Universal Space:
Vertical and Horizontal Context
Moving Towards a Self Powered Built Environment
Fall Semester 2015
Professor Peter Land
Horizontal Context
Summer 2015 Compendium
Professor Peter Land | High Rise and Wide Span Studio | Building Research

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WIDE-SPAN BUILDING LIST
Built and Un-built

1. AEOLIAN ROOF, Altechnica, 2003
10. CHANGI AIRPORT TERMINAL 3, Singapore. 2008. SOM/CPG CONSULTANTS.
22. HAJ AIRPORT TERMINAL, Jedda. 1982. SOM/Jong Schiach.
33. MASDAR HEADQUARTERS, Adrian Smith & Gordon Gill, Abu Dhabi, 2012

Prof. Peter Land
Rev. 12 (08.21.2013)
Research Phase

The Mont-Cine training centre synthesizes many design strategies, as well as pioneering the "micro-climatic envelope" whose vast interior shelter is a micro-environment of urban life. It was built as part of the larger project of reimagining Germany's once proud industrial Ruhr. The ambitious Ruhr-wide Hennes Park is an example of this integrally envisaged, territorially contingent legacy of the past with a vision of a vibrant future respectful of ecological memories.

The new structure, built where the fens hold the Mont-Cine coal mine once stood, is used for short residential training courses and also serves employment and civic education to the nearby industrial towns of Henne and Schönhagen. They are located in two rows of buildings forming a platform central street sheltered within the 133,000 square-foot cloister flows. The micro - climatic envelope - a retrofit of historical and urban fabric - comprises a high-tech skin with motorized openings and thermal structure whose innermost courtyards are drenched along with an open front porch - serves several purposes. Inside, it achieves a Northern European Mediterranean climate where an "outdoor" life can be enjoyed, protected from the rain and cold. The roof and most elevation are covered with 100,000 square feet of photovoltaic cells which generate two and a half times the energy consumed by the complex. Even without the photovoltaic, however, the strategy achieves considerable economies in energy use. Note with standing the vast size of the external envelope in relation to the inner building, the Training Centre was economical to build.

The inner structures do not have to be built in high standards of insulation and noise exclusion, and the building itself is clad in the most economical modules of single cladding. Materials used are from local sources within 10 miles. The 16-inch diameter pipe trunks used for pipes and main utility services, as is the wood for the laminated timber trusses and the decking wood cladding the inner building. The glass is from even closer, as are the photovoltaic cells, from a factory made close to this contract and now built of Schneider Plate's glass frame.

Herne-Sodingen Academy
Jürgen & Peralaid
Ove Arup & Partners
Henne-Sodingen, Germany

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Igo Factory
Nicolas Grumshaw Partners
Whitby Bird
Cologne, Germany
wind / sun active cable net folded hyper surfaces

wind turbine details
universal space wide span structure. fall 2007. illinois institute of technology
professor Peter Land   student Jac Selinsky
THE VERTICAL CONTEXT:
“If you think of the voids instead of the solid elements, the truth appears. The structure is composed of holes, all different in dimension and distribution, but with an unmistakable purpose in their occurrence. So we arrive a paradoxical conclusion, that the art of structure is how and where to put the holes.”

Robert LeRicolais
“In every structure, meaningful construction and ecological efficiency are as critical as functionality and design. **Form and supporting structures are only effective if they meld together to become one entity** that does not beg scrutiny and is perceived as part of a comprehensive Building Culture” - Jörg Schlaich