The Evolving Metropolis
2019 IABSE Congress New York City

IABSE 90 YEARS

Design of Gridshells – Challenges and Advances in Design

Cristobal CORREA

Design Principal

BuroHappold Consulting Eng

New York, NY USA

Cristobal.Correa@burohappold.com

An engineer for more than 30 years with varied experience working on long span, tension and traditional building structures. Also a Professor at the Pratt Institute School of Architecture in Brooklyn NY

Craig M. SCHWITTER

Partner

BuroHappold Consulting Eng.

New York, NY USA

Craig.Schwitter@burohappold.com

Craig Schwitter is a structural engineer and partner who founded the first North American BuroHappold office in New York City more than 20 years ago. He is a champion of integrated engineering design and has a deep interest in the use of technology and innovative engineering strategies

1 Abstract

The structural engineering techniques used in the design of gridshells have evolved considerably in recent years as the impact of digital design and fabrication has allowed for the creation of ever more complex geometries and analysis. This paper will examine this evolution using different case studies that chart the introduction of technology and look at how this has changed the ways that gridshells are conceived and integrated into architectural designs.

The paper will argue that this evolution can be linked with the tradition of engineer as builder, as the design, analysis, fabrication and construction of these elements becomes more and more enmeshed and offer opportunities for greater design involvement. This new way of looking at gridshell design needs to be properly understood and the engineer needs to have the correct level of design intelligence to be able to navigate these challenges and produce a successful project.

Keywords: Geometry, Grid Shell, Steel, Glass, Complex Forms, Architecture, History, Evolution, Form Finding

https://doi.org/10.2749/newyork.2019.1428
Distributed by Structurae