Bosch Rexroth AG, Lohr on the Main

### **Aachen site of the Henry Lambertz GmbH & Co. KG (Operation optimisation, 2011 - 2012)**

Detailed analysis of the energy demand of an industrial bakery (pastries) taking into account processes as well as the infrastructure (ventilation, lighting), elaboration of concrete efficiency measures concerning the systems for space and process ventilation as well as the supply systems for steam and compressed air, development of a basis for strategic decisions concerning the site's energy supply, functional tender of the developed measures and supervision of implementation  
Client..... Henry Lambertz GmbH & Co. KG, Aachen

### **Hydro Aluminium Rolled Products GmbH, site Bonn (Energy demand analysis, 2011)**

Detailed analysis of the energy demand of the whole site (small-series production, labs and administration), evaluation of energy related aspects, building up of energy awareness, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice  
Client..... Hydro Aluminium Rolled Products GmbH, Bonn

**Henry Lambertz GmbH & Co. KG, site Würselen (Operation optimisation, 2011)**

Detailed analysis of the energy demand of an industrial bakery (gingerbread, biscuits) taking all production steps and infrastructure into account, formulation of concrete ideas for increased energy efficiency in building and process ventilation, energy supply (cogeneration, steam and compressed air), development and assessment of differing strategic scenarios for the energy supply of the site

Client..... Wilhelm Kinkartz GmbH & Co. KG, Würselen

**Volkach site of the Bosch Rexroth Mechatronics GmbH (Operation optimisation, 2011)**

Detailed analysis of the energy demand of the production process and the corresponding infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, optimisation of the cooling water supply

Client..... Bosch Rexroth Mechatronics GmbH, Schweinfurt

**Schweinfurt 2 site of the Bosch Rexroth Mechatronics GmbH (Operation optimisation, 2011)**

Detailed analysis of the energy demand of the production process (hardening plant), administration and corresponding infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, development of a waste heat recovery concept for the hardening plant

Client..... Bosch Rexroth Mechatronics GmbH, Schweinfurt

**Jihlava site of Bosch Diesel s.r.o. (Czech Republic) (Operation optimisation, 2011)**

Detailed analysis of the energy demand of 3 production plants (diesel injection pumps and rails) and the corresponding infrastructure, formulation of concrete ideas for the reduction of energy costs and CO<sub>2</sub>-emissions in practice, development of the foundation for an effective energy controlling

Client (Principal)..... Bosch Diesel s.r.o., Jihlava (Czech Republic)

**Schweinfurt site of the Bosch Rexroth Mechatronics GmbH (Operation optimisation, 2011)**

Detailed analysis of the energy demand of the production processes as well as the infrastructure, development of measures increasing energy efficiency and reducing the site's greenhouse gas emissions significantly

Client..... Bosch Rexroth Mechatronics GmbH, Schweinfurt

**Cologne site of TaconicArtemis GmbH (Operation Optimisation, 2010)**

Analysis of the ventilation systems and its energy demand, elaboration of energy efficiency measures concerning the laboratories and animal breeding areas

Client..... TaconicArtemis GmbH, Cologne

**Tyco Electronics, works Speyer (Operation optimisation, 2010)**

Rough analysis of the works infrastructure and elaboration of economically realisable energy reduction potentials

Client..... EnProM Energie- und Prozessmanagement GmbH, Castrop-Rauxel

**Warburg site of the CWS-boco Deutschland GmbH (Operation optimisation, 2009 - 2010)**

Detailed analysis of the steam and water flows under consideration of the existing heat recovery systems and storages using dynamic system simulations, break down of the energy demand by component (washing machines, dryers, mangles, finisher etc.), development of an enhanced heat recovery concept, elaboration of optimized control strategies for single components

Client..... Haniel Verwaltungsgesellschaft mbH, Duisburg

**YKK Stocko Fasteners GmbH, works Wuppertal (Operation optimisation, 2009 - 2010)**

Analysis in detail of the energy demand for the production (fasteners and fashion accessory) and corresponding infrastructure, formulation of precise improvement suggestions seeking to reduce energy costs, elaboration of a waste heat utilisation concept for compressed air generation as well as improvements for ventilation and steam supply

Client..... YKK Stocko Fasteners GmbH, Wuppertal

**Production building 5314 of Boehringer Ingelheim Pharma GmbH & Co. KG (Operation optimisation, 2009)**

Detailed energy analysis for the production building 5314 (Dabigatran) using dynamic building and HVAC simulation, compilation of simulation models covering the processes Fluidized Bed and Coating as well as process related air-conditioning facilities, break down of the energy consumption and deduction of precisely described measures reducing energy costs.

Client..... Boehringer Ingelheim Pharma GmbH & Co. KG, Ingelheim on the Rhine

**Building 5411 (Galenik) of Boehringer Ingelheim Pharma GmbH & Co. KG  
(Operation optimisation, 2009)**

Detailed energy analysis for the laboratory and production building 5411. Due to the large number of laboratories and production rooms with different clean room standards and so called GMP-Zones with high requirements concerning the climate steadiness, a dynamic building and HVAC simulation was used in order to analyse the structure of the energy demand and elaborate precise proposals seeking to reduce energy costs.

Client..... Boehringer Ingelheim Pharma GmbH & Co. KG, Ingelheim on the Rhine

**Energie Food Town GbR at Duisburg (Analysis, 2009)**

Detail analysis of the large-scale ammonium refrigerating plant using calculation methods and measuring techniques, malfunction analysis of the operating performance of the ammonium condensers

Client (Operator) ..... Energie Food Town GbR, Duisburg

**Location Tienen (Belgium) of Robert Bosch Produktie N. V.  
(Operation optimisation, 2008 - 2009)**

Detailed analysis of the energy demand of the production (windscreen wiper fabrication) and the associated infrastructure, deduction of detailed recommendations for measures reducing energy costs, development of a concept for a waste heat utilisation from the exhaust gas of the reburning of the varnishing system exhaust

Client..... Robert Bosch Produktie N. V., Tienen (Belgium)

**Laboratory building 4471 of Boehringer Ingelheim Pharma GmbH & Co. KG  
(Operation optimisation, 2008 - 2009)**

Detailed energy audit on the laboratory building 4471 using dynamic building and HVAC simulation, analysis of the structure of energy demand and compilation of precise recommendations for technical measures reducing energy costs

Client..... Boehringer Ingelheim Pharma GmbH & Co. KG, Ingelheim on the Rhine

**Bayer Schering Pharma AG – Berlin Works (Operation optimisation, 2008)**

Detailed energy analysis of the laboratory building S 107 (animal keeping) using dynamic building and HVAC simulation, identification of energy saving potentials regarding the ventilation and air conditioning systems

Client..... Bayer Schering Pharma AG, Berlin

**Food Town Rheinhausen, Energie Food Town GbR (Analysis, 2008)**

Analysis of the power station supplying cooling and heating energy media as well as compressed air, assessment of the technical state and the energy efficiency of the facilities under consideration, identification of economic saving potentials and formulation of enhancement measures

Client (Operator) ..... Energie Food Town GbR, Duisburg

**Hambach Factory / Lorraine (France) of smart France S.A.S. (Analysis, 2008)**

Measurement based analysis of the air distribution in a plastics spray painting section to increase the process quality

Client..... Plastal S.A.S., Hambach Cedex (France)

**Bayer Schering Pharma AG – Berlin Works (Operation optimisation, 2008)**

Detailed energy analysis of the laboratory building S 106 using dynamic building and HVAC simulation, identification of energy saving potentials for ventilation and air conditioning

Client..... Bayer Schering Pharma AG, Berlin

**Building 401 of Blaupunkt GmbH at location Hildesheim (Operation optimisation, 2008)**

Energy audit using dynamic building and HVAC simulation, identification of energy saving potentials concerning the ventilation system

Client..... Blaupunkt GmbH, Hildesheim

**Building 152 of Robert Bosch GmbH at location Hildesheim (Operation optimisation, 2008)**

Energy audit using dynamic building and HVAC simulation, identification of energy saving potentials

Client..... Robert Bosch GmbH, Hildesheim

**Hertie-Department store in Essen-Rüttenscheid (Operation optimisation, 2008)**

Energy audit using dynamic building and HVAC simulation, identification of energy saving potentials concerning the HVAC systems

Client..... EnProM Energie- und Prozessmanagement GmbH, Castrop-Rauxel

**Candy factory van Netten GmbH (Operation optimisation, 2007)**

Compilation of energy saving potentials concerning ventilation and air conditioning, optimisation of compressed air and steam supply, design of a new cooling supply system

Client..... van Netten GmbH, Dortmund

**Monheim Site of SCHWARZ PHARMA AG (Energy Performance Certificate, 2007)**

Compilation of a consumption dependent Energy Performance Certificate for laboratory building A 03

Client (Principal)..... SCHWARZ PHARMA AG, Monheim

**Work Biel / Bienne (Switzerland) of Farbendruck Weber AG (Operation optimisation, 2007)**

Identification of energy saving potentials concerning ventilation and air conditioning, enhancement of waste heat usage resulting from printing processes, optimisation of the process cooling supply system

Client..... ARQUES Industries AG, Starnberg

**Neunkirchen Site of Fritz Schäfer GmbH (Operation optimisation, 2007)**

Optimisation of the natural gas load, analysis of the production facilities focusing on the optimisation of their gas consumption characteristics

Client..... EnProM Energie- und Prozessmanagement GmbH, Castrop-Rauxel

Principal ..... Fritz Schäfer GmbH, Neunkirchen

**Steigenberger hotels (Rough analysis, 2007)**

Initial analysis for six hotels (InterCityHotel Düsseldorf, InterCityHotel Wuppertal, Fleming's Hotel at Frankfurt exhibition, InterCityHotel at Frankfurt Airport, InterCityHotel at Hahn Airport, Steigenberger Hotel in Frankfurt City), estimation of energy saving potentials considering the facilities for heating and hot water supply, lighting, cooling, ventilation and air conditioning as well as the control systems

Client..... Techem Energy Contracting GmbH, Eschborn

Principal ..... Steigenberger Hotels AG, Frankfurt on the Main

**Work 3 of Bosch Diesel s.r.o. at location Jihlava (Czech Republic) (Optimisation of existing buildings, 2007)**

Energy analysis using dynamic building and HVAC simulation, compilation of energy saving potentials for the existing buildings, facilities and processes

Client (Principal)..... Bosch Diesel s.r.o., Jihlava (Czech Republic)

**Giebel Kaltwalzwerk GmbH (cold rolling mill) of KNAUF INTERFER COMPANY (Operation optimisation, 2007)**

Analysis of the energy efficiency, elaboration of energy saving potentials for compressed air, steam generation, production halls' air conditioning and heating, development of a concept for waste heat recovery

Client..... EnProM Energie- und Prozessmanagement GmbH, Castrop-Rauxel

Principal ..... Giebel Kaltwalzwerk GmbH, Iserlohn

**Bochum works of ThyssenKrupp Steel AG (Operation optimisation, 2006 - 2007)**

Optimisation of the steam supply system within the scope of production extension of the steel-mill, assessment of the applicability of absorption chillers

Client..... M.I.S. Management- + Informations-Systeme GmbH, Recklinghausen

Principal ..... ThyssenKrupp Steel AG, Duisburg

**Bayer Schering Pharma AG – Berlin Works (Operation optimisation, 2006 - 2007)**

Formulation of key operating figures for the ventilation plant in different laboratory buildings to establish whether there was a need to take any action and to make an initial estimate of the energy saving potential, drawing-up of energy certificates

Client (Principal)..... Bayer Schering Pharma AG, Berlin

**Makro Cash & Carry markets (NL) of METRO AG  
(Optimisation of existing buildings, 2006 - 2007)**

Analysis of energy consumption of three markets in the Netherlands (Amsterdam, Groningen und Nijmegen) and compilation of potential energy savings as a basis for the establishment of internal energy management

Client..... M.I.S. Management- + Informations-Systeme GmbH, Recklinghausen  
Principal ..... METRO Cash & Carry International GmbH, Düsseldorf

**Aerzener Maschinenfabrik (Optimisation of existing buildings, new building, 2006 - 2007)**

Analysis of the energy requirement for the whole property using dynamic building and plant simulation, formulation of energy saving potentials for the existing buildings, formulation of an energy strategy for the planned production centre, developing a closed energy supply concept for the existing property and new build

Client (Principal)..... Aerzener Maschinenfabrik GmbH, Aerzen

**Pratola Serra works of Fiat Powertrain AG in Avellino (Italy)  
(Optimisation of existing buildings, 2006)**

Formulation of energy savings potential for room heating provision (including ventilation system), process heating provision, cooling provision and compressed air provision

Client..... EnProM Energie- und Prozessmanagement GmbH, Castrop-Rauxel  
Operator..... Fiat Powertrain AG, Turin (Italy)

**Steigenberger Airport Hotel, Frankfurt on the Main (Operation optimisation, 2006)**

Analysis of energy consumption by means of a dynamic building and plant simulation, compilation of energy saving potential in the area of HVAC technology, optimising energy supply

Client..... Techem Energy Contracting GmbH, Eschborn  
Principal ..... Steigenberger Hotels AG, Frankfurt on the Main

**Hambach Factory / Lorraine (France) of smart France S.A.S. (Operation optimisation, 2006)**

Investigation of retained water dryer in the plastic painting department, analysis of actual situation and drafting of proposals to improve drying of plastic parts before painting

Client (Principal)..... smart GmbH, Böblingen

**Garden mould- and compost Work Streng in Ostrhauderfehn  
(Operation optimisation, 2005 - 2006)**

Highlighting of potential energy savings for the existing systems and processes

Client (Principal)..... Heinrich Streng Erden- und Kompostwerk GmbH & Co. KG, Rhaderfehn

**Kaufhof department stores of METRO AG (Optimisation of existing buildings, 2005 - 2006)**

Analysis of the actual state of two department stores at locations Dortmund and Duisburg by means of simulation and compilation of potential energy savings as a basis for the introduction of energy management

Client..... M.I.S. Management- + Informations-Systeme GmbH, Recklinghausen  
Principal ..... METRO Group Asset Management GmbH & Co. KG, Saarbrücken

**Operation part 3 of Robert Bosch GmbH at location Bamberg  
(Optimisation of existing buildings, 2005 - 2006)**

Energy study using a building and system simulation, highlighting of potential energy savings for the existing buildings, systems and processes

Client (Principal)..... Robert Bosch GmbH, Bamberg

**Hall 16 at Work Villach of Infineon Technologies Austria AG  
(Optimisation of existing buildings, 2005)**

Energy study using a building and system simulation to highlight the influence of room air parameters relative humidity and temperature on the energy demand, highlighting of potential energy savings

Client (Principal)..... Infineon Technologies Austria AG, Villach (Austria)

**Peat pellet manufacturing at Deutsche Torfgesellschaft mbH in Scharrel  
(Operation optimisation, 2004 - 2005)**

Technical systems analysis of the existing process, highlighting of potential energy savings, analysis of alternative processes in the manufacture of peat pellets

Client (Principal)..... Deutsche Torfgesellschaft mbH, Saterland-Scharrel

**Juiz de Fora Works (Brazil) operated by smart GmbH  
(Modification and optimisation of existing buildings, 2004)**

Energy study using a building and system simulation of the planned modifications (model change) to restrict the required investments in building systems to an absolute minimum and to minimise energy costs for future operations, highlighting of potential energy savings for the existing buildings and systems  
Client (Principal)..... smart GmbH, Böblingen

**Quelle AG Regional warehouses (Optimisation of existing buildings, 2004)**

Analysis of the actual state by means of simulation and compilation of the possibilities for energy saving  
Client..... M.I.S. Management- + Informations-Systeme GmbH, Recklinghausen  
Principal ..... Karstadt Quelle AG, Nuremberg

**extra markets of METRO AG (Optimisation of existing buildings, 2003 - 2004)**

Analysis of the actual state by means of simulation and compilation of potential energy savings as a basis for the introduction of energy management  
Client..... M.I.S. Management- + Informations-Systeme GmbH, Recklinghausen  
Principal ..... MFS METRO Group Facility Services GmbH, Leinfelden

**Clay pellet manufacturing at Griendtsveen AG in Scharrel (Operation optimisation, 2003)**

Rough analysis of potential energy savings and alternative processes in the manufacture of clay pellets  
Client (Principal)..... Griendtsveen AG, Saterland-Scharrel

**Picture tube fabrication in the Philips Industrial Park in Aachen (Operation optimisation, 2002)**

Analysis of the actual state by means of simulation and measurement for improving the comfort index in a heavily thermal stressed hall  
Client..... Philips Industriepark Rothe Erde GmbH, Aachen

**Peat steamer at Torfwerk Moorkultur in Ramsloh (Operation optimisation, 2001)**

Study on the energy improvement of the steamer  
Client (Principal)..... Torfwerk Moorkultur Ramsloh Werner Koch GmbH & Co. KG, Ramsloh

## 2.2 Administration buildings

**Office building H 831 in the industry park Hoechst in Frankfurt on the Main  
(Operation optimisation, 2015)**

Energetic analysis and evaluation of the current situation of the building, development and economic evaluation of improvement measures based on weak point analysis, prioritisation and preparation of recommendations for action  
Client..... Infraserb GmbH & Co. Höchst KG, Frankfurt on the Main

**Head Office of Haniel group in Duisburg (Operation optimisation, 2014)**

Concept development for the renewal of heat and cold supply to the central administration site, comparison of centralised and decentralised supply structures for heating and cooling, analysis of the integration of renewable energy, cogeneration and heat pumps, sensitivity analysis of the supply concept regarding energy price increases and the power to gas price ratio  
Client..... Haniel Verwaltungsgesellschaft mbH, Duisburg

**Administration building Johanna-Kinkel-Str. in Bonn (Operation optimisation, 2009)**

Energy analysis of the building seeking to reduce the annual energy costs and to increase the summertime comfort index  
Client..... Chambers Flick Gocke Schaumburg, Bonn

**Administration building of company Pixelpark in Cologne (Operation optimisation, 2009)**

Evaluation of the summertime comfort index as well as the planned enhancement measures using dynamic building simulation  
Client..... Peter Zeiler & Partner Ingenieurgesellschaft mbH, Frechen



### **Head Office of Haniel group in Duisburg (Operation optimisation, 2008 - 2009)**

Energy analysis in detail of all 11 buildings at Franz-Haniel-Platz revealing the structure of the energy demand, development of enhancement measures in order to reduce energy costs, followed by a functional tender and attendance of the realisation phase, elaboration of a metering and energy controlling concept

Client..... Haniel Verwaltungsgesellschaft mbH, Duisburg

### **Schillerhöhe (Headquarters) of Robert Bosch GmbH (Operation optimisation, 2006)**

Analysis of the whole property energy demand, formulation of energy saving potentials for the existing HVAC plants in the high rise building

Client (Principal)..... Robert Bosch GmbH, Gerlingen-Schillerhöhe

### **Taunusanlage of Deutsche Bank AG in Frankfurt (Operation optimisation, 2005)**

Study of room climate in partial divisions (measurement of room air conditions and measurement of air conditioning systems) to improve thermal comfort at the working places

Client..... M.I.S. Management- + Informations-Systeme GmbH, Recklinghausen

Principal ..... Deutsche Bank AG, Frankfurt

### **Head Office of NORD/LB am Friedrichswall in Hanover (Operation optimisation, 2002 - 2004)**

Technical systems analysis of the actual state to highlight potential for optimisation and for improving the summertime comfort index, accompanying of operation optimisation, improvement of the process control technology systems

Client (Principal)..... Norddeutsche Landesbank, Hanover

Technical building support ..... NILEG Norddeutsche Immobiliengesellschaft mbH, Hanover

## **2.3 Other buildings**

### **Clinic Bad Bramstedt GmbH (Rough analysis, 2016)**

Evaluation of the energy consumption of a total of 13 hospital buildings with different usages according to the EDL-G, recording all major consumers and identification and quantification of potential savings

Client..... belp-Ingenieure GmbH, Hamburg

### **Scandic Hotel Potsdamer Platz in Berlin (Consulting, 2012)**

Investigation of the occurring comfort loss in summer, calculation of the required cooling capacity for new ceiling induction devices using dynamic building simulation

Client..... Scandic Hotels Deutschland GmbH, Berlin

### **Malteser monastery St. Nikolaus at Duisburg-Ruhrort (Rough analysis, 2011)**

Assessment of an energetic quality of a residential home for elderly people, deduction of efficiency measures to reduce the energy expenses of the site

Client..... KoneX Energie GmbH, Dinslaken

### **Uni-Center in Cologne (Optimisation of existing building, 2008)**

Detection and evaluation of energy saving potentials for the facade, ventilation and supply technology, compilation of a demand dependent Energy Performance Certificate

Client..... immonova Immobilienverwaltungsgesellschaft mbH, Cologne

### **Hospital facilities Bad Sassendorf (Rough analysis, 2008)**

Survey of all major energy consumers within the scope of a contracting proceeding, identification of energy saving potentials and demands for more detailed investigations

Client..... EnProM Energie- und Prozessmanagement GmbH, Castrop-Rauxel

### **VKA exhaust roller dynamometer test bench of BLB NRW, Aachen (Optimisation of existing building, 2006)**

Drafting of a technical solution to ensure comfortable conditions during summer weather in glazed stairway

Client (Principal)..... BLB Bau- und Liegenschaftsbetrieb NRW, Aachen

### 3 Energy design for new buildings / redevelopment

#### 3.1 Trade and Industry

##### **Consolidation warehouse 1, Dingolfing BMW AG Plant (Changed usage, 2015)**

Creating an EnEV-certificate for the changed usage of a warehouse building

Client..... Elmar Mückenhausen, Gangkofen

##### **Dreieich site of CWS-boco Deutschland GmbH (Concept development, 2014)**

Study on the use of a cogeneration solution for the supply of a laundry with steam and heat using a micro gas turbine coupled to steam production, technical assessment, as well as static and dynamic cost effectiveness study

Client..... CWS-boco Deutschland GmbH, Dreieich

##### **Heusch GmbH & Co. KG (Concept development, 2013)**

Feasibility study and economic evaluation of a possible conversion of the heating for a heat treatment salt bath to natural gas using various carrier media such as thermal oil, high pressure steam, molten salt, consideration of energy, safety, process and technical boundary conditions

Client..... Heusch GmbH & Co. KG, Aachen

##### **ALDI-Süd Coffee roasting plant at Mülheim a. d. Ruhr (New building, 2013)**

Economic evaluation of the use of a specific cogeneration unit (CHP) for a new development and verification of compliance with the EEWärmeG

Client (TBE planning)..... Peter Zeiler & Partner Ingenieurgesellschaft mbH, Frechen

##### **Energie Food Town GbR at Duisburg (Concept development, 2012 - 2013)**

Study on the expansion of compressed air supply capacity, evaluation of different supply variants under the premise of an efficient compressor operation, development and evaluation of a staged control strategy using a frequency converter to optimise efficiency

Client..... Energie Food Town GbR, Duisburg

##### **Energie Food Town GbR at Duisburg (Concept development, 2012 - 2013)**

Study on different variants to cover heat demand, economic and ecological assessment of the use of heat recovery from compressed air production, a heat pump, a CHP plant and a gas turbine

Client..... Energie Food Town GbR, Duisburg

##### **ALDI-Süd Coffee roasting plant at Mülheim a. d. Ruhr (New building, 2010 - 2015)**

Determining the annual energy consumption of the whole site by means of dynamic building and system simulation in terms of an adequate energy supply of production and storage areas, development of heating and cooling concept, preparation of thermal insulation documentation according to the currently valid EnEV, evaluating compliance with EnEV during each planning stage, random checks of the implementation during the construction, testing and certification of compliance of the renewable energies heat Act (EEWärmeG), preparation of the energy certificate

Client (TBE planning)..... Peter Zeiler & Partner Ingenieurgesellschaft mbH, Frechen

##### **Brauweiler site of Amprion GmbH (Concept development, 2010 - 2011)**

Elaboration of a concept for the future development of the chilling supply systems including the distribution networks taking into account for the redundancy requirements of critical processes, possible pipeline routings and network hydraulics, analysis of the chilling requirements of the IT-systems and air conditioned office areas and a demand forecast serving as a basis of the concept development

Client..... Carpus + Partner AG, Aachen

##### **Bayer Schering Pharma (Study, 2010)**

Technical and economical comparison of the employment of heating water and steam for the supply of buildings for space heating with focus on the respective heat transfer stations, deduction of a best practice rule

Client..... Bayer Schering Pharma AG, Berlin

### **Car dealership Steingass at Euskirchen (Study, 2010)**

Economic evaluation for the application of a combined heat and power plant, rough dimensioning of the components, selection of diverse models

Client..... Haus der Technik, Essen

### **Model store of the Lidl Austria GmbH (New building, 2010)**

Calculation of the dynamic heating and cooling load of a model store using dynamic building and HVAC simulation under consideration of the internal heat sources and sinks (e. g. refrigerators), assessment of the air handling units with regards to a suitable operation and under consideration of the summertime comfort index

Client..... Carrier Kältetechnik Deutschland GmbH, Cologne

### **Rape oil cogeneration plant for a Cash & Carry shop at Klagenfurt (Austria) (Technical study, 2010)**

Economical evaluation of a rape oil fired cogeneration unit for a large scale supermarket under consideration of the effective national laws regulating the remuneration of power generated from biomass fired plants in Austria and Germany, consideration of the economical effect of the combination with an absorption chiller

Client..... CPP Technologies GmbH, Übach-Palenberg

### **Biocampus Cologne, A. Nattermann & Cie. GmbH (Study, 2010)**

Comparison of operating costs and investment for a set of alternative steam and hot water supply systems for the Nattermann & Cie. GmbH and other companies located at Biocampus Cologne, calculation of operating cost on behalf of a time discrete system model, estimation of the load curve of hot water and steam consumption based on monthly consumption data, punctual load measurements and weather data

Client..... A. Nattermann & Cie. GmbH, Cologne

### **ALDI-Süd store at Kamp-Lindfort (New building, 2010)**

Dynamic cooling load calculation for the planned new building using building and equipment simulation, consideration of the cooling furniture impact supplied by the refrigerating plant composite, facilities evaluation seeking a demand tailored operation under consideration of the summertime comfort index

Client (TBE planning)..... Peter Zeiler & Partner Ingenieurgesellschaft mbH, Frechen

### **ALDI-Süd, stores Kerpen-Horrem and Bornheim (New building, 2010)**

Elaboration of an energy efficient ventilation concept to ensure the summertime comfort index using a dynamic building and equipment simulation

Client (TBE planning)..... Peter Zeiler & Partner Ingenieurgesellschaft mbH, Frechen

### **Emmerthal Site of Emmerthaler Apparatebau GmbH (Optimisation of existing buildings, new building, 2007)**

Analysis of the energy requirement for the entire property using dynamic building and HVAC simulation, elaboration of energy saving potentials for the existing buildings, formulation of an energy usage concept for the new production building under planning, design of an energy supplying concept for the entire location

Client (Principal)..... Emmerthaler Apparatebau GmbH, Emmerthal

### **Prenzlau works of aleo solar AG (Conversion of production, 2007)**

Development of an air conditioning concept for a new flasher box

Client (Principal)..... aleo solar AG, Prenzlau

### **Aerzener Maschinenfabrik (New building, 2006 - 2007)**

Investigation of the commercial and technical feasibility of a biomass heating power station (feasibility study), estimation of the regionally available biomass, establishing which types of power station (steam power station, ORC-process) would be suitable

Client (Principal)..... Aerzener Maschinenfabrik GmbH, Aerzen

### **Hambach Factory / Lorraine (France) of smart France S.A.S. (Conversion, 2006)**

Analysis of planned alterations in car body painting department, in terms of ventilation technology (process and building), determining the effects on the energy demand

Client (Principal)..... smart GmbH, Böblingen

**Wood fired steam boiler at Torfwerk Moorkultur in Ramsloh (New building, 2006)**

Calculation of profitability compared to existing fuel oil fired steam boiler, application for approval according to the Federal Immission Control Act

Client (Principal)..... Torfwerk Moorkultur Ramsloh Werner Koch GmbH & Co. KG, Ramsloh

**Copeland/Emerson Climate Technologies assembly plant in Mikulov (Czech Republic) (New building, 2006)**

Compilation of an energy and technology concept for the overall optimisation of investment and operating costs as well as ensuring comfortable conditions during summer weather, compilation of options for using waste heat from production processes, definition of requirements of ventilation technology, designing heating system

Client (Principal)..... Copeland GmbH, Berlin

Architecture..... Architekturbüro Nellessen, Brasse & Partner, Roetgen

**Consolidation warehouse 1, Dingolfing BMW AG Plant (New construction, 2004)**

Energy and light survey by means of a building, equipment and light simulation for the layout of the energy supply and optimisation of the building physics measures for the cold storage warehouse as well as efficient use of daylight

Client (Principal)..... Elmar Mückenhausen, Gangkofen

Lessee ..... BMW AG, Dingolfing

**Peat steamer at Klasmann-Deilmann GmbH in Groß Hesepe (Conception, 2003)**

Technical conception of the steamer, of the measuring and control technology and the energy supply

Client (Principal)..... Klasmann-Deilmann GmbH, Groß Hesepe

**Hothouse in Torfwerk Moorkultur in Ramsloh (New building, 2003)**

Thermal survey by means of building and equipment simulation for the layout of the glazing and the energy supply

Client (Principal)..... Torfwerk Moorkultur Ramsloh Werner Koch GmbH & Co. KG, Ramsloh

**Rastatt Factory of DaimlerChrysler AG (Extension, 2001 - 2002)**

Thermographic survey of all facades of the existing buildings, determination of the energy requirement for heating and ventilating the body shell plant and the planned extension by means of computer simulation, operation optimisation of the HVAC plant in the customer centre, planning support by means of building simulation for the reduction of the costs of building technology for the North-east Building

Client (Principal)..... DaimlerChrysler AG, Rastatt

**Production building at Jütte Druck GmbH in Leipzig (New building, 2001)**

Energy concept for the ventilation and air-conditioning of the printers by using structural component tempering and heat pumps

Client (Project management) ..... Heinze GmbH, Potsdam

Principal ..... Jütte Druck GmbH, Leipzig

**Assembly Hall in the Bremen factory of DaimlerChrysler AG (New building, 2000)**

Fluidic optimisation of the ventilation concept

Client (TBE planning)..... Ingenieurgesellschaft Bannert, Bremen

Principal ..... DaimlerChrysler AG, Bremen

**Exhibition Hall 7 of the Messe Bremen Fair (New building, 2000)**

Fluidic optimisation of the ventilation concept

Client (TBE planning)..... Ingenieurbüro Bruns & Partner, Bremen

Principal ..... Messegesellschaft Bremen

**Measuring Hall in the Wolfsburg factory of Volkswagen AG (New building, 1997)**

Systems comparison with determination of operating costs for cooling and heating of the hall

Client (TBE planning)..... Volkswagen AG, Wolfsburg

Principal ..... Volkswagen AG, Wolfsburg

### **Production halls in the Bonn factory of IDAC Autolacke (Extension, 1997)**

Development of concepts for the thermal improvement of working environments  
 Client (TBE planning)..... GUT Gebäude- u. Umwelttechnik, Jüchen  
 Principal ..... IDAC Automobile GmbH, Bonn

### **Bielefeld branch of DaimlerChrysler AG (New building, 1996)**

Facade concept for the showroom  
 Client (Architecture) ..... DaimlerChrysler AG, Stuttgart  
 Principal ..... DaimlerChrysler AG, Bielefeld

### **Hambach Factory / Lorraine (France) of smart France S.A.S. (New building, 1995 - 2002)**

Determination of the heating energy requirement of the complete factory by means of simulation for the layout of the block-type thermal power station, operation optimisation and drawing up of a control concept for all ventilation plant including invitation to tender and final inspection, fluidic survey of the atriums, planning of ventilation plant for the factory extension, thermographic surveys of all facades, setting-up of an energy management database  
 Client (Principal)..... smart France S.A.S., Hambach (France)  
 Architecture..... Sexer Loyrette, Paris (France)

## **3.2 Administration buildings**

### **Administration building of German Telekom AG in Bonn (Concept development, 2016)**

Development of a concept for improving the thermal comfort in a UMTS control room by means of dynamic building simulation  
 Client..... STRABAG Property and Facility Services GmbH, Siegen

### **Administration building of German Telekom AG in Neustadt an der Weinstraße (Conversion, 2016)**

Verification of the summertime comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort  
 Client..... STRABAG Property and Facility Services GmbH, Siegen

### **Administration building of German Telekom AG in Karlsruhe (Conversion, 2016)**

Verification of the summertime comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort  
 Client..... STRABAG Property and Facility Services GmbH, Karlsruhe

### **Administration building of German Telekom AG in Brunswick (Concept development, 2016)**

Verification of the summertime comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort  
 Client..... STRABAG Property and Facility Services GmbH, Siegen

### **Administration building of German Telekom AG in Munich (Conversion, 2015 - 2016)**

Verification of the summertime comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort for the site Dingolfingerstreet Turm B  
 Client..... STRABAG Property and Facility Services GmbH, Siegen

### **Administration building of Robert Bosch GmbH in Stuttgart (New building, 2015)**

Evaluation of the ventilation concept for the project Feuerbach of Robert Bosch GmbH using building simulation  
 Client (Principal)..... Robert Bosch GmbH, Stuttgart

### **Administration building of German Telekom AG in Regensburg (Conversion, 2015)**

Verification of thermal comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort  
 Client..... STRABAG Property and Facility Services GmbH, Siegen

**Administration building of German Telekom AG in Munich (Redevelopment, 2015)**

Verification of the summertime comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort for the site Marsplatz

Client..... STRABAG Property and Facility Services GmbH, Würzburg

**Administration building of German Telekom AG in Düsseldorf (Conversion, 2015)**

Verification of thermal comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort

Client..... STRABAG Property and Facility Services GmbH, Siegen

**Administration building of German Telekom AG in Mannheim (Modernisation, 2015)**

Verification of thermal comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort

Client..... STRABAG Property and Facility Services GmbH, Siegen

**Administration building of German Telekom AG in Cologne (Conversion, 2015)**

Verification of thermal comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort

Client..... STRABAG Property and Facility Services GmbH, Heusenstamm

**Administration building of German Telekom AG in Essen (Concept development, 2014)**

Verification of the summertime comfort index for the current planning concept, development of a concept for ensuring the desired thermal comfort

Client..... STRABAG Property and Facility Services GmbH, Heusenstamm

**Administration building of German Telekom AG in Frankfurt on the Main (New building, 2013)**

Simulation for the evaluation of thermal comfort in winter for the site Wilhelm-Fay-Street in Frankfurt on the Main

Client..... Lang & Cie. Siebzehnte Projektentwicklung GmbH & Co. KG, Frankfurt

**Administration building of German Telekom AG in Dortmund (Conversion / Modernisation, 2013)**

Verification of the summertime comfort index for the planning stage, development of a concept to guarantee the desired thermal comfort for the site Kamp Street in Dortmund

Client..... STRABAG Property and Facility Services GmbH, Osnabrück

**Head Office of Förde Sparkasse Kiel (Conversion / Modernisation, 2013)**

Simulation for the evaluation of thermal comfort in winter for restoration purposes

Client..... Petersen-Ingenieure GmbH, Flensburg

**Administration building of German Telekom AG in Dortmund (Conversion, 2013)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the expansion of the service center in Dortmund

Client..... Medibau Grundstücksgesellschaft mbH, Castrop-Rauxel

**Branch office at Bürgerpark of NORD/LB in Brunswick (Conversion / Modernisation, 2012)**

Verification of the summertime comfort index for the planning stage by means of dynamic building simulation, development of suggestions for improvement for the glazing and the shading

Client..... Norddeutsche Facility-Management GmbH, Hannover

TBE planning ..... PBS PlanungsBüro Schmidt, Wennigsen

**Service-Center of German Telekom Customer Service DTKS (Conversion / Modernisation, 2012)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the location Freiburg

Client..... STRABAG Property and Facility Services GmbH, Osnabrück

**Administration building of German Telekom AG in Munich (Conversion / Modernisation, 2012)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the location "Dachauerstraße" in Munich

Client..... STRABAG Property and Facility Services GmbH, Osnabrück

### **Administration building of German Telekom AG in Aachen (Conversion / Modernisation, 2012)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the location "Am Gut Wolf" in Aachen

Client..... STRABAG Property and Facility Services GmbH, Heusenstamm

### **Head Office of Haniel group in Duisburg (Study, 2011)**

Analysis of the economic feasibility of different variants of cogeneration on the basis of natural gas, biogas and rapeseed oil

Client.....KoneX Energie GmbH, Dinslaken

### **Service-Center of German Telekom Customer Service DTKS (Conversion / Modernisation, 2011)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the locations Bielefeld, Sternengasse Cologne, Munich, Schwerin

Client..... STRABAG Property and Facility Services GmbH, Düsseldorf

### **Head Office of Haniel group in Duisburg (Concept development, 2010 - 2011)**

Development of a concept for the reconstruction of the chilling supply systems of the Franz-Haniel-Platz property, screening of different alternatives of technical realisation in terms of efficiency and economic feasibility using a simulation model, deduction of a recommendation for realisation

Client..... KoneX Energie GmbH, Dinslaken

### **Vodafone Campus in Düsseldorf (New building, 2010)**

Assessment of a design planning for heating, ventilation and air conditioning including the according supply systems for a 85.000 m<sup>2</sup> building (n. b. ar.), elaboration of suggestions for improvement

Client..... inDIGO Ingenieur-Gesellschaft für Dienstleistungen, Gebäude- und Objektservice mbH, Dortmund

Principal ..... Vodafone, Düsseldorf

### **Call Center of German Telekom Customer Service DTKS (New building, 2010)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the location Ludwigshafen

Client (Principal)..... GOLDBECK Süd GmbH, Hirschberg

### **Call Center of German Telekom Customer Service DTKS (New building, 2010)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the location Dortmund

Client (Architecture) ..... Architecture office Schlösser, Dortmund

### **Call Center of German Telekom Customer Service DTKS (Conversion / Modernisation, 2009 2010)**

Verification of the summertime comfort index according to the lessee's specifications using dynamic building simulation for the locations Bielefeld, Kempten, Meschede, Recklinghausen, Schwerin, Traunstein, Weiden

Client..... Lahmeyer Rhein-Ruhr GmbH, Essen

Principal ..... STRABAG Property and Facility Services GmbH, Düsseldorf

### **Office building Tower in Brunswick (Conversion, 2009)**

Verification of the summertime comfort index for the planning state using dynamic building simulation, elaboration of enhancement proposals for glazing and shading installations, compilation of Energy Performance Certificates according to the German Energy Saving Act (EnEV) as of 2007 and 2009

Client..... Architekturbüro Nellesen, Brasse & Partner, Roetgen

Principal ..... Nürnberger Versicherungs AG, Nuremberg

### **Wassermannhaus at business park TRIOTOP, Cologne (New building, 2008 - 2009)**

Model-based analysis of the building design and development of a facade and energy concept, evaluation of diverse room-sided supply systems and economic analysis of potential supply options for the property, assembly of an Energy Performance Certificate using partial simulation results, compilation of an Energy Performance Certificate according to DIN V 18599

Client (Principal)..... Hiba Grundbesitz GmbH & Co. KG, Cologne

### **Eurolab of Ericsson GmbH in Herzogenrath (Modernisation, 2008)**

Consultancy for the staff association with regards to a technical concept concerning the intended office area modification

Client..... Ericsson GmbH, Herzogenrath

### **Administration building on Porscheplatz 1 in Essen (New building, 2008)**

Building-physical consultancy and compilation of an Energy Performance Certificate using dynamic building simulation

Client..... Kempen Krause Ingenieurgesellschaft, Aachen

Principal ..... Caritas, Essen

### **Office building of NOA GmbH in Aachen (Study, 2008)**

Evaluation of measures to ensure the summertime comfort index

Client..... NOA GmbH, Aachen

### **Regional authority for salary and provisioning of the Federal Land North Rhine-Westphalia in Düsseldorf (New building, 2007)**

Determination of the annual thermal heat and cooling demand using dynamic building simulation

Client..... Axima GmbH, Cologne

Principal ..... BLB Bau- und Liegenschaftsbetrieb NRW, Düsseldorf

### **Office building in Hasselt (Belgium) (New building, 2007)**

Verification of the summertime comfort index as well as hibernal room temperatures for the planning state using dynamic building simulation, elaboration of enhancement proposals for the glazing and shading facilities

Client..... VIKA Ingenieur GmbH, Aachen

### **Offices on Kaiserkai Hafencity in Hamburg (New building, 2006)**

Investigation concerning summer heat protection (comfort) using dynamic building simulation

Client (Principal)..... d.quai Kontor GmbH, Hamburg

### **Dalman Carrée Hafencity in Hamburg (New building, 2006)**

Study into summer heat protection (comfort) using a dynamic building simulation

Client..... Entwicklungsgesellschaft Dalman-Carrée mbH & Co. KG, Hamburg

Principal ..... DS-Bauconcept GmbH, Hamburg

### **Head office of SANDVIK GmbH in Düsseldorf, Heerdter Landstraße (New building, 2005)**

Drawing-up of the technical building specification (technical building equipment, cost class 400) for an investor competition to ensure low operating costs

Client..... Diets & Siepmann Ingenieurgesellschaft mbH, Kaarst

Lessee ..... SANDVIK GmbH, Düsseldorf

### **Building P at E.ON Kraftwerke GmbH, Gelsenkirchen (Modernisation, 2004 - 2005)**

Energy analysis using a dynamic building and equipment simulation for the planned redevelopment, detailed building physics planning (thermal bridges, humidity protection), development of a technology and energy concept for the planned modification of the entrance hall

Client (Principal)..... E.ON Kraftwerke GmbH, Gelsenkirchen

### **Office and commercial building Q1 Neuenhofstraße, Aachen (New building, 2004)**

Development of an energy concept (thermal construction physics + systems), study into summer heat protection (comfort) using a dynamic building simulation

Client (Principal)..... G. Quadflieg GmbH, Aachen

Architecture..... mpb-Architekten, Aachen

### **Infineon Development Center, Duisburg (New building, 2004)**

Study into summer heat protection (comfort) using a dynamic building simulation and measurements of the shading equipment

Client (Principal)..... Erste PRIMUS Projekt GmbH, Düsseldorf

Architecture..... tec ARCHITECTURE, Munich



#### **IT Centre in Lombardenstraße of STAWAG in Aachen (New building, 2002 - 2004)**

Facade study and optimisation of the building physics for ensuring the summertime comfort index, drawing-up of the energy requirement certificate, detailed building physics planning (thermal bridges, humidity protection)

Client (Principal)..... Stadtwerke Aachen AG  
 Architecture..... Hentrup-Heyers & Fuhrmann, Aachen

#### **Atrium of the Federal Press Conference in Berlin (New building, 1999)**

Layout and control concept for the ventilation flaps of the natural ventilation

Client (Principal)..... Allianz Grundstücks GmbH, Stuttgart  
 Architecture..... Nalbach & Nalbach, Berlin

#### **Administration building of Debis AG in Aachen (New building, 1999)**

Optimisation of the ventilation concept for the atrium, layout of the flaps for natural ventilation

Client (Architecture) ..... Architekturbüro Nellessen, Brasse & Partner, Roetgen  
 Principal ..... Debis AG, Aachen

#### **Chamber of Industry and Commerce in Aachen (Extension, 1999)**

Representation of principal with specialist examination of the invitation to tender for TBE and double facade

Client (Principal)..... Industrie und Handelskammer Aachen  
 Architecture..... ProPlan GmbH, Aachen

#### **Technical Medical Centre in Aachen (New building, 1998)**

Facade concept for ensuring summertime comfort index, thermal insulation certificate

Client (Principal)..... GEGRA GmbH, Aachen  
 Architecture..... Nellessen, Brasse & Partner, Roetgen

#### **Ford Research Centre Aachen (Competition, 1998)**

Determination of the life-cycle costs (25 years) of a building blueprint as part of a restricted implementation competition

Client..... Hochtief AG, Aachen  
 Sponsor ..... Ford AG, Cologne

#### **Head Office of Rheinmetall AG in Düsseldorf (New building, 1997)**

Optimisation and layout of the facades and ventilation openings in the atrium, determination of the energy requirement

Client..... Generalplaner Rather Straße GmbH, Düsseldorf  
 Principal ..... Rheinmetall AG, Düsseldorf

#### **Regional Administration of RWE AG in Düren (Extension, 1997)**

Optimisation of the building physics for reducing the energy requirement

Client (TBE planning)..... Rheinbraun Haustechnik GmbH, Düren  
 Architecture..... RWE AG, Essen

#### **Former Telephone Exchange in Hanover (Redevelopment, 1997)**

Systems comparison of different facade superstructures with the determination of the associated operating costs

Client (Principal)..... DeTe Immobilien, Hanover

#### **Administration building of the Segeberg County Council (Modernisation, 1997)**

Systems comparison of different facade superstructures with the determination of the associated operating costs

Client (Principal)..... Hochbauamt des Kreises Segeberg

#### **Technology Centre at the Europaplatz in Aachen (Extension, 1996)**

Optimisation of the facades to ensure the summertime comfort index

Client (Principal)..... Agit GmbH, Aachen  
 Architecture..... Franken und Hecker, Düsseldorf

### **Head Office (old) of NORD/LB in Hanover (Redevelopment, 1996)**

Facade study for the former tellers' hall

Client (TBE planning)..... NEK Ingenieure, Brunswick

Principal ..... Norddeutsche Landesbank, Hanover

### **Garbsen Town Hall (New building, 1995, 2000)**

Facade study and optimisation of building physics for ensuring the summertime comfort index, fluidic survey of the atrium, comparison of simulation results and measurement values

Client (TBE planning)..... Ingenieurbüro NEK GmbH, Brunswick

Architecture..... Schneider & Sendelbach, Brunswick

### **State Central Bank Siegen (New building, 1995)**

Inspection and optimisation of the facades and TBE for reducing the operating costs

Client (Principal)..... Landeszentralbank des Landes NRW, Düsseldorf

Architecture..... K. Breithaupt, Salzkotten

### **NRW Ministry for Science and Research (Modernisation, 1995)**

Optimisation of the building physics of the building cladding, determination of the operating costs

Client..... Architects Prof. Gabi Willbold-Lohr and Alex Lohr,

Büro für energiegerechtes Bauen, Cologne

## **3.3 Other buildings**

### **Construction of „Casa del aire“ on Ibiza (New Building, 2016)**

Development of the basis of the HVAC concept and verifying the desired thermal comfort for the project "Casa del aire" Ibiza using dynamic building simulation

Client..... TSB Ingenieurgesellschaft mbH, Darmstadt

### **Construction of „Lot 6 – Cluster G, Bio-Medizintechnik“ on Campus Melaten in Aachen (New Building, 2015)**

Development of a concept for compliance with the EnEV of a building project as part of a bid competition

Client..... Bouwbedrijven Jongen, Landgraaf (the Netherlands)

### **Logistics hall at the site Leipheim (New Building, 2014)**

Heat and Photometric simulation for logistics hall

Client..... Honold Logistik Gruppe GmbH & Co. KG, Neu-Ulm

### **Dresdener Str. site of Zeitungsverlag Aachen GmbH (Conversion, 2014)**

Building physics evaluation and development of a decision basis for the technical design of a window exchange and a facade modernisation, selection of suitable new windows based on dynamic building simulation taking into consideration summertime thermal comfort, clarification of the legal requirements due to the EnEV for window and facade modernisation, analysis of thermal bridges by means of CFD calculations to examine the need for accompanying measures to the window exchange (e.g. partial insulation of the balustrade)

Client..... Zeitungsverlag Aachen GmbH, Aachen

### **Krönungssaal Aachen (Concept, 2013 - 2014)**

Development of a temporary solution to ensure necessary climatic conditions for the exhibits during the special exhibition "places of power" as part of the Karl year held from mid-June to mid-September 2014 in the Coronation Room of the town hall of Aachen

Client..... Stadt Aachen, Aachen

### **Materials Management Center of MTU Friedrichshafen GmbH (New Building, 2012 - 2013)**

Analysis of energy consumption of the entire site by means of dynamic building simulation, development of specific suggestions to reduce energy costs

Client..... MTU Friedrichshafen GmbH, Friedrichshafen

### **Rechtenbach Primary School in the Lahn-Dill District (New Building, 2012)**

Certification of the desired summer comfort based on the DGNB-criteria 19.1 as well as the certification of the relative humidity in summer / winter according to the criteria 18.4 / 19.4

Client..... intep Integrale Planung GmbH, Munich

Principal ..... Lahn-Dill-Kreis

### **Sturgeon breeding in Ryazan (Russia) (New building, 2011)**

Calculation of the power requirements (heating and cooling) of the process, development of an energy supply concept and estimation of the annual energy demand for heating and chilling, development of a concept for ventilation and air conditioning including the calculation of the required air change rates, estimation of the power requirements for the infrastructure (ventilation, lighting, heating and cooling) and identification of the minimum requirements concerning the building physics

Client..... Aquanero GmbH, Neubrandenburg

### **RWTH Aachen University, electronic data processing center extension (Study, 2010)**

Analysis of the given thermal load using dynamic building simulation, evaluation of the installed glazing, elaboration and quantification of improvement measures for ensuring summer heat protection

Client..... BLB Bau- und Liegenschaftsbetrieb NRW, Aachen

### **Building of German Archaeological Institutes in Rom (Modernisation, 2009)**

Calculation of heating and cooling load using dynamic building simulation

Client..... Peter Zeiler & Partner Ingenieurgesellschaft mbH, Frechen

### **Hall of residence, Vaalser Straße 150 - 152 b, Aachen (Redevelopment, 2009)**

Elaboration of an energy redevelopment concept using dynamic building simulation, quantification of structural-physical improvement proposals, verification of a solar thermal utilisation for hot water generation, illustration of potential sponsorship

Client (Principal)..... Dr. Vossen & Partner GmbH, Aachen

### **Vocational institute Eschweiler (Study, 2009)**

Economics calculation of the existing energy supply system as to the German standard VDI 2067

Client..... Nessler Grünzig Bau GmbH, Aachen

### **Boulevard im Erlebnispark Nürburgring (New building, 2007)**

Examination of the desired summer comfort during big events as well as securing frost protection of the hall in winter using dynamic building simulation

Client..... Tilke GmbH & Co. KG, Aachen

### **Quellpavillon in the Kurpark Bad Hersfeld (New building, 2007)**

Examination of the desired summer comfort using dynamic building simulation for the unheated and naturally ventilated Quell (Fountain) Pavillion

Client..... Wette & Küneke Landscape Architecture, Göttingen

### **Multi-purpose hall, Karl-Hohmann-Straße, Düsseldorf (New building, 2004)**

Development of the ventilation concept using a flow simulation

Client (Principal)..... FCSD Sportverein e. V., Düsseldorf

Architecture..... Architekturbüro Guida, Rheinfelden

### **Berlin State Library Book Stacks (Conversion, 2004)**

Technical systems analysis for inspection of the climatic conditions of book stacks, development of a control strategy for air conditioning

Client (TBE planning)..... NEK Beraten & Planen GmbH, Berlin

### **Slab buildings in Brandenburg an der Havel (Redevelopment, 2001)**

Redevelopment of the existing ventilation plant, development of an energy concept for heat recovery with heat pumps

Client..... Frigotechnik Handels-GmbH, Hamburg

**Organic Chemistry of Hanover University (Redevelopment, 1999)**

Ecological and economical surveys for combining solar heat with the warm water supply whilst maintaining the existing long-distance energy connection

Client..... Hanover University

**Main Refectory at Chemnitz University (Redevelopment, 1998)**

Facade and ventilation concept for the fully-glazed entrance atrium

Client (Architecture) ..... Architekturwerkstatt AC, Aachen

**Art Hall Emden (Extension, 1998)**

Inspection of the climatic conditions in the picture galleries, optimisation of the ventilation concept

Client (TBE planning)..... Ingenieurbüro NEK GmbH, Brunswick

Architecture..... Büro Prof. Spengelin, Hanover

**Glass Cube at the Elisenbrunnen in Aachen (New building, 1998)**

Development of the energy concept for a fully-glazed café without shading elements

Client (Project management) ..... Mr. Beginen, Aachen

Architecture..... Architekturbüro Vonhoegen, Würselen

**Swimming baths in Bad Berleburg, Bedburg, Kerpen and Wuppertal (Modernisation, 1998)**

Measuring and theoretical determination of potential energy savings, determination of foundations and overall cost consideration for the redevelopment

Client..... Municipal councils of the towns of Bad Berleburg, Bedburg, Kerpen and Wuppertal

**Federal College in Schwerin (New building, 1997)**

Fluidic optimisation of the ventilation concept in the main lecture theatre

Client (TBE planning)..... Ingenieurbüro Fliener & Runge, Eckernförde

Architecture..... von Gerkan, Mark & Partner, Hamburg

**March-Hugstetten Primary School (Extension, 1997)**

Court appraisal report on the overheating of the classrooms in summer

Client..... Expert Willmann, Merzhausen

Principal ..... March-Hugstetten Council

**Thalia Hall in the Schwerin House of Culture (Modernisation, 1997)**

Fluidic conception of the ventilation in the historic building

Client (TBE planning)..... Ingenieurbüro Barkowski, Wismar

**Philoturm of Hamburg University (Redevelopment, 1996)**

Systems comparison of different facade superstructures with determination of the corresponding operating costs

Client (Principal)..... Umweltbehörde der Stadt Hamburg

**Weberbach Council Library in Trier (Redevelopment, 1996)**

Development of detailed building physics solutions, ventilation concept for the archiving of historical books

Client..... Stadtverwaltung Trier

**Conversion of a machine hall into a rehearsal stage for the city of Kiel (1996)**

Development of a concept for the natural ventilation of a theatre auditorium

Client..... Hochbauamt der Stadt Kiel

## 4 Research & Development

### Heat demand forecast with ANN (Development, 2014)

Development, testing and evaluation of a method for the annual heat demand forecast using artificial neural networks (ANN) in hourly resolution based on average weather data, extension of the method for continuous short term demand forecasting based on continuously recorded consumption data and weather forecasts as the basis for the direct marketing instruments for electricity produced in CHP

Client..... EWE AG, Oldenburg

### Yazaki absorption chillers (Software development, 2011)

Upgrading of the dimensioning software for Yazaki absorption chillers for the new WFC50 model

Client..... Yazaki Europe Ltd. Environment and Energy Equipment Operations, Cologne

### Market Survey for Energy Controlling Software (Development, 2011)

Concept development and attendance of a market survey for energy controlling software including investigation of available products and manufacturer questionnaires

Client..... EnergieAgentur.NRW, Wuppertal

### Cogeneration guideline for the meat processing industry (Technical documentation, 2011)

Compilation of a guideline for cost reduction using cogeneration in the meat processing industry, illustration of branch specific fields of application and illustration of practical examples

Client..... B.KWK Bundesverband Kraft-Wärme-Kopplung e. V., Berlin

### sOptimo – Structure Optimisation of the Energy Supply of Industrial Parks (BMW research project, 2010 - 2013)

Research focused on finding energy efficiency potentials for the energy supply systems of industrial sites, development of a structure optimisation method, which enables the planner to find the best solution for an optimised future supply system based on the problem specification and site specific boundary conditions

Client..... Jülich (PTJ), Energy Efficiency in Industry and Commerce, sponsored by the Federal Ministry for Economic Affairs and Energy (BMWi)

### NCplus – Process and value creation-oriented controlled machine tool (BMBF research project, 2009 - 2012)

Process and energy flow analysis of two machine tools during typical processing, identification and quantification of potential for improvement, development of a computer-based model to optimise the coolant supply, prototypic implementation of an energy-efficient and value creation-oriented working machine tool along with ten other companies and a research institution

Client..... Karlsruhe Institute of Technology (KIT), Production and Manufacturing Technologies (PTKA-PFT), sponsored by the Federal Ministry of Education and Research (BMBF) in the framework „Research for the production of tomorrow“

### Yazaki absorption chillers (Software development, 2009)

Development of a dimensioning software based on the software framework TOP-Energy for Yazaki absorption chillers – type WFC in cooperation with the GFal at Berlin, modules for machine selection and simulation under time variable load conditions

Client..... Yazaki Europe Ltd. Environment and Energy Equipment Operations, Cologne

### Yazaki Europe Ltd. (Study, 2008)

Development of a sales supporting study on the market positioning of absorption chillers, technical and economical evaluation of the field of application of absorption chillers, compilation of precise case studies focusing on the economical application of absorption technology

Client..... Engert und Partner GmbH & Co. KG, Aachen

Principal ..... Yazaki Europe Ltd. Environment and Energy Equipment Operations, Cologne

### **Energy audits at textile plants in Lahore (Pakistan) (Coaching, 2006)**

Coaching and supervision of energy audits at textile plants in Pakistan

Client..... EUtech Energie & Management GmbH, Aachen,  
sponsored by the GTZ (German Society of Technical Cooperation) within  
the Renewable Energy & Energy Efficiency Program (REEE), Eschborn

### **Quality control of experiences of the use of a passive house (Study, 2005)**

Evaluation of the energy consumption and operating costs, analysis of the user experiences with living in a passive house

Client..... Institute of land- and urban development research and civil engineering of  
the State of NRW (ILS), Aachen,  
sponsored within the scope of the accompanying research of the passive  
house promotion within the REN-Program of the State of NRW

### **Participation and empowerment research project (Participation, 2000 - 2001)**

Aim of the project: improving employee motivation by exchanging experiences between different companies

Client..... ZLW/IMA of RWTH Aachen,  
sponsored by the Federal Ministry for Education and Research

### **Cooperative development of the Aachener passive house (Development, 1999 - 2001)**

Drawing-up the application and project management of a cooperative of 13 tradesmen and planning companies for planning and building a cost-effective passive house in massive construction

Client..... G. Quadflieg Bauträger GmbH, Aachen,  
sponsored by the Ministry for Building and Accommodation of the State of  
NRW, Düsseldorf, as part of the future-orientated construction initiative

### **Reduction of the usage-linked operating costs of swimming baths (Study, 1998)**

Measuring analysis of 5 municipal swimming baths with the aim of highlighting points for saving operating costs for all municipalities in NRW

Client..... Ministry for Building and Accommodation NRW, Düsseldorf

### **Research project on environment-friendly operation by tradesmen (Participation, 1996 - 1998)**

Aim of the project: compilation of interface problems on the building site and different possible solutions as well as qualification of tradesmen in the field of ecological construction

Client..... ZLW/IMA of RWTH Aachen,  
sponsored by the Ministry for Economy, MSE's, Technology and Transport  
of the state of NRW as part of the Quatro EU co-financed development  
scheme

### **Heat exchangers for Adtranz GmbH trains (Study, 1997)**

Risk assessment for the use of plate heat exchangers in train operation

Client..... Adtranz GmbH, Berlin

### **Production of planning aids for dimensioning geothermal exchangers (Development, 1995)**

Client..... Architects Prof. Gabi Willbold-Lohr and Alex Lohr,  
Büro für energiegerechtes Bauen, Cologne,  
supported by the Ministry for Building and Accommodation of the state of  
NRW

## 5 Other

### 5.1 Carbon Footprint

#### **OSI Food Solutions UK Ltd. (Product Carbon Footprint, 2013)**

Development of a tool incl. guidelines for the creation of product carbon footprints for slaughterhouses (scope 3) with allocation and evaluation relating to sub-processes, support during pilot and implementation phase, creation of video tutorials for application support

Client..... OSI Food Solutions UK Ltd., United Kingdom

#### **Kampffmeyer Mühlen GmbH (Product Carbon Footprint, 2011)**

Compilation of a Product Carbon Footprint of wheat crops under consideration of the upstream chains (scope 3), development of a database application allowing the evaluation of the collected samples and other statistical data with respect to the wheat quality and regional provenance

Client..... Kampffmeyer Mühlen GmbH, Cologne

#### **Esca Food Solutions GmbH (Product Carbon Footprint, 2010)**

Development of a guideline for the compilation of Product Carbon Footprints covering the production of hamburger patties with consideration of the upstream chain (scope 3), support of the persons in charge during the conduction phase

Client..... Esca Food Solutions GmbH, Duisburg

#### **Elmühle of Kampffmeyer Mühlen GmbH (Product Carbon Footprint, 2010)**

Compilation of a Product Carbon Footprint for selected flour qualities with consideration of the upstream chain (scope 3) as well as the byproducts

Client..... Kampffmeyer Mühlen GmbH, Cologne

#### **Aldrup works of Agrarfrost GmbH & Co. KG (Product Carbon Footprint, 2010)**

Compilation of a Product Carbon Footprint for the pommes frites production with consideration of the upstream chain (scope 3), the byproducts as well as the onsite cogeneration facilities

Client..... Agrarfrost GmbH & Co. KG, Wildeshausen / Aldrup

#### **Fresh Start Bakery (FSB), location Duisburg (Consultancy, 2009)**

Compilation of a carbon footprint according to the Ademe's balancing standard "Bilan Carbone" and environmental reports according to the customer's specification for all European bakeries of FSB, formulation of a bakery specific guideline on calculating carbon footprints, conduction of a workshop on "energy efficiency in bakeries"

Client..... FSB Backwaren GmbH, Duisburg

### 5.2 Energy auditing of medium-sized enterprises

#### **Consulting of medium-sized businesses at Dirkra Sondermaschinenbau GmbH (Consulting, 2015)**

Energy consultation and analysis in accordance with the directive of the federal ministry of economics and energy on the promotion of energy consultancy for SMEs

Client..... Dirkra Sondermaschinenbau GmbH, Stolberg (Rhineland)

#### **KfW Energy consulting of medium-sized businesses at C. Hölter KG (Consulting, 2014 - 2015)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... C. Hölter KG, Salzkotten

**KfW Energy consulting of medium-sized businesses at Cornexo GmbH  
(Consulting, 2014 - 2015)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Cornexo GmbH, Freimersheim

**KfW Energy consulting of medium-sized businesses at Sawmill and Crate Manufacturer Carl Alpmann GmbH (Consulting, 2014 - 2015)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Sägewerk und Kistenfabrik Carl Alpmann GmbH, Salzkotten

**KfW Energy consulting of medium-sized businesses at Sawmill Heinrich Holtmeyer & Sohn GmbH (Consulting, 2014 - 2015)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Sägewerk Heinrich Holtmeyer & Sohn GmbH, Ottersberg-Narthauen

**KfW Energy consulting of medium-sized businesses at Hammerwerke Haspe GmbH & Co. KG (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Hammerwerke Haspe GmbH & Co. KG, Hagen

**KfW Energy consulting of medium-sized businesses at Lanwehr Naturstein GmbH & Co. KG (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Lanwehr Naturstein GmbH & Co. KG, Arnsberg

**KfW Energy consulting of medium-sized businesses at Lausberg Kunststofftechnik GmbH & Co. KG (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Lausberg Kunststofftechnik GmbH & Co. KG, Meschede

**KfW Energy consulting of medium-sized businesses at Menke Kunststoffe GmbH & Co. KG (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Menke Kunststoffe GmbH & Co. KG, Warstein

**KfW Energy consulting of medium-sized businesses at Potraz Kunststofftechnik GmbH (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Potraz Kunststofftechnik GmbH, Werl

**KfW Energy consulting of medium-sized businesses at Hollsteinische Mühlen Werke Rusch GmbH & Co. KG (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Hollsteinische Mühlen Werke Rusch GmbH & Co. KG, Itzehoe

**KfW Energy consulting of medium-sized businesses at Heinrich Bulthaup GmbH (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Heinrich Bulthaup GmbH, Melle



**KfW Energy consulting of medium-sized businesses at Ernst Fisch GmbH & Co. KG  
(Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Auftraggeber ..... Ernst Fisch GmbH & Co. KG, R then

**KfW Energy consulting of medium-sized businesses at H ster GmbH (Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... H ster GmbH, Warstein

**KfW Energy consulting of medium-sized businesses at Johann Kirchhoff GmbH & Co. KG  
(Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Johann Kirchhoff GmbH & Co. KG, Finnentrop-R nkhausen

**KfW Energy consulting of medium-sized businesses at Sawmill Lei e GmbH  
(Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... S gwerk Lei e GmbH, Warstein

**KfW Energy consulting of medium-sized businesses at Josef Schmelter GmbH  
(Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Josef Schmelter GmbH, Lennestadt

**KfW Energy consulting of medium-sized businesses at Stricker & Weiken GmbH & Co. KG  
(Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Stricker & Weiken GmbH & Co. KG, Warstein

**KfW Energy consulting of medium-sized businesses at Warsteiner Eisenhammer GmbH & Co. KG  
(Consulting, 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Warsteiner Eisenhammer GmbH & Co. KG, R then

**KfW Energy consulting of medium-sized businesses at Schlachthof-Betriebs-GmbH F rth  
(Consulting, 2013 - 2014)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Schlachthof-Betriebs-GmbH F rth, F rth-Burgfarnbach

**KfW Energy consulting of medium-sized businesses at A. u. K. M ller GmbH & Co. KG  
(Consulting, 2013)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... A. u. K. M ller GmbH & Co. KG, D sseldorf

**KfW Energy consulting of medium-sized businesses at KKT Kaller Kunststoff Technik GmbH  
(Consulting, 2013)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... KKT Kaller Kunststoff Technik GmbH, Kall

**KfW Energy consulting of medium-sized businesses at mk Plast GmbH & Co. KG  
(Consulting, 2013)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... mk Plast GmbH & Co. KG, Monschau-Kalterherberg

**KfW Energy consulting of medium-sized businesses at Karl Bindewald Kupfermühle GmbH  
(Consulting, 2012)**

Detailed analysis based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Karl Bindewald Kupfermühle GmbH, Bischheim

**KfW Energy consulting of medium-sized businesses at Max Wagner KG (Consulting, 2012)**

Initial consultation based on the guidelines of the federal ministry of economics and technology for the funding of energy consulting of medium-sized enterprises

Client..... Max Wagner KG, Bad Essen

**KfW Energy efficiency consultation at Bakery & Mill Eberhard Vielhaber GmbH & Co. KG  
(Consulting, 2011 - 2012)**

Initial consultation followed by a detailed analysis according to the guidelines for energy efficiency consultation in the framework of the special fund for energy efficiency in small and medium-sized enterprises

Client..... Bakery & Mill Eberhard Vielhaber GmbH & Co. KG, Sundern-Stockum

**KfW Energy efficiency consultation at Heusch GmbH & Co. KG (Consulting, 2011)**

Initial consultation followed by a detailed analysis according to the guidelines for energy efficiency consultation in the framework of the special fund for energy efficiency in small and medium-sized enterprises

Client..... Heusch GmbH & Co. KG, Aachen

### **5.3 PIUS-Check**

**Rudolf Hillebrand GmbH & Co. KG (PIUS-Check, 2015)**

Process-related energy demand analysis (PIUS-Check energy and raw materials), detailed analysis of current energy situation, measurement, analysis and presentation of in-plant energy flows, development and demonstration of potential energy and process technology improvements, especially in the fields of powder coating, wet coating, component pre-treatment, retained water drying, baking oven, process heat recovery, heat supply and alternative concepts

Client..... Rudolf Hillebrand GmbH & Co. KG, Wickede (Ruhr)

**Bäckerei Mensing OHG (PIUS-Check, 2015)**

Process-related energy demand analysis (PIUS-Check energy and water), detailed analysis of current energy situation, measurement, analysis and presentation of in-plant energy flows, development and demonstration of potential energy and process technology improvements, especially in the areas of water treatment, process heat recovery, water heating and cooling

Client..... Bäckerei Mensing OHG, Velen-Ramsdorf

**Isselguss GmbH Gießereierzeugnisse (PIUS-Check, 2014)**

Process-related energy demand analysis (PIUS check energy), current state analysis, representation of site internal energy flows, development of specific proposals for energy efficiency and process optimisation, in particular in the areas of smelting in the cupola furnace, coke-free cupola furnace, furnace gas CHP, waste heat supplied district heating network as well as alternative procedures for greensand cooling

Client..... Isselguss GmbH Gießereierzeugnisse, Isselburg

**Werner Langer GmbH & Co. KG (PIUS-Check, 2014)**

Process-related energy demand analysis (PIUS check energy), current state analysis, representation of site internal energy flows, development of specific proposals for energy efficiency and process optimisation with consideration of process cooling, conveyance systems, building heating, lighting and some areas of the building envelope and in particular the pellet drying as well as a feasibility study of a possible CHP solution at the site  
Client..... Werner Langer GmbH & Co. KG, Meschede-Berge