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Deutsch-Amerikanische Handelskammern

energy solutions
MADE IN GERMANY

ENERGY EFFICIENCY AWARD CHALLENGE

German Innovation in US Buildings

April 7, 2016 | Chicago, IL

Energy Efficiency Award Challenge

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Contact

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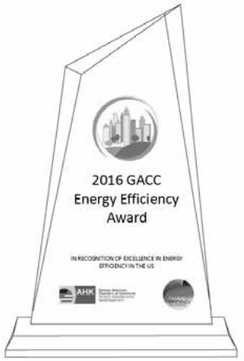
About our Energy Efficiency Award Challenge

The German American Chamber of Commerce of the Midwest, Inc. is delighted to welcome you to our Energy Efficiency Award Challenge, together with our four energy efficiency solution providers from Germany, who have been selected as today's finalists. Between the project presentations and expert speakers in the morning, the site visit in the afternoon, and the award ceremony later in the evening, this unique event is a perfect opportunity to become acquainted with energy efficiency solutions from Germany that are being utilized to improve energy efficiency and building quality in the United States.

The Award Challenge was created as part of the German Energy Solutions Initiative, sponsored by the German Ministry for Economic Affairs and Energy, to recognize the positive impact German businesses have in the US building sector. It is designed to help German companies strengthen their position in the US market and make new connections within the US sustainable building industry. The competition provides participating German companies with the chance to showcase their technologies and services that focus on increasing overall building performance across the US. We received many great applications, but there were four companies that especially distinguished themselves: Airleader, Baumann Consulting, INTEP and Schüco. These four will present themselves and their projects today in hopes of winning the coveted Energy Efficiency Award.

Current market trends suggest that building owners and managers will invest $960 billion between now and 2023 on "greening" their existing building infrastructures. In terms of growth throughout the sustainable building industry, the US is still lagging behind Germany and other European countries that prioritize reducing CO_2-emissions. The aforementioned trends towards a more sustainability and energy efficiency-focused method of building, coupled with the exemplary efforts to prioritize developments in this industry throughout Europe, have created increasing market opportunities in the US for German companies in this field.



This Award Challenge is aimed at providing both applicants and attendees with the chance to learn more about energy efficient solutions from German manufacturers, as well as how they are being implemented in the US building sector. We hope you enjoy our event and to the Award Challenge finalists, *viel Glück*!

Preface

The Energy Efficiency Award Challenge is a celebration of innovative German energy-efficient solutions in buildings across the USA. It is a great opportunity to promote successful German-US partnerships, which have led to increased building quality, reduced energy costs and lower CO2 emission levels in the US. The four innovative projects, which are being showcased in the framework of the Energy Efficiency Award Challenge, present the USA as an attractive location for German companies seeking concrete partnerships and market opportunities.

The advanced technologies, know-how and expertise from the German companies involved in these projects conducted in the USA are representative of a wider success story: Germany is a world leader in the field of energy efficiency. Cutting-edge German technology are featured in all energy efficiency market segments, including insulation systems, insulated glazing, heating and cooling technologies, efficient home appliances, smart metering, energy-efficient lighting systems, cogeneration systems, as well as pumps and compressed air systems. German companies generate a turnover of about $66 billion per year in this industry, and double-digit growth rates are expected in the coming years.

Since 2002, the Federal Ministry for Economic Affairs and Energy has successfully supported German-American partnership via the German Energy Solutions Initiative. The US market has proved to be very open to German suppliers of energy-efficient products, systems and services. Since this initiative was launched in 2002, the German American Chamber of Commerce has been active in creating and hosting successful cooperation platforms such as trade missions, study tours and innovation seminars. This new Showcase project is a first for the US, and it gives the German Ministry for Economic Affairs and Energy a welcome opportunity to celebrate some great examples of German-American partnership in the building sector.

Christina Wittek
Head of Division
German Energy Solutions Initiative
Federal Ministry for Economic Affairs and Energy

Agenda

Energy Efficiency Presentation Event

10:00 am **Words of Welcome & Introduction**
Mark Tomkins, President & CEO, German American Chamber of Commerce of the Midwest, Inc.

10:10 am **Empowering the Environment - AktivHausBio**
Viola Kosseda, Project Manager Facades, WSNY, Inc.

10:40 am **Energy Efficiency in the US**
Colin Rohlfing, Vice President, Director of Sustainable Development, HDR, Inc.

11:10 am **Showcase 1 - Waldsee BioHaus in Bemidji, MN**
- Stephan Tanner, Registered Architect, AIA, Principal, Intep - Integrated Planning, LLC
- Tim Delhey Eian, Dipl.-Ing. Arch., Certified Passive House Designer, Principal, Intep - Integrated Planning, LLC

11:30 am **Coffee Break & Networking**

12:15 pm **Showcase 2 - Integrated Energy Master Plan for the City of Holland, MI**
Oliver Baumann, President, Baumann Consulting, Inc.

12:35 pm **Showcase 3 - Herman Miller in Spring Lake, MI**
Jan Hoetzel, Managing Director, SIGA Development LLC DBA Airleader - WF Steuerungstechnik GmbH

12:55 pm **Showcase 4 - Bullitt Center in Seattle, WA**
Attila Arian, President, Schüco USA LLLP

1:15 pm **Closing Remarks**
Corinna Jess, Senior Manager, Market Entry Programs & Delegations, German American Chamber of Commerce of the Midwest, Inc.

1:30 pm **Lunch & Networking Break**

Energy Efficiency Award Ceremony & Evening Reception

5:30 pm **Words of Welcome**

5:35 pm **Energy Efficiency Award Presentation**

5:45 pm **Celebration of the Award Winner & Networking**

7:30 pm **End of the Event**

Site Visit - Energy Efficiency: Made in Germany

2:30 pm Departure

3:00 pm Mansueto Library

Guided tour of the Mansueto Library at the University of Chicago:

- Larry Blouin, Director of Contruction Management for Facilities Services, The University of Chicago
- Stephan Wurster, Sales Manager, seele, Inc.

The University of Chicago
1100 East 57th Street
Chicago , IL 60637

4:15 pm Depart for the Award Ceremony & Evening Reception

Speakers & Moderator

Viola Kosseda
Project Manager Facades, Werner Sobek New York Corp.

Viola Kosseda joined Werner Sobek in 2010 and has been involved in various projects from the conceptual design throughout the construction administration phase since. With a deep knowledge and understanding of sustainable design, she contributed to the work of the façade team, focusing on the thermal performance of buildings as well as the integration of sustainability aspects in early design stages. Viola was responsible for developing models in Therm and Ecotect for building performance analysis and optimization of glass designs, glass canopy structures, façades and roof systems. Viola has worked in close contact with the Werner Sobek team in Stuttgart, also designing systems and components for complex geometry projects which include the National Museum of Qatar by Ateliers Jean Nouvel. Prior to joining the New York branch of the group, she worked as a Sustainability Consultant with Werner Sobek GreenTechnologies in Stuttgart for two years. There she worked on several building certifications according to the DGNB System and consulted on prototype buildings including the Plus-Energy House with Electromobility in Berlin, Germany. Viola was a visiting student at Cornell University in 2009 and graduated with a Dipl.-Ing. degree in Architecture from the University of Stuttgart, Germany in 2010.

Colin Rohlfing, LEED AP BD+C
Vice President, Director of Sustainable Development, HDR, Inc.

Colin is passionate about facilitating the marriage of performance and aesthetics, and that both are necessary for a project's success. As the director of sustainability, Colin is responsible for the overall sustainable design leadership of the practice. He promotes quality design efforts among all departments, regional business units and market business units, and he is acutely involved in the positioning of the practice, as well as the pursuit, win and delivery of design projects. He also provides global sustainable consulting thought leadership to enhance core services. Over the past 12 years, Colin has held various design and leadership roles, as well as being actively involved with the USGBC, AIA COTE, Biomimicry Guild and the International Living Future Institute. He is an active speaker, and he has been recognized on Building Design + Construction magazine's and Design Futures Council's "40 Under 40" lists and Engineering News-Record magazine's "20 Under 40" list. He has received a USGBC Illinois Natural Leader Award, among others.

Mark Tomkins
President & CEO, GACC Midwest

Mark Tomkins joined the German American Chamber of Commerce of the Midwest in March 2006. Throughout his time at GACC Midwest, Mark has led numerous projects focusing on energy efficiency, such as dasHAUS, a pavilion showcasing cutting-edge concepts in renewables and energy efficiency that traveled the US and Canada. Prior to this, Mr. Tomkins spent over 10 years in business development consulting, working with businesses throughout the world in developing strategic alliances and long-term co-operations. Mr. Tomkins began his professional career in the automotive and IT industry in Germany and the US. He serves on the board of the German American Chamber of Commerce of the Midwest, the Honorary Board of the German International School Chicago, and the Board of Advisors for AIESEC at Northwestern University. Mr. Tomkins also serves on the National Academies of Sciences Committee on the Supply Chain for Middle-Skill Jobs. Mr. Tomkins graduated from Northwestern University in Evanston, IL with a B.A. in Applied Mathematics (Honors Program), Economics and German.

The Jury

A huge thanks to all the Energy Efficiency Award Challenge submissions. The high standard of applications, made it difficult to determine our four finalists and ultimately our Energy Efficiency Award Winner. Thankfully, we are beeing supported with this difficult task by our expert panel of judges consisting of energy efficiency and green buildings professional in the Chicago area. Based on a series of judging criteria, they narrowed down the applications to four finalists in our first evaluation round in February. The Award Challenge culminates today in our second and final round where our expert panel of judges will select the Energy Efficiency Award Winner.

Meet our 2016 Energy Efficiency Award Challenge judges:

Jeremy L. Adelman
Vice President, Energy Foundry

Jeremy Adelman has fifteen years of experience working with innovators, early-stage investors and entrepreneurs on building partnerships, raising capital, and bringing cutting edge technology to market. As Vice President of Energy Foundry, Jeremy is active in all phases of the venture investment process and leads the firm's strategy for building Chicago's energy innovation ecosystem. He co-founded Coalition:Energy, one of the country's first energy focused co-working spaces. He also manages the Smart Grid Cluster, an energy-tech startup acceleration platform for promoting regional growth and economic development—recognized by U.S. Small Business Administration Head, Maria Contreras-Sweet, as an "inspiration to the entrepreneurial sprit of the Nation."

Ellen Bell
Manager, Midwest Clean Energy, Environmental Defense Fund

Ellen Bell manages EDF's Redefining Energy Efficiency Project, which works with commercial office buildings and other non-profit partners in Chicago to develop new approaches to improve efficiency, advance energy management, and use existing and emerging technologies as a source of revenue. Previously, Ellen's work focused on accelerating energy efficiency project identification and implementation in commercial real estate through EDF Climate Corps. Ellen worked to help properties achieve target energy reductions and educate building owners and operators about energy efficiency opportunities. Before her time with EDF, Ellen served as the Global Sustainability Manager for the Chicago-based East Balt Inc. baking company.

Dr. Erin Grossi
Chief Economist, Underwriters Laboratories LLC

Erin Grossi serves as UL's chief economic strategist, providing the organization with macroeconomic analysis, insight, and trend forecasts. Erin recently completed a UL-sanctioned research project that included on-the-ground research of Germany's energy ecosystem and its usage of renewable energy. Erin has also done extensive research in the area of building sustainability. In her 10 years with UL, Erin has served as the Director of Corporate Innovation and Director of Global Government Affairs in UL's Washington, D.C. office. Dr. Grossi completed her Doctorate, with distinction, in International Commerce and Trade at Georgetown University. Previously, she received an M.A. from Georgetown in International Commerce and Trade.

Darren Hoppa, AIA, NCARB, LEED BD+C
Principal Designer, Epstein

Darren Hoppa is a pioneer and innovator in environmental and sustainable architectural design. His built work, writings and lectures have expanded the understanding of the far-reaching opportunities inherent in the balance of built and natural environments. While serving as Chair of AIA Chicago's Committee On The Environment, design excellence and sustainability have always been central to his work. His broad range of experience includes designs in master planning, high rise office, institutional and higher education. His own work, along with Kohn Pederson Fox, Adrian Smith + Gordon Gill Architecture, and Croxton Collaborative, has been featured in Architectural Record, Metropolis magazine, and Oculus.

Vuk Vujovic, Associate AIA, LEED AP BD+C
Vice President, Director of Sustainability & Energy, Legat Architects

Vuk Vujovic has lead the integration of sustainable design, resiliency, and renewable energy into all of Legat Architects Projects since 2000. His professional experience encompasses sustainable design, sustainable campus master planning, high performance building and construction, and LEED certification, as well as and renewable energy applications such as solar, wind, and geothermal. Vuk is an active member of the USGBC Green Schools and Higher Education Committees, a member of International Living Future Institute, Associate Director of the American Institute of Architects' (AIA) Chicago chapter, former Chair of AIA Chicago's Committee on the Environment (COTE), and a member of the Society for College and University Planning (SCUP). Vuk holds a Bachelor of Architecture degree from the University of Belgrade and a Master of Science in Management degree from Purdue University.

Short Project Description
Waldsee BioHaus serves as a powerful catalyst for debate appealing to a new generation of villagers, students & architectural, construction & environmental professionals committed to advancing sustainable design & quality of life.

Reference Project Address
The Waldsee BioHaus Environmental Living Center
8659 Thorsonveien NE
Bemidji, MN 56601

Key Building Information
- 1st Certified Passive House in North America
- Construction Duration 2005/06 (1.0)
- 4,320 square feet treated floor area [PHPP] over 2 stories
- Construction Type: Insulated concrete forms (ICF) & stick framing

Energy Efficiency Achieved
90% energy reduction to similar types of buildings achieved through: R-93 extensive vegetative & flat roof, R-66 Inuslated Concrete Forms (ICF)/Exterior Insulation Façade System (EIFS) & stick-framed/Vacuum Insulated Panel (VIP) walls above ground, R-52 EPS/ Concrete slab, Air-tightness of 0.18 ACH50 achieved.

intep

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www.intep.com

The Waldsee BioHaus Environmental Living Center

2016 marks the 10th anniversary of North America's first certified Passive House, the Waldsee BioHaus. It is located near Bemidji, Minnesota, in US climate zone 7—the coldest part of the country with 10,200 heating-degree days. The Passive House standard was developed in—and for—a much more moderate central European climate with an average of only 6,300 heating-degree days. With the BioHaus project, it would see its first real-world test in an environment with seriously limiting conditions.

In response to its location and the design parameters the BioHaus' building envelope is extremely well insulated to prevent heat loss. Walls achieve an R-value of 66, while the roof's insulation value is 93.

Stephan Tanner and his design team at Intep engineered two different wall sections to illustrate different paradigms. A 20-inch 'thick' wall utilizes conventional building materials, while an 8-inch 'thin' wall assembly leverages cutting-edge vacuum insulation panel (VIP) technology from Germany. Both perform at the same level. The building envelope is designed to minimize the annual heating energy demand to a maximum of 15kWh/(m2 a) as specified by the Passive House Institute.

Concordia Language Villages believes that architects, engineers, contractors and staff are responsible for creating the most educationally inspiring, efficient and cost-effective building possible.

BioHaus provides its owner with:
- Enhanced occupant comfort
- Improved learning environments
- Extended useful life of its real estate
- Reduced maintenance
- Reduced environmental impact
- Reduced life cycle cost

The first ten years of operation have shown that it is possible to build a Passive House in an extreme climate. The average energy consumption is approx. 12,000 kWh per year for all energy consumed in the building—including heating and lighting—at a cost of only $960. That is $80 per month for a 5,000 square foot commercial school building. The initial investment cost (approx. $260/sf) for this prototype and first of its kind were only about 20% above comparable educational facilities. This includes added cost for imported products like windows/ doors, the ventilation system, and motorized exterior shades needed for the design, as well as a few redundant systems, which were installed to illustrate and educate various pathways to energy efficiency, and the cutting-edge vacuum insulated panel (VIP) insulation system, that is rarely used in this application. The space heating demand is reduced by 90% over conventional designs. At the same time occupants experience a new, much higher level of comfort.

Featured German technology/innovation
- Tanner Windows – triple-pane Passive House windows
- Porextherm – vacuum insulated panels
- Warema – exterior motorized shade system
- Lüfta – high-efficiency heat recovery ventilation system
- Sto – source-drained EIFS facade system
- Rehau – earth tube ground-source air pre-conditioning system
- Rehau – solar thermal domestic hot water system
- Rehau – hydronic in-floor backup heat system

Key players
- Architect: Stephan Tanner, Registered Architect AIA (Intep - Integrated Planning, Minneapolis, MN)
- Builder: Zetha Construction, Bemidji, MN

Showcase 2

BAUMANN
CONSULTING

Baumann Consulting, Inc.
180 N. LaSalle Street, Suite 2210
Chicago, IL
Oliver Baumann
+1 (312) 386-7710
o.baumann@baumann-us.com
www.baumann-us.com

Short Project Description

Baumann Consulting helped to develop the Integrated Energy Master Plan (IEMP) for the City of Holland, Michigan. The IEMP is one of the first of its kind to be implemented in North America and serves as an actionable roadmap for achieving 50% building energy consumption and 40% greenhouse gas emissions reduction for the city by 2050.

Key Project Information

- 30-40,000 total buildings encompassing 75 million square feet of property
- implementation from 2010-2050

Energy Efficiency Achieved

The City of Holland IEMP has a 2010-2050 plan term with a projected minimum 7% internal rate of return. Implementation of the energy conservation measures outlined in the IEMP are projected to save the city over $40 million.

The City of Holland, Michigan

Project description

Baumann Consulting helped to develop the Integrated Energy Master Plan (IEMP) for the City of Holland, Michigan. Closely modeled after the energy plan of Mannheim, Germany, the IEMP is one of the first of its kind to be implemented in North America and serves as an actionable roadmap for achieving 50% building energy consumption and 40% greenhouse gas emissions reduction for the city by 2050.

Featured German innovation

The city's commitment to the IEMP, including plans for implementing a "Made in Germany" district heating system, could save the city over $40 million and prevent 325,000 metric tons of greenhouse gas emissions by 2050.

Like Holland, the city of Mannheim also includes a mix of residential, commercial and industrial buildings, and the two cities have the same climate zone and thus a similar heating and cooling demand. Representatives from the City of Holland traveled to Mannheim to learn about the city's district heating system as the basis for the implementation of an entirely new, "Made in Germany" district heating system in Holland which will reduce building energy demand and provide more efficient and reliable heat supply to buildings. A district heating system of this scope and scale enables greater security of supply by being capable of taking advantage of a variety of cleaner fuel sources including combined heat and power (CHP), biomass, waste incineration, wind, hydroelectric, etc. Since the system uses low-grade heat, industrial processes can also feed heat back into the system, which is key for a highly industrialized city like Holland which can now take advantage of waste heat recovery from industrial processes.

Key information

The City of Holland IEMP is one of the first (if not the first) of its kind to be implemented in North America. This IEMP in particular is unique in that it not only lays out energy demand and greenhouse gas reduction goals, but also provides data-driven action items that serve as a step-by-step roadmap for achieving 50% building energy consumption and 40% greenhouse gas emissions reduction for the city by 2050. The IEMP integrates both supply and demand energy into its calculations in order to present more holistic recommendations and strategies for achieving the established targets. All recommendations included in the plan are backed by data-driven models which have been tested against a variety of future scenarios such as utility cost fluctuation, availability of renewable energy credits, and carbon credits trading, which could affect the rate of return for the project.

The projected greenhouse gas emissions reductions from the City of Holland IEMP equates to 325,000 metric tons, which is comparable to the entire emissions of the country of Samoa. This illustration demonstrates just how substantial the impact of a plan of this type can be, even when implemented on the scale of a small Midwestern city. An IEMP is a tremendously powerful tool for scaling up energy savings beyond the reach of a single building to include an entire campus, city, or even county, encompassing tens of thousands of buildings. Deployment of energy efficiency strategies on such a large scale enables significant reduction in fossil fuel consumption, thereby enhancing the feasibility of using alternative clean fuel sources and achieving energy independence.

Showcase 3

airleader
Compressor Management

SIGA Development LLC
DBA Airleader - WF
Steuerungstechnik GmbH
5460 33rd Street SE
Grand Rapids, MI 49512
Jan Michael Hoetzel
+1 (616) 828-1024
info@airleader.us
www.airleader.us

Short Project Description
The AIRLEADER Compressor Management System was retrofitted to an existing compressor system at Herman Miller, located in Spring Lake MI. The installation of the AIRLEADER system led to a dramatic reduction of energy in hidden or sleeping energy losses which outperformed expectations.

Reference Project Address
Hermann Miller - 171
18558 171th Ave
Spring Lake, MI 49456

Energy Efficiency Achieved
The project achieved energy savings of 763,762 kWh which was an improvement of 21%. The monetary savings were in excess of $60,000, making the project cash positive within the first year of operation. This means the simple Return on Investment (ROI) was a stunning 0.9 years. In addition, monitoring features of the system increased overall system awareness and helped realize further savings after the project was fully implemented.

Hermann Miller - 171

The use of compressed air in manufacturing processes is extremely expensive and represents roughly 10% of the overall electricity used in manufacturing industry.

Significant amounts of energy are lost through system inefficiencies such as compressed air leakage, heat, inefficient controls, and a low degree of awareness from operators. With this in mind, compressed air systems should be an important target for Energy and Sustainability Managers all over world.

Herman Miller's Sustainability Manger took the first step by initiating an Air Energy Audit. The goal was to better understand the system, potential energy savings, the ROI with these improvements, and creating a base line for comparison to post retrofit.

The Energy Audit identified compressed air as a significant portion of the energy demand at the facility which was 24.5%. The compressed air system represented nearly one-quarter of the total electricity bill for this facility. The audit revealed inefficiencies of the 6 compressors spread across 3 different locations. A system simulation performed during the audit found potential savings for the company, reduction in wear and tear and lower overall run time for the equipment through the use of an AIRLEADER Compressor Management System.

The estimated ROI for the project was just over one year which made it easy for Herman Miller to opt for the AIRLEADER Master controller with web-based monitoring. In addition to the quick ROI, the web-based monitoring system provided further benefits and strengthened the argument in favor of moving forward with the project.

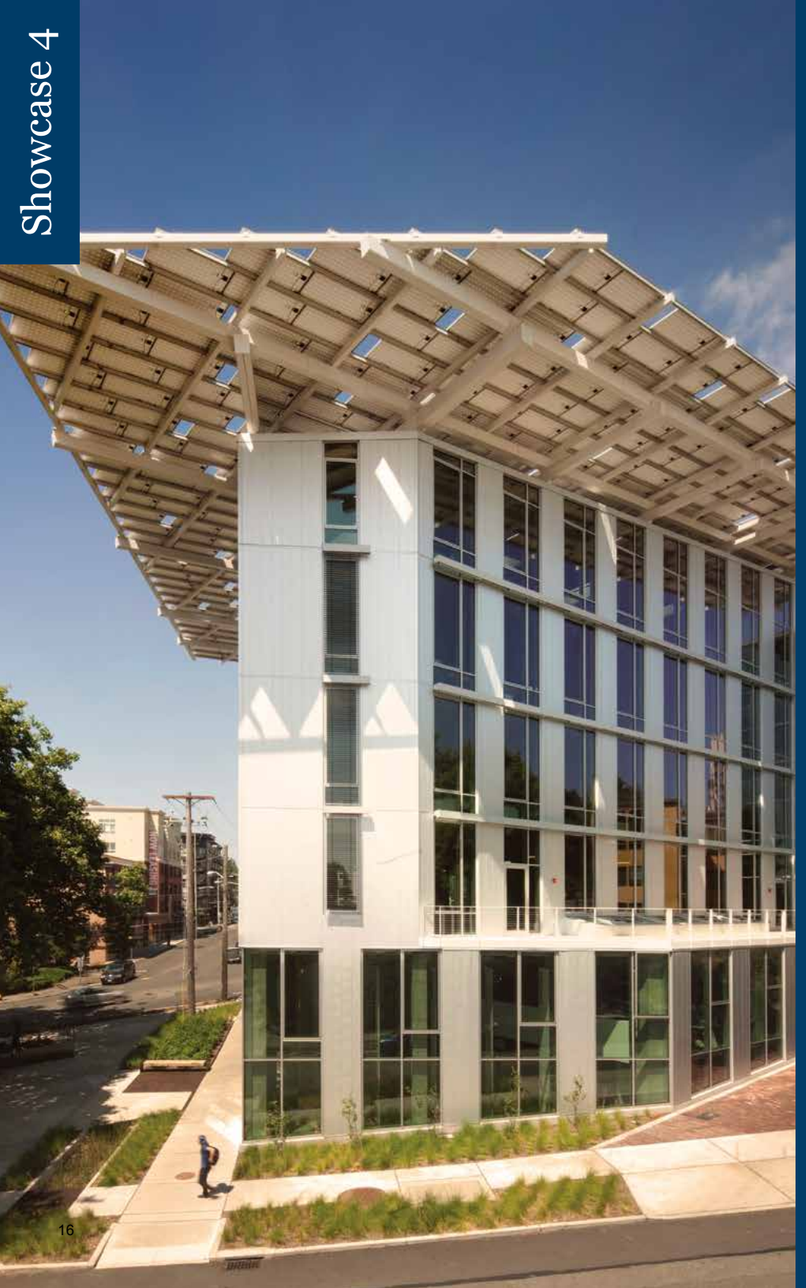
The result for Herman Miller was an annual savings of 763,762 kWh at a specific cost of

8cents/kWh. These energy reductions helped the company realize over $60,000 annually in energy savings. These results have been verified and have contributed to the Herman Millers 2011 total energy reduction of 876,863 kWh.

AIRLEADER's philosophy and focus is on running large compressors at full load while trimming with smaller compressors. In order to do it effectively, accurately and reliably, the system consumption is required to determine the best and most efficient combination of compressors at any given time. AIRLEADER utilizes an innovative, self-learning proprietary calculation which constantly adapts to system changes resulting in efficiencies far above sequencers and other controllers.

AIRLEADER has sold more than 10,000 controllers and is a household name in Germany. The company's brand recognition is steadily growing in North America. The monitoring system performs as a continuous Air Energy Audit as required by ISO 50001, allows the monitoring of air quality as defined in ISO 8573-2010, and provides other system reliability data and assure long-term effectiveness.

Short payback time makes AIRLEADER an attractive investment for retrofitting compressed air systems.



Short Project Description
The Bullitt Center is designed to be the greenest commercial building in the world, as it was the first office building to earn Living Building Certification. Everything about the building is focused on eliminating its environmental impact. In particular, the façade, operable windows and sliding doors are key to meeting the aggressive energy efficiency and natural ventilation performance goals.

Reference Project Address
Bullitt Center
1501 East Madison
Seattle, WA 98122

Key Building Information
- 6-story, 52,000 sf commercial building
- Triple glazed two-inch thick insulated glass units installed in a high performance building envelope
- Approximately 4' x 10' motorized parallel opening windows integrated into facade

Energy Efficiency Achieved
- 75% less energy used than in a typical new building in Seattle
- Super insulated thermal performing systems in combination with the building's solar panels enable the building to be net positive energy.

SCHÜCO

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Bullitt Center, Seattle

The Bullitt Center was deliberately designed and built to be the greenest commercial building in the world. It has 52,000 sqft. of commercial building market rate Class A office space that is meant to show what is possible today in urban sustainability and to inspire others to take a similar path forward on new construction projects. As stated by the designers and owners of the Bullitt Center, this project will be a failure if it does not inspire future buildings to go even further in energy efficiency design.

A key, central feature of the first office building to earn Living Building Certification is the extremely high performing building envelope. Although typically the fenestration areas are a weak link in a building's thermal enclosure, Schuco's super insulated stick curtain wall in combination with a triple glazed, two-inch thick glass made of argon and warm-edge spacers, provides a strength. It did not require any special design to accommodate the needs of the Bullitt Center because the curtain wall, windows and sliding doors used by Schuco were all off the shelf, readily available standard products. The innovation team in the company's Bielefeld, Germany headquarters is constantly at the forefront of the industry in developing products to achieve maximum energy performance.

Occupants of the Bullitt Center have expressed high levels of comfort satisfaction. A key contributor to this are the approximately 4' x 10', 532 pound motorized parallel opening windows that project out horizontally 4 inches throughout the building's facade. The gaskets on the window have very tight seals to maximize weather performance and minimize infiltration heat loss. These zero sightline windows allow air flow on all 4 sides and are connected to C02 sensors that detect the need for fresh air which cause the windows to open. However, during a rainy day or when sustained wind speeds are greater than 15 mph the windows automatically close. During summer months the windows open during the night to allow a night-flush cooling which can lower building temperatures 3°-5°F. In addition to these automated features, occupants have the ability to manually override the control system.

All of these features are crucial to the holistic approach that Living Building Challenge projects focus on. The building envelope is designed to keep cold air out during the winter and hot air out during the summer. Because of these Schuco high performing systems, the energy used on this project is 75% less than a typical new building in Seattle.

The actual energy performance of the building was monitored to prove that it meets what the design intended. In fact, during the first full year of monitoring the Bullitt Center outperformed the targets. The Energy Use Index average for an office building was 72 kBTU/sf year locally when the Bullitt Center was planned. The 6-story building was designed to achieve 16.1 kBTU/sf year, but is averaging 12.3 kBTU/sf year. The strong thermal performance in combination with the solar panels enabled the building to be net positive energy. This validates that green buildings built with the best systems do more than just protect the environment, t hey are financially good investments.

Besides the building envelope the building features:
- 250 year design
- 56,000-US-gallon (210,000 l) rainwater collection
- 26 geothermal wells that extend 400 feet (120 m) into the ground, where the temperature is a constant 55 °F (13 °C). These wells will help heat the building in the winter
- Energy efficiency 83% greater than a typical Seattle office building
- 242kW photovoltaic array
- Ground source geothermal heat exchange system

- Water efficiency 80% greater than a typical Seattle office building
- 56,000 gallon rainwater collection cistern
- Greywater reclamation
- Composting foam flush toilets (save 96% more water than traditional flush toilets)
- Green roof and constructed wetland

Joe and Rika Mansueto Library

The Joe and Rika Mansueto Library, designed by Helmut Jahn and built by Barton Malow, opened for patron use on May 11, 2011 and serves as an on-site shelving facility for the other 5 University of Chicago libraries. The building is a 240 foot x 120 foot ellipse (approximately 60,000 GSF), comprised of underground collection storage and the new reading room with its vast ellipsoidal glass dome of nearly 30,000 square feet. The automated storage and retrieval system of 5 aisles has a capacity of 3.5 million volumes. The Grand Reading Room, occupying the south half of the dome, has seating for approximately 180 users. The north half of the dome houses state-of-the-art conservation and digitization laboratories.

Library users enter the new building, which is directly adjacent to the current library, via a glass-sided, glass-roofed bridge spanning almost 80 feet between supports. The structure to the elegant glass dome above the entrance level of the new building consists of a steel-and-aluminium framework. Elongated rhombuses form the primary structure – a total of 150 tons of steel. The 1200+ circular hollow sections have different wall thicknesses to suit different structural requirements. These sections are connected at various angles via 625 CNC-milled nodes. Located on top of the primary structure is the aluminium framework for the glazing, adjusted by means of steel pins. Each of the mainly trapezoidal insulating glass panes, almost 700 of them, is fixed with two black-painted point fixings on each edge. For the first time, a solar-control coating was applied directly to ceramic screen printing. From outside, the observer sees a pattern of black dots. Inside, on the library side, there is a congruent pattern of white dots. This is finished with the solar-control coating to the glass.

Seele was responsible for design, engineering, and manufacturing of the dome. The design, engineering, and the majority of manufacturing took place in Germany.

Energy Efficiency Achieved

- Positioning the automated storage and retrieval system below ground minimizes the site footprint and the use of fossil fuels for heating and air conditioning
- Small footprint has permitted new green space in a dense urban neighborhood
- The book vault's interior shaft wall (more than 2 feet thick) is designed to keep the temperature (60 degrees) and relative humidity (30 %) constant, decreasing energy expenditure during seasonal changes
- Daylighting minimizes electric lighting, and the automation does not need lighting during normal operation.
- The roof skylight minimizes the urban heat island effect
- An underground storm water detention vault minimizes the impact of storm water on city infrastructure
- Low E, insulated glass and fritted glass reduce solar heat gain under the dome, achieving a 9% energy savings (LEED Silver requires 14% energy savings)
- At the upper area of the dome, the glass incorporates 57% shading with a ceramic frit dot pattern applied to the interior of the external surface of the insulated glass; the high performance glass reject 73% of the solar heat while blocking 50% of the visible light and 99% of the UV light

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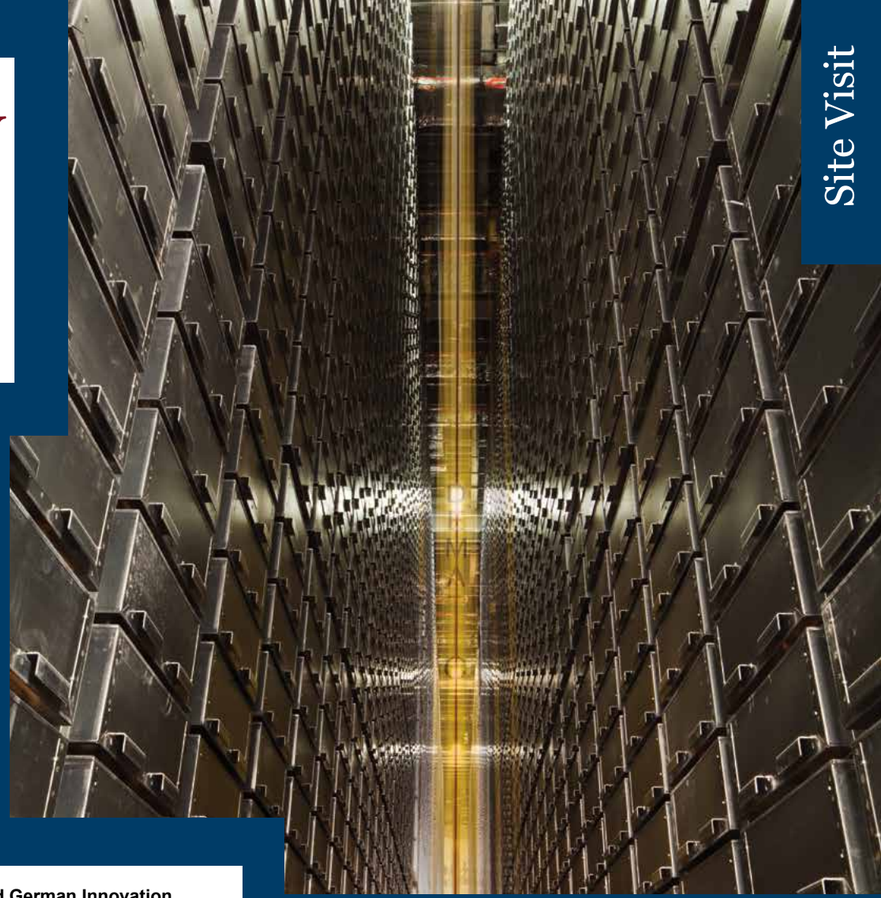

Featured German Innovation

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About the German Energy Solutions Initiative

energy solutions
MADE IN GERMANY

With energy prices on the rise and fossil fuel resources becoming scarce, both economic prosperity and competitiveness increasingly depend on our ability to use new energy sources and energy efficiency solutions. This applies to all countries worldwide. The use of innovative energy solutions offers enormous potential for energy conservation in all fields.

The promotion of renewable energies and energy efficiency in Germany has resulted in the establishment of an industry, which offers some of the world's leading technologies. This industry encompasses several thousand small and medium-sized enterprises specialized in the development, design and production of renewable energy technologies, energy efficiency solutions, grids and storage. This is the basis for smart energy solutions.

The transfer of energy expertise, the promotion of foreign trade and the facilitation of international development cooperation are part of the German Energy Solutions Initiative, which is coordinated and financed by the German Federal Ministry for Economic Affairs and Energy. It offers targeted programs to meet your specific needs:

Fact-Finding Missions to Germany

Our fact-finding missions provide the opportunity to participate in a group visit to Germany, where you will benefit from a comprehensive information and visitor program. These group missions will provide you with up-to-date expertise as well as opportunities for on-site visits with providers to view examples of concrete, applied solutions in the field of energy efficiency.

Trade Missions

German trade missions to your country provide you with the opportunity to establish targeted contacts with German experts, practitioners, technology providers, and consultants in the field of energy efficiency. These sessions take place within the framework of one-on-one meetings.

Finding German Partners

The initiative has established an online database to help you find the right partner from Germany for your project. Selected companies present their products, services and reference projects. All of these companies offer innovative energy technologies, products and services, e.g. for using renewable energies and improving energy efficiency. Using our database, you can perform targeted searches for German vendors in a range of technologies and fields of application and thus find a suitable business partner, supplier or service provider. In addition to a company profile, the database also provides details of reference projects carried out by the listed vendors.

The initiative creates benefits for Germany and the participating countries by:

- boosting global interest in renewable and smart energy efficiency technologies
- encouraging the use of renewables and energy efficiency technologies
- improving economic, technical and political cooperation between Germany and partner countries
- generating jobs in Germany and abroad

For more information, please visit www.german-energy-solutions.de

German American Chamber of Commerce® of the Midwest, Inc.

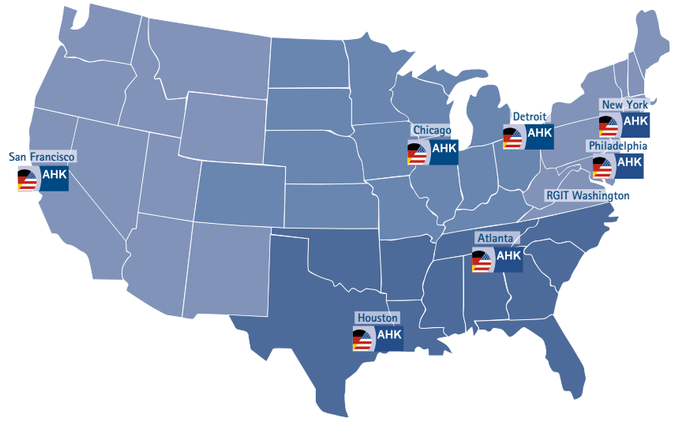
German American Chambers of Commerce
Deutsch-Amerikanische Handelskammern

The German American Chamber of Commerce of the Midwest (GACC Midwest), headquartered in Chicago, and with a branch office in Detroit, was founded in 1963. Our continuing mission is to further, promote, and assist in the expansion of bilateral trade and investment between Germany and the United States, especially the Midwest.

The organization is an integral part of the German Chambers of Commerce Abroad network with over 130 offices in 90 countries and also part of the German American Chamber network with offices located in Atlanta, Chicago, Detroit, Houston, New York, Philadelphia, San Francisco, and a liaison office in Washington, D.C. (RGIT).

GACC Midwest's territory covers 14 US states: the 13 states of the Midwest (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin) and Colorado, comprising together approximately one quarter of the nation's geographical area, its population, and its GDP.

Our national network



With over 800 members, GACC Midwest enables its members to socialize and build important business relationships throughout its network.

Our organization combines elements of a trade commission, a membership association, and a professional consulting service provider - quite a unique concept in international trade promotion.

Find out more about our membership and services at www.gaccmidwest.org.

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