Design for Zero and Beyond: Opportunities to Create Future-Relevant Solutions in a Climate-Constrained World

Moderator: Susan Gladwin – Autodesk
Panelists: 1) John Andary, Integral Group; 2) Axel Bindel, High Speed Sustainable Manufacturing Institute; 3) Jonathan Rowe, Autodesk; 4) Alex Steffen, Planetary Futurist; 5) Ted van der Linden, DPR Construction

BM 6930 This session/class offers an opportunity for discussion about how the next 40 years impact the future of humanity more than any before. This session will set the context for what our current planetary trajectories mean to those using design, dive into these implications as they relate to climate change, and survey solutions that are on the path to net zero carbon and how they were created, from the people whose vision inspired them. Hear from a futurism expert on the imperatives and opportunities in designing for zero. This is a 90-minute session.

Learning Objectives

At the end of this class you will be able to:

Learning Objective 1

To see the connection between design and the impact it can have on the world's most pressing challenges.

Learning Objective 2

Understand how technology and revolutionary mindsets are now converging, empowering designers everywhere to create solutions.

Learning Objective 3

Understand the core principles of future-relevant design: impact modeling, rapid iteration, massive collaboration

Learning Objective 4

Understand the importance of embracing the world's constraints, and how this creates focus and potential to solve epic challenges

Learning Objective 5

Understand the business opportunities in designing for zero.

About the Moderator

Susan Gladwin leads a strategy consulting practice that builds on her experience in technology marketing combined with two decades of helping organizations achieve success in a sustainable context. She launched and built Autodesk's clean tech program and industry strategy, developing partnerships with cleantech companies and stakeholders worldwide. On behalf of Autodesk, she is now spearheading expansion of awareness and engagement of the design-led revolution, a global movement based on the rise of the power of design to solve epic challenges. Susan's faculty positions include teaching the sustainability studio in the MBA in Design Strategy program at the California College of the Arts. She holds a bachelor of science in computer science from the University of Massachusetts at Amherst, studied international political economy at the University of Copenhagen, and trained with Biomimicry 3.8. Follow Susan on Twitter: @susangladwin

About the Panelists

John Andary - PE, LEED AP: John is a Mechanical Engineer and Principal at Integral Group where he brings over 30 years of energy-focused consulting experience to the firm. John leads the Bioclimatic Design practice at Integral, which focuses on passive and climate-based architectural and engineering design solutions to improve occupant health, thermal comfort and energy efficiency in the built environment. Mr. Andary believes that sustainable design is an engineer's social responsibility and has served as Principal In Charge on numerous LEED Platinum and Net Zero Energy projects. Notably, John led the MEP Engineering, Sustainable Design and Energy Consulting teams for the Research Support Facility project at the National Renewable Energy Laboratory (NREL). At 370,000 square feet, this LEED Platinum Certified, AIA COTE Top Ten facility is considered to be the largest measured and verified Net Zero Energy building in the world. Follow John on Twitter: @johnandary

Dr. Axel Bindel: Axel is Chief Technology Officer at the High Speed Sustainable Manufacturing Institute (HSSMI). HSSMI is a member based not-for profit organization with the aim to support the deployment of new technologies for manufacturing businesses. One of the areas at HSSMI focuses on improving resource efficiency of factories. An example research project is the modeling of the factory climate using 3D models and CFD analysis to assess the airflow and temperature distribution with the aim to optimize the use of HVAC systems for improved energy efficiency. HSSMI also develops a new resource monitor which allows end-users to assess resource usage of assets on the shop floor using a web based visualization which integrated Autodesk's BIM 360. Axel has extensive experience in applied industrial research. After graduating at University of Stuttgart in Electrical Engineering, he worked for the Fraunhofer Technology Development Group (now Fraunhofer IPA) in Stuttgart / Germany where he led the group Integration of Electronic Systems. His responsibilities were the development of new products and systems for mainly automotive automation and production systems. One example was the development of energy harvesting systems for wireless sensors which can be deployed without the need for batteries or external power supplies. After this position he took on a role at Loughborough University in the Manufacturing Systems Integration group. Axel holds a PhD from Loughborough University in Manufacturing Engineering. Follow Axel on Twitter: @HSSMI

Jonathan Rowe: Jonathan is a Program Manager for Autodesk's Sustainability Solutions team, which focuses on helping make high performance design easy, insightful, and cost effective for the building, infrastructure, and manufacturing industries. His work at Autodesk has focused on improving existing simulation services and developing new analysis tools for zero energy building projects. Jonathan worked closely with KieranTimberlake and PE International to create Tally, a new Revit plug-in for whole building life cycle assessment. He has deep expertise demystifying green building certification schemes, managing complex LEED projects, and helping design teams get the most out of BIM tools. Determined to reach across the traditional silos of building design teams, Jonathan earned his Bachelor of Science in Architecture from Georgia Institute of Technology and a Master of Science in Civil Engineering from Stanford University. Follow Jonathan on Twitter: @JRoweSF

Alex Steffen: Planetary Futurist, author and speaker on urbanism, climate action, sustainable prosperity, social innovation, technology and design. Alex recently completed his residency as Planetary Futurist at the innovation and design firm IDEO. He spends his time working to understand the planetary future, and how the changes unfolding around us impact our lives and possibilities. He is considered one of the world's leading voices on sustainability, social innovation and futurism. Alex offers new perspectives to the kinds of approaches available to us in addressing the issues we face as we enter the height of the climate crisis. Follow Alex on Twitter: @alexsteffen

Ted van der Linden: Ted is the Director of Sustainability at DPR Construction and has been at the company for nearly 18 years. In 1998 he led the preconstruction effort on a first of its kind "green" project designed by William McDonough + Partners. Ted was elected to the Contractor/Builder seat on the U.S. Green Building Council's National Board in 1999 and completed his third term as a National Director in 2010. DPR has over 450 LEED AP's and typically generates more than 75% of DPR's annual volume of new projects focusing on LEED Certifications. He continues to work closely in the industry, driving the market towards darker green projects with a renewed emphasis on process improvement, innovation in green technology and education. To that end, Ted spearheaded DPR's green commitment on their most recent office in San Francisco, which is targeting both LEED v4 Platinum certification, as well as targeting to be the first NZE Certified commercial office in San Francisco. Follow Ted on Twitter: @tedvanderlinden

For more information about Autodesk's Sustainability programs:
http://www.autodesk.com/sustainable-design/revolution?src=OMSE&mktvar002=581385

Following are links to several reference documents related to Net Zero.

RESOURCES

Understanding where we are:

IPCC Latest Reports

http://www.ipcc.ch/

Stockholm Environment Institute

http://www.sei-international.org/publications

Gapminder

http://www.gapminder.org/

US Energy Information Administration

http://www.eia.gov/totalenergy/

Understanding Carbon Budgets:

“The One Number You Need to Know” by Alex Steffen

http://www.alexsteffen.com/2013/10/the-one-number-you-need-to-know/

The Trillion Tonne Communiqué

https://www.climatecommuniques.com/

“22 years till we blow the 2°C Carbon Budget” by Lindsay Wilson

http://shrinkthatfootprint.com/global-carbon-budget

Carbon Zero by Alex Steffen

http://grist.org/carbon-zero/

Understanding Industry to Infrastructure

Industry & Product Design – Autodesk Sustainability Workshop

http://sustainabilityworkshop.autodesk.com/product-design/concepts

Buildings – Architecture 2030

http://www.architecture2030.org/

http://newbuildings.org/2014-zne-update

Developments – Ecodistrics

http://ecodistricts.org/

Infrastructure – C40

http://www.c40.org/

Other Sources

Living Building Challenge

http://living-future.org/lbc

Passivhaus Institute

http://passiv.de/en/