



German American  
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Handelskammern



# Energy Efficiency Awards

German Innovation in U.S. Buildings

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(GACC West)

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# Introduction to the Energy Efficiency Awards

## German Innovation in U.S. Buildings



The Representative of German Business for the Western United States (GACC West) is delighted to welcome you to our **Energy Efficiency Awards - German Innovation in U.S. Buildings**,

presenting five energy efficiency projects from Germany that have been selected as today's finalists.

The Energy Efficiency Awards are part of the German Energy Solutions Initiative, sponsored by the German Ministry for Economic Affairs and Energy, to recognize the positive impact of German businesses in the U.S. building sector. It is designed to help German companies strengthen their position in the U.S. market and make new connections within the sustainable building industry. The awards provide participating German companies the chance to showcase their technologies and services that focus on increasing overall building performance.

With the reference site visit of the new Uber HQ construction site, the evening pitches and awards ceremony, this unique event is a perfect opportunity to become acquainted with energy efficiency solutions from Germany that are improving building performance in the United States.

Following a varied set of scoring criteria, our independent jury of experts evaluated many great applications! Thanks to their hard work, we were able to determine five finalists. The two distinctions in the categories of energy efficiency and innovation will be revealed at the awards ceremony on June 26.

### Our five finalists:

- Behnisch Architekten and Transsolar
- Josef Gartner GmbH
- MeteoViva
- Vector Foiltec
- Warema

We hope you enjoy our event and congratulations to our finalists!

# Welcoming words from the Federal Ministry for Economic Affairs and Energy



*Wittek*

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

The technology showcase is a celebration of innovative German energy-efficient solutions in buildings in the United States. It is a great opportunity to promote successful German-U.S. partnerships, which have led to increased building quality, reduced energy costs and lower CO<sub>2</sub> emission levels in the United States. The five innovative projects, which are being shown in the framework of the technology showcase, present the United States 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 United States are representative of a wider success story: Germany is a world leader in the field of energy efficiency. Cutting-edge German technology is 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 \$67 billion per year in this industry, and double-digit growth rates are expected in the coming years.

Since 2004, the Federal Ministry for Economic Affairs and Energy has successfully supported German-U.S. partnerships via the German Energy Solutions Initiative. The U.S. 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 and fact-finding missions. This Showcase project is a second for the United States, and it gives the German Ministry for Economic Affairs and Energy a welcome opportunity to celebrate some great examples of German-U.S. partnerships in the building sector.

# The German Energy Solutions



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 smart and sustainable energy solutions 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 specialised in the development, design and production of renewable energy systems, energy efficiency solutions, smart grids and storage technologies. Also new energy technologies like Power-to-Gas and fuel cells are the basis for cutting-edge 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.

## We offer:

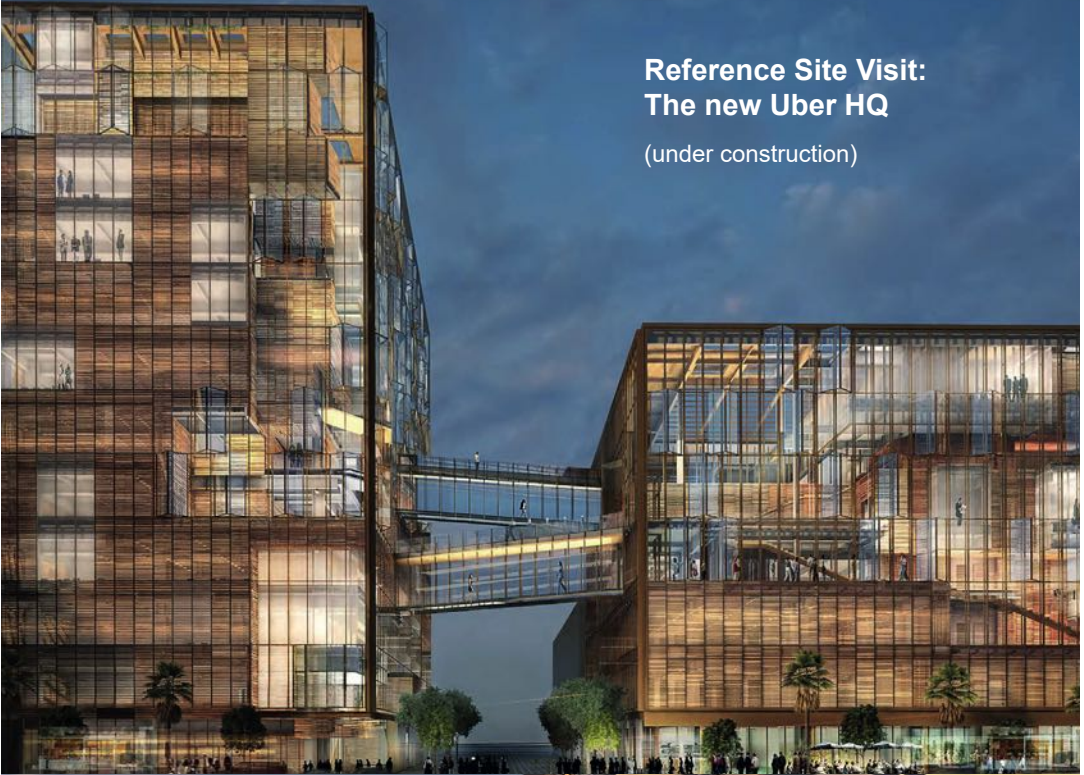
- networking and business opportunities both in your country and in Germany
- showcasing of reference projects
- know-how exchange

Coordinated and financed by the German Federal Ministry for Economic Affairs and Energy (BMWi), the initiative is implemented in cooperation with partners such as German bilateral chambers of commerce (the AHKs), the German Energy Agency (dena) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

For more information, please visit  
[www.german-energy-solutions.de](http://www.german-energy-solutions.de)

**Reference Site Visit:  
The new Uber HQ**

(under construction)



# Event Program

1:30 pm	Welcome and introduction to the Energy Efficiency Awards at the German Hub 101 Montgomery Street, Suite 1900 San Francisco, CA 94104
2:30 pm	Guided tour and demonstration of energy efficient technology by Josef Gartner GmbH at the new Uber HQ construction site in Mission Bay
5:00 pm	Registration
5:30 pm	<p>Awards ceremony Taube Auditorium, Commonwealth Club 110 The Embarcadero San Francisco, CA 94105</p> <ul style="list-style-type: none"> <li>• Welcome and introductions</li> <li>• Keynote speeches</li> <li>• Finalist pitches</li> <li>• Presentation of awards</li> </ul> <p>Welcome Remarks Annika Hoeltje Hans-Ulrich Südbeck</p> <p>Keynote Speakers Debbie Raphael Tony Saracino</p>
7:30 pm	Networking reception with the Bay Area green building community

With special thanks to our promotional partners:

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# Speakers

## Welcome and Introductions



**Annika  
Hoeltje**

Director Innovation  
Solutions, GACC  
West

Annika leads Innovation Solutions at the German American Chamber of Commerce in San Francisco, is Innovation Scout for the German state of Baden-Württemberg and manages the InnovationCamp BW in Silicon Valley. She fosters knowledge and technology transfer between Germany and the western USA. She has worked with many corporations, startups, universities, and accelerators to enable international collaboration and product innovation. Annika holds a B.A. in Psychology, an M.A. in American Studies, and an MBA in Sustainable Management. She is a fellow at the Institute for Intercultural Communication.



**Hans-Ulrich  
Südbeck**

German Consul  
General in San  
Francisco

Various postings as member of the Federal Foreign Office took him to The Hague (1994 - 1997), Kiev (1997 - 2000), the German Representation to the EU in Brussels (2005-2007), as Deputy Head of Mission to the German Embassy in Belgrade, Serbia, and as the Senior Civilian Representative in Regional Command North to Masar-e-Sharif, Afghanistan. Within the Federal Foreign Office in Berlin, he focussed on Western Balkans and EU-Civilian Crisis Management missions, as well as on EU Internal Market Issues and the Northern EU Member States. Prior to his coming to San Francisco, Südbeck headed the Western Balkans Division in the Ministry. Hans-Ulrich Südbeck holds a Master's degree in History, English Studies and African Studies.



## Keynote Speakers



**Debbie  
Raphael**

Director of the  
San Francisco  
Department of  
Environment

Debbie Raphael is the Director of the San Francisco Department of the Environment and believes that cities can take bold action to address environmental harm. A scientist by training and public servant by profession, Debbie has spent more than twenty years working in government to ensure that everyone has an equal right to a safe and healthy environment. In partnership with the Mayor, Board of Supervisors, and fellow City departments, Debbie has helped steer the city towards greater greenhouse gas emission reductions, including setting a new audacious goal of achieving net-zero emissions by 2050. Named one of the world's 100 most influential people in climate policy by Apolitical, Debbie is a frequent keynote speaker at international climate conferences and a national spokeswoman on environmental issues.



**Tony  
Saracino**

Sustainability  
Customer  
Engagement  
Manager, Autodesk

Tony Saracino is the Sustainability Customer Engagement Manager at Autodesk, where he helps Architecture, Engineering and Construction customers use technology to realize their sustainability and impact goals. Prior to joining Autodesk, Tony worked at BASF's Center for Building Excellence working on the intersection between USGBC, the American Chemistry Council, and materials specifiers surrounding healthy materials in architecture and construction. He has a background in Architectural Engineering specializing in high performance building design, materials and energy productivity, and innovation in design and construction. He is active in ASHRAE, AIA, and USGBC and previously served on the USGBC Materials and Resources Technical Advisory Group.

# Presenting our distinguished Jury

**A huge thank you to all the Energy Efficiency Awards submissions and to our wonderful jury for their hard work evaluating the applications! We are very grateful for their help in showcasing German excellence in energy efficiency in U.S. buildings.**



**Bronwyn Barry**



Ms. Barry is a registered architect based in San Francisco, a Certified Passive House Designer and founding member of both Passive House California (PHCA) and the North American Passive House Network (NAPHN.) She served as the chair of the Passipedia Committee for the International Passive House Association (iPHA) and currently serves as President of the North American Passive House. Ms. Barry's advocacy work extends internationally. She has contributed to the UNECE's Coalition on Buildings development of a global standard for high performance buildings. Her projects include organizing California's first all-women construction crew for Habitat for Humanity. Locally, she has focused on direct implementation by designing and building Passive House buildings since 2008, working in collaboration with One Sky Homes under the banner of her own architecture firm, PassiveHouse BB.



**Melanie Colburn**



Based in San Francisco, Melanie Colburn manages the U.S. Green Building Council's Pacific Region Communities, advancing the organization's vision of 'green buildings for all within a generation'. As a sustainability and corporate social responsibility professional, she has helped many organizations align social and environmental impact with organizational goals and excellence.



## Peter Reppe

For the last 25 years, Peter's professional life has been dedicated to energy efficiency in the built environment, and whole building energy analysis. His scope of work encompasses primarily commercial buildings, including new construction and existing building upgrades.

While his original background is in mechanical engineering, he has gained a thorough understanding of the complex interplay of architectural, mechanical, and electrical systems. His responsibilities at Brightworks Sustainability in Portland Oregon range from design consulting on specific projects, to supporting large portfolio clients with their efforts to reduce carbon emissions.

**BRIGHTWORKS**  
SUSTAINABILITY



## Stefan Schwab

As the CEO of Enlighted, Inc. Stefan oversees the strategic direction of the Sunnyvale-based, Internet of Things (IoT) solutions company delivering the leading technology platform for smart buildings. Siemens acquired Enlighted in July 2018 and Stefan was appointed CEO in October 2018. His Siemens career began in 2006 in business development

in Germany. He advanced through positions of increasing responsibility in executive management, including assignments in Germany and Singapore. In 2014, he was named executive general manager of the Siemens Building Technologies Division for Australia and New Zealand. Stefan earned degrees in political science, economics and business administration from the University of Augsburg and Munich and an MBA from the European School of Management and Technology in Berlin.

**enlighted**  
A Siemens Company



## Steve Straus

Steve Straus is the President of Glumac, a sustainability-focused building engineering and commissioning firm founded in 1971. Since 2000, Steve has grown the firm three-fold while holding true to its mission to design "Green Buildings that Work." With sustainable design as its guide, Glumac has become a leader in the green building industry, having hundreds of LEED-certified projects in its portfolio, and is now helping lead the growing green building industry in Asia.

Since 2017, Steve has lead Glumac's joining Tetra Tech, and established its High Performance Buildings Group (HPBG). Working with Cosentini and Norman, Disney & Young, the HPBG is establishing an alliance of 1,500 engineers focused on the cutting edge of sustainable and resilient design in the built environment.

**GLUMAC**  
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**TETRA TECH**  
High Performance Buildings Group

@Brad Feinknopf






# Behnisch Architekten and Transsolar

BEHNISCH ARCHITEKTEN



## Reference Project - Karl Miller Center

	<p><b>Karl Miller Center</b></p> <p>615 SW Harrison Street, Portland, Oregon 97201, USA</p>
	<p><b>Year of implementation</b></p> <p>competition: 2013; design and completion: 2014-17</p>
	<p><b>Key characteristics</b></p> <ul style="list-style-type: none"> <li>• 2018 LEED Platinum Certification from U.S. Green Building Council</li> <li>• Passively cooled and naturally ventilated new addition</li> <li>• Utilized ceiling fans, night flushing, thermal mass and occupant controlled automated operable windows to increase the upper comfort limit setpoint to 83°F (28°C)</li> <li>• Glazing in the new addition was located to eliminate nearly all overheating hours caused by solar radiation</li> <li>• A 2018 post-occupancy evaluation indicated the new design was outperforming planned EUI estimates, using 62% less energy than the original, pre-renovated structure.</li> </ul>
<p><b>German Contribution</b></p>	
<p>The German companies Behnisch Architekten and Transsolar contributed to the project with their unique German design and technology - providing the overall architectural concept and the climate engineering solutions: climate-responsive design that takes advantage of the specific local climate and surroundings to maximize user comfort and passive strategies.</p>	

The Karl Miller Center, home to Portland State University's School of Business, promotes a variety of innovative, largely passive, climate concepts. Its design strives to minimize energy impact with a low tech approach. Taking advantage of the Pacific Northwest's temperate climate, the new pavilion structure was designed to be passively cooled through a meticulously designed natural ventilation strategy. Outside air is drawn through operable windows into the classrooms and collaboration areas, and is then transferred via acoustically protected vents into the atrium, which acts as a "natural cross-ventilation exhaust shaft". Designed to accelerate stack effect with its sloping geometry, the atrium has exhaust fans located at the roof to provide supplemental drive for natural ventilation with minimal energy use when necessary. All automated windows have local override to provide user control and increase perception of quality and comfort in the classrooms. The same air transfer and return path is used for mechanical ventilation in heating mode, eliminating the need for return ducts. With heat extraction supplied from

the campus chilled water return loop for almost all heating demand, the building improves efficiency of the campus cooling system while limiting required equipment for heating on site. Both existing and new construction is optimized for daylight harvesting and thermal performance.

The high-performance facade design of the renovated portion includes two layers of insulation and glazing with two low-e coatings, one of which shares the room-side surface with a ceramic frit. With a floor plan configuration that provides maximum access to daylight, all offices adjacent to the facade will not require electric lighting for nearly all daylight hours. Exterior glazing on the 45,000sf addition is oriented based on solar modeling, either to the north or under large overhangs to avoid solar heat gain yet maximize daylight opportunity. A series of terracing green roofs capture site stormwater and release it into planters located at ground level drastically reducing site runoff.



## Energy Savings

Prior to renovation in the fall of 2017, the SBA had an EUI of approximately 63 kBtu/gsf/year. The remodeled KMC was designed to have the lowest EUI on campus, at 25 kBtu/gsf/year. The period between 04/03/18 and 07/22/2018 was extrapolated for a year and the EUI was calculated to be 24 kBtu/gsf/year. Further energy and GHG reductions were found by utilizing the campus chilled water return as a heat source for most of the heating season, by means of a heat pump. This water is then returned to the campus chiller plant at a lower temperature,

which in turn increases the plant's energy efficiency. Campus steam is used only in peak heating; less than 8% of heating energy used. As a result of this design, the Karl Miller Center was awarded the LEED Pilot EAc2 for 51% GHG reduction rather than energy cost savings with 2.08 kg CO<sub>2</sub>/sf vs. 4.28 kg CO<sub>2</sub>/sf baseline. The Carbon savings over the baseline are approximately 300,000 kg of CO<sub>2</sub> emissions. Carbon intensity is 2.08 kg of CO<sub>2</sub>/sf compared to the national baseline average of 4.28 Kg CO<sub>2</sub>/sf .

## Innovation

Although the building has only been occupied for a little over a year, its impact has already been felt in and around the University and the City of Portland. As a 'lighter' and more flexible form of building in the way that it fuses urban activity with campus life, the building has redefined what it means to build in downtown Portland.

In particular, the building takes a major step in the development of the Montgomery Green Street Initiative, a city plan which proposes linking the West Hills through the Park Blocks eastward down to the banks of the Willamette River through a shared 'green street' concept. The building is a bold statement by Portland State University about its commitment to a

more sustainable future through its passively-cooled design and avoidance of mechanical cooling systems. As the metrics indicate, the project is currently outperforming the planned EUI targets and overall is using less than half of what the original pre-renovated structure (which was 45,000sf smaller than the finalized project) utilized. Additionally, the decision to clad the new addition in Alaskan Yellow Cedar was at once a statement about the material's relationship to a storied Northwestern tradition, as well as a way to sequester carbon that would otherwise have been spent producing a more 'typical' urban façade. The project has a variety of innovative climate concepts including natural ventilation in all perimeter spaces throughout the building, and

no installed mechanical cooling in the Karl Miller Center. This is achieved through a scientific approach to setting an acceptable upper thermal comfort limit of 83 °F for naturally ventilated spaces with ceiling fans, as well as night flushing, thermal mass and occupant controlled automated operable windows. The design includes a high performance façade optimized for daylight harvesting and thermal

performance as well as the integration of state-of-the-science glazing IGU: double glazing with 2 low-e-coatings, one of which is on the room-side surface and frit. The atrium social/circulation space brings daylight to the center of the building and drives natural ventilation, while areas of green roof create a natural vibrant environment for the students.

## About Behnisch Architekten and Transsolar

### Architects - Behnisch Architekten

Behnisch Architekten was founded in 1989 and works out of three offices – Stuttgart, Munich, and Boston. These offices are directed by Stefan Behnisch and his partners Robert Höfle (Munich), Robert Matthew Noblett (Boston), Stefan Rappold and Jörg Usinger (Stuttgart). Originally established as a branch office of Günter Behnisch’s practice Behnisch & Partner, who designed the facilities for the Olympic Games in Munich in 1972 and the German Parliament building in Bonn, the Stuttgart office became independent in 1991 and has subsequently developed into an international practice. We, as architects, are driven by the belief that our surroundings directly influence the quality of our lives,

whether in the workplace, at home or in the public spaces in between. This emphasis on the social dimension is fundamental to our design philosophy, which takes as its starting point the acknowledgement that architecture is generated by the needs of people, needs that may be spiritual as well as being material.

#### Behnisch Architekten

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## Climate Engineers - Transsolar

Transsolar KlimaEngineering is a diverse team of engineers focused on creating climate-responsive built environments. They collaborate with their clients and partners to enhance the human experience while minimizing resource use following their self-declared attitude: High Comfort, Low Impact. In partnership with the world's leading architects their unique approach has led to numerous breakthrough projects including Manitoba Hydro Place, which in 2012 became the most energy efficient office tower in North America. Their collaborative style has earned their projects many AIA Honor, COTE Top Ten, and other international awards; a recent high point is the 2015 AIA Institute Honor for Collaborative Achievement. Transsolar consults for a variety of projects, ranging from residential and university buildings to museum design, campus planning, and urban design.

The firm also has a history of art collaboration where the knowledge and skill to manipulate a space's thermodynamic conditions are required. Notable examples are "cloudscapes" with Tetsuo Kondo and "lightsapes" with Anja Thierfelder at the 2010 and 2016 Architecture Biennale in Venice. Transsolar has been operating for over 25 years with offices in Stuttgart, Munich, Paris and New York.

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@Mike Kelley



# Josef Gartner GmbH



## Reference Project – Brickell Centre, Miami

	<b>Brickell Centre</b> 701 S Miami Ave, Miami, FL 33131
	<b>Year of implementation</b> 2013-15
	<b>Key characteristics</b> <ul style="list-style-type: none"><li>• Passive shading structure optimized for wind and sun, reducing need for air conditioning in an urban mixed use project.</li><li>• Comprised of custom steel delta beams spanning up to 30 meters, wrapped in glass fibre-reinforced membranes and covered by laminated safety glass.</li></ul>
<b>German Contribution</b> <p>As a German company founded in the late 19th century, Josef Gartner GmbH has taken the world of modern sustainable building to a new level. In Miami, they implemented and optimized the concept of the Climate Ribbon, as well as fabricating and installing this structure in the Brickell Centre.</p>	

The Brickell City Centre is a major commercial development by Swire Properties on three city blocks in downtown Miami. The Climate Ribbon™ is an architectural feature covering the pedestrian streetscape across distinct blocks, linking the development into a single architectural statement. It provides shelter for the shops and circulation below and for the bridges over public roads. Designed by Hugh Dutton Associates and Sébastien

Perrault, fabricated and installed by Gartner, the Climate Ribbon™ is a continuous surface of glass and architectural fabric over a custom steel structure, covering 7,000 square meters. It has been fine-tuned to provide an effective microclimate within the retail centre, attenuating the discomfort associated with hot and humid Miami weather solely through the use of passive energy strategies.

This unique urban element of the project is emblematic in both its environmental and aesthetic qualities. It shades the facades of shops and terraces directly exposed to strong sunlight and creates air circulation to improve comfort, harnessing the summer trade winds by the use of scoop features which pull gentle breezes through the public spaces.

### Energy Efficiency

The high-performance building envelope reduces heating and cooling requirements of mechanical systems. This, coupled with efficient mechanical and electrical equipment serving the retail spaces, is expected to reduce energy consumption by more than 10% when compared to ASHRAE standard 90.1-2007.

### Innovation

Gartner implemented and optimized this idea in cooperation with architects and planners in order to meet the specified cost budget, developing special details in response to project constraints. The steel structure was subdivided into grids and the glass panes were arranged in modules of 2.5 metres. Individual blocks were separated by expansion joints and built-up in the workshop in advance. The erection of a prototype proved the concept and guaranteed efficient site installation.



@Mike Kelley



## About Josef Gartner GmbH




Gartner started in 1868 as a small locksmith's workshop in Gundelfingen on the Danube. Today we employ more than 1,300 people worldwide, of which approximately 900 are in Germany. In our headquarters in Germany and our subsidiaries worldwide, Gartner develops, plans and manufactures mainly architectural envelopes for signature landmark buildings throughout the world, applying constant innovation through advanced technologies. From early consulting, planning assistance, technical research as well as development, our clients and business partners can rely on our expertise in design and engineering. Our specialists deliver elaborate project management oversight of the whole value chain from design and engineering to performance testing, material selection, aluminum and steel production, logistics, installation and after sales service.

Today, building envelopes are conceived and designed to meet the highest architectural demands, yet at the same time to be energy efficient. End users expect highest comfort levels and optimum internal environments, tenants low operating and maintenance costs, and clients a dependable and first class provider for their building façades.

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# Snapshot into the Future

	<p><b>Uber HQ</b> 1500 3rd Street, Mission Bay, San Francisco, CA 94158 USA</p>
	<p><b>Year of implementation</b> currently under construction (from 2017 – to 2019)</p>
	<p><b>Key characteristics</b></p> <ul style="list-style-type: none"> <li>• New office building featuring a computer-controlled “breathing” exterior façade which encloses a semi-conditioned atrium space.</li> <li>• Inner glazed curtain wall is shaded with thermally-modified wood louvers.</li> <li>• In combination, these systems regulate indoor air temperature naturally, using less energy than typical office buildings.</li> <li>• Targeted for LEED Platinum and WELL Building Certifications</li> </ul>
<p><b>German contribution</b> At the forefront of German contributions to sustainable buildings in the United States, Gartner developed a custom mechanism for opening/closing the breathing façade of the new Uber HQ in Mission Bay.</p>	

The new global Uber headquarters is located in the Mission Bay neighborhood of San Francisco, CA. The development includes two buildings offering around 39,000 sqm (420,000 sq ft) of office space: an 11-story tower at 1455 Third Street and a 6-story structure at 1515 Third Street. Both structures feature state-of-the-art transparent, motorized “breathing” façades which open to full height atrium.

In conjunction with computer-controlled skylights, the atrium serves as a thermal buffer for the conditioned office space, harnessing the temperate marine air and reducing energy consumption by mechanical systems. The two buildings are interconnected by a pair of angling glass-and-steel bridges.

**As a reference project, we will be touring the new Uber HQ construction site and see a demonstration of Josef Gartner's energy efficient technology!**

## **Energy Efficiency**

“Taking advantage of San Francisco’s temperate climate, the sustainability features of the Uber buildings center on their innovative “breathing” façades—a computer-controlled system of operable windows that greatly reduce the need for mechanical ventilation. The full-building-height indoor/outdoor spaces of the Commons serves as a buffer zone between the unconditioned exterior and the conditioned interior office environment.

That feature is an integral part of a whole-building environmental strategy that also includes on-site water collection and solar harvesting, with green space both on the roof and in the public park at ground level. The building is expected to meet LEED Platinum requirements when complete.”

– SHoP Architects

## **Innovation**

To create a thermal buffer zone and reduce the need for mechanical ventilation, Gartner developed a custom mechanism for opening/closing the breathing façade. Due to the large size of the units, a number of kinematic mechanisms were evaluated in computer and physical models before arriving at a working solution: two powerful chain drives do the bulk of the motion, in conjunction with a linear locking drive to fully close the unit. Lightweight steel trusses combined with low-iron glass make the outer wall highly transparent, making the Commons a bright and comfortable space.

Where solar heat gain and glare must be controlled, a unique system of horizontal wood slats was developed for the inner walls. The wood is a Spanish Chestnut species which was thermally modified to create ten different colors, and these colors were carefully deployed by the architect for visual effect. Where the wood louver look occurs in the exterior walls, the glazing units feature ten different shades of ceramic frit bands. The coordination of these bespoke shading features was a particular challenge to the façade contractor.

@MeteoViva








# MeteoViva



## Reference Project – American University

	<b>American University - McKinley Building</b> 4400 Massachusetts Ave, NW, Washington, D.C. 20016
	<b>Year of implementation</b> 2016
	<b>Key characteristics</b> <ul style="list-style-type: none"><li>• LEED Gold certified building with 24/7 operation</li><li>• Complex building with different types of spaces and energy needs</li></ul>
<b>German contribution</b> The rapidly growing German startup MeteoViva is the creator of a cloud-based predictive engine that optimizes indoor climates. With the predictive controls from MeteoViva, the McKinley building achieved significant energy saving.	

The historic McKinley building is the home of American University’s (AU) School of Communication and has undergone extensive renovations completed in 2015, resulting in a LEED-Gold certification. It incorporates a modern-glass entrance and houses digital classrooms, a media innovation lab, office spaces, a focus group teleconference suite with the latest communication technology, and a 150-seat theater for master classes and screenings.

The implementation of MeteoViva Climate was an integral part of AU’s effort to reduce energy consumption and reduce its carbon footprint. AU announced in April of 2019 that it had achieved carbon-neutrality, 2 years ahead of its original objective. The building features a highly distributed HVAC system allowing for the individual control of temperature, humidity and CO2.

It is serviced by a low-pressure steam campus system with a single setpoint controlling the hot water temperature. Campus steam is used for heating during the winter, while a dedicated building electric water heater is used during the summer.

There are 4 central air handling units serving 96 variable and 5 constant air volume boxes. The building features re-heating coils around the perimeter, and an additional 16 fan coil units that condition server and telecom rooms. The building itself is connected to the campus' chilled water and steam systems. The MeteoViva engineer first performed a detailed analysis of the building identifying the necessary control and log data points to allow for MeteoViva Climate to effectively manage the HVAC equipment. Next, working with the client, the team examined usage, orientation, and envelope characteristics of all areas of the building to create a proper zone map while minimizing implementation costs. The building features 25 zones with 73 control data points and 206 log data points. Using that information, the model of the building was

configured using the MeteoViva platform. Once the model calibrated, operations and savings started. Always available to the building staff, the MeteoViva cockpit allows for a quick view of all setpoints (e.g. supply temperature), forecasted and actual values (e.g. room temperature, return temperature), as well as historical values. With MeteoViva Climate running, the energy consumption and costs were reduced significantly.

During the first year of operation, the savings achieved already exceeded the installation cash outlay. In addition, the system identified several equipment issues that AU was quickly addressed (simultaneous heating and cooling in multiple air handling units, leak in a chilled water control valve, bad dehumidification “sequence of operation”, or constant “hunting” of a hot water controller due to bad programming). And perhaps most satisfying of all, the Energy & Engineering staff started received positive feedback from their most important clients: the faculty and student body.

## Energy Savings

First year (HVAC) energy savings were 36%: 263 MWh cooling energy, 100 MWh electric heating energy, 109 MWh steam energy and 212 MWh electrical energy for fans and pumps - for a total of 684 MWh of energy savings. CO<sub>2</sub> emissions were also reduced by 171 tons.

Second year HVAC energy savings reached 41%: 288 MWh cooling energy, 88 MWh electric heating energy, 147 MWh steam energy and 206 MWh electrical energy for fans and pumps - for a total of 729 MWh of energy savings. CO<sub>2</sub> emissions were reduced by 175 tons. All results are weather-normalized.

## Innovation

At the core of MeteoViva's technology lies the innovative approach to controlling a building: anticipate the changes that affect indoor comfort. Anticipating these factors allows for better management of the equipment and yield better comfort, lower energy costs, and a lower carbon footprint. Because of its low implementation costs, MeteoViva Climate typically ranks at the top in a building ROI list of potential energy-saving measures. Needless to say, predictive controls are expected to become standard in all large buildings.

## About MeteoViva

MeteoViva markets the next generation of building technology: a predictive engine that optimizes commercial buildings' Heating, Ventilation and Air Conditioning (HVAC) installations. Occupants benefit from greater comfort, while building operators benefit from reduced operations and energy costs as well as a lower carbon footprint. In addition, owners benefit from increased real estate values. MeteoViva Climate is a cloud-based service deployable across a wide variety of buildings. It connects to the existing Building Management System (BMS) to automatically and continuously adjust equipment settings or setpoints. The setpoints are calculated using simulations that rely on a building-specific model and predictive algorithms.



And most recently, the approach is also emerging as a key enabler for the Grid-Interactive Efficient Building concept rumored around the U.S. research community.

The thermodynamics of the building, its usage patterns and internal loads, as well as the weather forecast and solar radiations are all taken into account to determine the most efficient way to manage the building. In addition, a continuous feedback loop allows for close monitoring and feedback into the health of the installation.

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# Vector Foiltec

vector foiltec  
CREATE. SUCCESS.

## Reference Project - ARTIC: Anaheim Regional Transportation Intermodel Center

	<b>ARTIC - Anaheim Regional Transportation Intermodel Center</b>  Anaheim, California 92806, USA
	<b>Year of implementation</b>  2014
	<b>Key characteristics</b> <ul style="list-style-type: none"><li>• Substantial savings in the steel tonnage, based on the use of Texlon® ETFE, an ultra lightweight cladding solution</li><li>• First LEED® platinum transit station in the world</li><li>• Optimal solar and climate control</li></ul>
<b>German Contribution</b>  As the inventors of the Texlon® ETFE cladding technology, Vector Foiltec is revolutionizing building technology and made the ARTIC building cladding for optimal solar and climate control.	

## Energy Efficiency

The ARTIC, the Anaheim Regional Transportation Center, supports area-wide public transportation of all types, from bikes to bus and rail. The Texlon® ETFE system of the ARTIC cladding incorporates a grid that allows generous light transmission into the building, while maintaining optimal solar control and

perfect ambient temperatures. LED lights were added to the steel upstands below the ETFE to accentuate the diamond shape of the foil panels. The diamond shaped panels meant that substantial savings could be made in the steel tonnage, which resulted in cost savings and environmental benefits (reduction of the

embodied energy / abiotic depletion potential). Our ETFE solutions require up to seven times less steel. The use of Texlon® ETFE offers significant environmental benefits when compared to alternative transparent cladding systems. This is true whether it is used for new buildings or refurbishment projects. The low levels of embodied energy and outstanding

environmental benefits result in ecologically benign building envelopes. Choosing Texlon® ETFE can facilitate a reduction in requirements for artificial lighting, environmental control and the mass of supporting structures, while allowing for a faster installation compared to similar glazed systems.

## Innovation

In 1982, when we started building with ETFE, we had no idea that we were about to invent a new building category. More than 35 years later and we have built some of the most creative and “successful” buildings in the world, setting landmarks globally. Our clients draw on the biggest ETFE turnover capacity worldwide, with the largest in-house design and engineering teams, and the two largest ETFE fabrication plants in the world.

We have more global offices than any other ETFE contractor and are deeply rooted in regional business environments and legislation. We deliver unprecedented experience in production. A few examples here are the welding technology on an industrial level, the first printing development, the first LED integration and the first variable shading systems that we have created. Recycling is a huge part of our business:

Texlon® inflated panels that have reached the end of their useful phase, and ETFE offcuts are recycled. The material is made into valves and other small components that are used in the manufacture of new ETFE systems.

The aluminium cap and base profiles can be re-used for new buildings and refurbishment projects or recycled. Following two years of empirical data collection, comprehensive life cycle analysis and third party evaluation, the Texlon® ETFE system was the first ETFE System in the world to be awarded an Environmental Product Declaration (EPD). Our efforts have been recognised by the Eco Platform which promote EPDs in European and international markets. We continue to work on our contribution to a sustainable future with a digitalization of our fabrication plants, the invention of new printing technologies and by improving our recycling system even more.



@John Linden

## About Vector Foiltec

With transparent roofs and facades made of Texlon® ETFE, the company Vector Foiltec has made a major contribution to setting new standards in architecture. As the global market leader in architectural foil construction and inventor of the Texlon® ETFE system, we have already completed over 1,500 international projects. Our system shapes stadiums, atriums, shopping centers, zoos and garden parts, public buildings, swimming pools, schools and universities all over the world. Our foils are 100% recyclable and even re-used for new projects. As the inventors of the Texlon® ETFE cladding technology, we use a special foil called ETFE (Ethylene Tetra Flouro Ethylene) to build roofs and facades for all different kinds of buildings. ETFE is a durable, flexible and self-cleansing material which allows UV transmission. We shape the foils into cushions or use it as a single layer membrane.

Our constructions are unusually lightweight and enable extraordinary designs (e.g. the Shed in Hudson Yards). Vector Foiltec invented and pioneered the use of Texlon® ETFE over 35 years ago, and is the only company in the world whose core business is ETFE cladding. Our team of experts has been responsible for most major technical innovations in the field. Through extensive investment in Research & Development and a commitment to superior quality and performance, we continue to be the global market leader. With 18 branches, a team of over 20 different nationalities and 2 production sites, we are represented in countries such as Australia, USA, China and the United Kingdom, combining local knowledge with global expertise.

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# Warema



## Reference Project – Passive House LA+

	Passive House LA+
	4040 McLaughlin Ave. Los Angeles, CA 90066
	Year of implementation
	construction completed in 2019
	Key characteristics
	<ul style="list-style-type: none"> <li>• Exterior Venetian Blinds to prevent overheating</li> <li>• Automation for best results and to support</li> <li>• Passive House technology and Sustainability</li> </ul>
German Contribution	
<p>Warema’s exterior sunshades are a prime example of German technology applied in the U.S. context - their shades a key element of the Passive House LA+. Other German contributors include BOSCH, Stiebel Eltron and KNAUF.</p>	

This is the first newly constructed Passive House in Los Angeles. The contemporary 1,750 sf, 4x bedrooms and 3x bath, two story home is designed to showcase the comfort, efficiency, and sustainability of the German Passive House construction standard.

- WAREMA Exterior sun shades prevent heat entering the building during the day and provide privacy during night time. The exterior venetian blinds are equipped with an automated sun tracking system adjusting the blinds according to the position of the sun.
- The horizontal slats are as open as possible to provide best possible view from the inside and cutting off direct solar radiation to avoid direct glare and prevent the building from heating up.
- Energy efficient all-electric appliances by BOSCH including an induction cooktop and condensation dryer
- Heat pump 50 gal water heater by Stiebel Eltron
- KNAUF blow-in Insulation and EcoSeal

## Energy Efficiency

Passive House LA+ is the first new construction passive house constructed in Southern C California. It is about to receive “Passive House Plus” Certification from the German Passive House Institute (PHI). 12x solar PV panels system combined with a storage battery makes this home a Zero New Energy (ZNE) Building. The contemporary 1,750 sf, 4x bedrooms and 3x bath two story home is designed to be a net zero residence. German Passive House Standard implementation makes this a highly energy efficient showcase Zero Net Energy (ZNE) building in Los Angeles, CA.

## Innovation

Passive House represents today’s highest energy standard, with the promise of reducing the energy consumption of buildings by up to 80% while providing superior comfort and air quality - all at minimal additional upfront cost. When coupled with renewable energy systems, such as a photovoltaic system, Passive House puts true zero energy buildings within reach.

@Christian Kienapfel



## About Warema

Intelligent sun shading that creates an atmosphere of enjoyment and provides comfort and energy efficiency: WAREMA has been known for exactly that for a long time. Our customers value us for well designed products that offer a solution for all individual needs and set standards. As a full-range provider we place great emphasis on professionally advising and supporting specialist dealers, architects and principals. In addition we apply our expertise to construction project development and are active in other industries as suppliers. We are a family-owned and run company with 63 years of experience in solar shading.

The product offering comprises of solar control solutions for family homes and patios like awnings, pergolas or umbrellas over interior roller shades and pleated blinds to exterior venetian blinds and large aerofoil louvre systems which are often used in commercial projects. Control systems enhance the portfolio to deliver highest efficiency with automated solar control. These products can reduce the energy used for cooling or heating buildings significantly and therefore they are a substantial contribution to sustainable construction. Warema is also supplier to the medical technology sector and automotive industry. A state of the art machinery and plastic moulding department designs and manufactures parts for well-known cars and surgery equipment.

R&D for all product areas is in house to make sure the products meet the client's demand and Waremas high quality expectations. Our trade partners are spread globally which provide our solar shading solutions to the market.

### Manufacturer

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### Architect and Owner

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# Presenting the Runner-Ups

## Durlum

Project:

Fulton Center, New York



Durlum develops and produces metal ceilings, lighting and daylight lighting systems for modern architecture. Together with our project partners, we create solutions that deliver a perfect synthesis between function and design. Solutions that make you feel at home. An oval dome with skylight and some 24 meters high in the centre of the station “Fulton Center”, reflects the natural sky into the inner of the atrium via a special construction. 952 perforated daylight reflecting panels by durlum suspended from a net of steel cables, guide the daylight from above down to two levels below the transit and shopping centre.

## eco2heat

Project:

Brooklyn single-family home



Originally founded in 2003 in Marburg, Germany, eco2heat™® is a global leading manufacturer of far-infrared heating products, which range from wall- and surface heaters to industrial and therapy solutions. Company's products are well known to generate a safe, healthy, energy efficient, maintenance-free radiant heat with a carbon-neutral footprint, when powered by green energy sources. Our heaters produce C-far-infrared rays that ensure the longest heat range, body's vitality and well-being, help maintain an optimal air humidity, control and prevent bacteria and mold. They are certified by TÜV, carry GS safety mark and EMV-certificate that rules out any emissions and EMF. eco2heat - heat healthy and efficiently!

**With many more great projects and applicants,  
we would like to present four runner-ups,  
highlight their work and thank them for participating!**

**Pohl**

Project:  
Santa Monica Parking Garage

**POHL** The POHL Facade Division is an owner managed international specialist for metal facades. We combine premium metals such as aluminum, stainless steel, zinc and brass with individual surfaces for one-of-a-kind building envelopes – individually or with a modular system. There are no limits to creativity in the development of architectural ideas. Our strength lies in translating these visions into real facade solutions. With the required know-how and an extensive machine park, we are able to solve any problem with productive manufacturing proposals.

**Unilux**

Project:  
Elmington House, Virginia

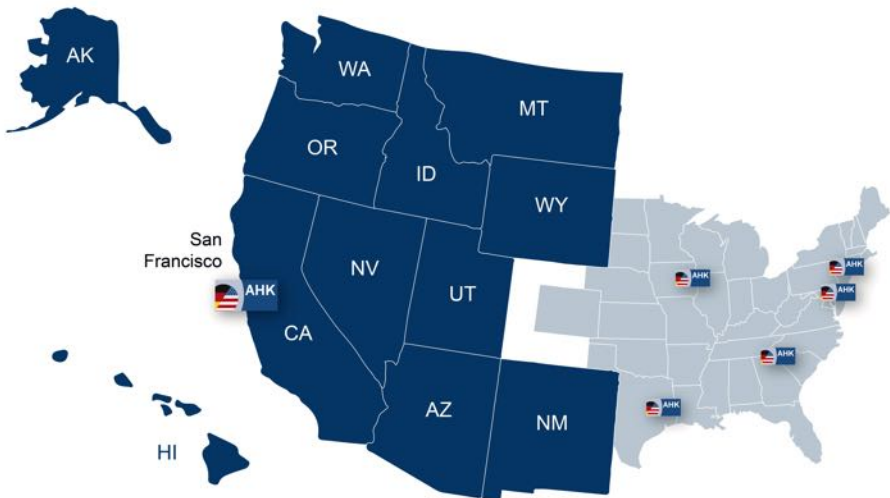


Unilux is a company with a long tradition in the southwest of Germany. UNILUX is the market leader in Europe for aluminum-clad windows, doors and curtain-wall systems. The project was an architecturally very low-energy house. The customer wanted the maximum use of glass with large opening possibilities to smoothly connect the interior and exterior, combined with an exceptional energy balance. What we have made is a type of low energy construction; with a very open and light-flooded architecture. Of particular interest is certainly that we have tested our windows and curtain walls impact and we are thus able to build such projects in the hurricane endangered areas.

# The Representative of German Business (GACC West)

Discover your opportunities in the Western United States!

As the official representative of the German economy, the GACC West acts as a link between German and American companies and organizations.



The Representative of German Business (GACC West) covers 12 states, which generate approximately 4.3 trillion USD, or about 25% of the total economic output of the United States. The West Coast with its metropolises Los Angeles, San Francisco, Phoenix, and Seattle forms the engine of the U.S. economy. Each of these hubs has a unique ecosystem including important players such as entrepreneurs,

established companies, research institutions and universities. Learn more about the global driver of innovation and take advantage of the variety of resources the U.S. West Coast has to offer. Get to know the industries and strengths the U.S. West Coast has to offer and how we can help you to enter the U.S. market or get connected to German and American companies in this region.

# Our core competencies

Please visit our website for more information: [www.gaccwest.com](http://www.gaccwest.com)  
Or contact us directly: [info@gaccwest.com](mailto:info@gaccwest.com)



## Trade Missions & Business Delegations

Whether the tech bubble of Silicon Valley or the Washington aviation cluster, there's plenty to discover and learn on the West Coast. Together with our partners, we regularly organize delegation trips lasting several days. Come with us and get inspiration for the "Next Big Thing" of your company!



## Innovation Solutions

Whether you're building IOT solutions for your warehouse, establishing a start-up culture in your business, or simply want to explore Blockchain technologies, Silicon Valley is full of takeaways for german entrepreneurs. Your Innovation Solutions team provides you with the know-how, contacts, and knowledge necessary to successfully lead your company into the 21st century.

# Go West – Your Partner for Innovation!



## Business Partner Search

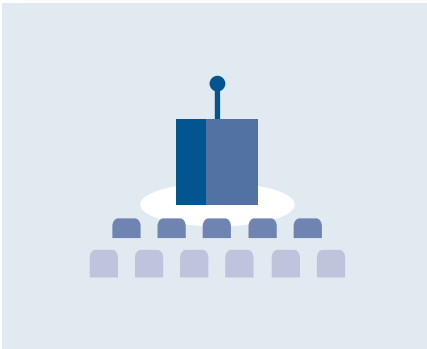
As the official Representative of German Business in the Western United States, the GACC West has numerous contacts to decision-makers in politics and business. Benefit from our network - we will find any kind of partner for you - suppliers, technology partners, potential customers, think tanks and non-profit organizations.



## Market Research

A new market entry is connected with many uncertainties - from the political-economic system of the USA, over regulations and taxes to the composition of main actors, there are a multitude of factors that have to be considered. That's why we offer holistic, industry-specific market analysis to provide you with relevant information - and facilitate your market entry from day one.





## Event Management

In the United States, especially, it is important to “show your face”: Presence at networking and other business events is necessary to build an effective network. We organize events with you and for you, promoting your brand among our broad network of partners.



## Virtual Offices

Are you thinking about entering the U.S. market, but want to proceed step by step? Whether for public authorities or potential business partners - an American telephone number and address are imperative in order to become active in the USA. Set up a Virtual Office with us! We offer you an American postal address, telephone number, and the virtual processing of all your U.S. requests.





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