

CV RESUME

NEBOJŠA JAKICA, PhD

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+39 388 90 10 841

Milan, Italy
May 2017

NEBOJŠA JAKICA, PhD

RESEARCHER, DEVELOPER, INNOVATOR, LECTURER

Research & development of innovative integrated sustainable design tools, solutions, products, technologies & workflows. Fostering & promoting cutting-edge architecture where design and performance seamlessly blend to drive creation of amazing, inspiring, self-sustained, zero-energy and zero-carbon buildings, cities and communities.



EDUCATION

PHD IN TECHNOLOGY AND DESIGN FOR ENVIRONMENT AND BUILDINGS

2011-2015

POLITECNICO DI MILANO, MILAN-ITALY

Title: **Performance-Based Architectural Design, Simulation and Optimisation of Complex Building Integrated Photovoltaics**

Supervisor: Prof. Alessandra Zanelli

Principal subjects: Performance-Based Building Design, Active and Passive Solar Design Strategies, BIPV (Building-Integrated Photovoltaic), Daylighting, Façade design, High-Performing Facades, Zero Energy Buildings, Cost-optimal design, Multi-Criteria Optimisation, Computational design, Data-driven Design

Description: Research aimed to address current limitations of PV implementation into buildings in terms of design and simulation by developing integrated performance-based solar design methodology and tools considering Active (Building-integrated Photovoltaics) and Passive (Daylighting) solar design strategies for both producing and saving energy enabling Zero and Plus Energy Buildings. Research includes comprehensive state-of-the-art review of more than 200 solar design tools and features for Daylighting and Building Energy, custom ray tracing software for informing design decisions, optical/light simulation of complex BIPV system and outdoor validation.

VISITING RESEARCHER

2014

UNIVERSITY OF APPLIED SCIENCES AND ARTS OF SOUTHERN SWITZERLAND (SUPSI), LUGANO-SWITZERLAND

BIPV testing and certification procedures, standards IEC 61215-61646, Experimental validation for optical simulation

Supervisor: Dr. Francesco Frontini

SPECIALIZING MASTER - ARCHITECTURE, STRUCTURE & TECHNOLOGY

2010-2011

POLITECNICO DI MILANO, MILANO-ITALY

Title: **Parametric Framework for Performance-Based Structural Design Optimisation of the Sports Arena**

Supervisor: Prof. Paola Ronca, Arch. Chiara Domenici

Principal subjects: Buildings and Structures, Architecture and Sustainability, Architectural Constructions, Architectural Technology

MASTER IN ARCHITECTURE (INTEGRATED STUDIES)

2003-2009

UNIVERSITY OF NOVI SAD, NOVI SAD-SERBIA

Title: **Centre for Innovation in Novi Sad – Parametric Design Study**

Supervisor: Prof.dr Predrag Šidjanin

Principal subjects: Architectural and Urban Design, Interior Design, Landscape Design, Architectural Constructions, Architectural/Urban Heritage – Conservation and Protection, Ecology of the Built Environment

SELECTED PUBLICATIONS

Lovati, M. Avesani, S., Maturi, L., Jakica, N., Moser D. (2016) - **Evaluating a BiPV sun shading system with various software and methods**, In: Proceedings of the 11th Conference on Advanced Building Skins, (pp.41-52). 10-11 October 2016, Bern, Switzerland, Publisher: Advanced Building Skins GmbH, Wilen, Switzerland. ISBN: 978-3-98120539-8

Jakica, N., Zanelli, A., Frontini F. (2015) - **Experimental Validation of Optical Simulation for Complex Building Integrated Photovoltaic System**. In: Proceedings of the 31st European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC 2015), (pp. 2890-2895), Hamburg, Germany

Jakica, N., Zanelli, A. (2015) - **Knowledge Based Expert System Optimisation of the Complex Glass BIPV System Panel Layout on the Cable Net Structural Skin**. In: Energy Procedia 78, pp. 2226–2231. doi:10.1016/j.egypro.2015.11.339.

Jakica, N., Zanelli, A. (2014) - **Dynamic Visualization of Optical and Energy Yield Co-Simulation of New Generation BIPV Envelope in Early Design Phase Using Custom Ray Tracing Algorithm in Python**. In: Proceedings of the Conference on Advanced Building Skins, (pp.1031-1038). Economic Forum, Munich, Germany. ISBN 978-3-98120537-4

Jakica, N. (2013). **Parametric Design and Optimisation of the ETFE Envelope of the Sports Stadium in Lamezia Terme**. In: H. Bogner-Balz, M. Mollaert and E. Pusat (Ed.) Proceedings of the TENSINET Symposium 2013 [RE]THINKING Lightweight Structures, Chapter: ETFE (pp. 417-424). Mimar Sinan Fine Arts University, Istanbul, Turkey. ISBN 9789072325068

Jakica, N. (2010). **Parametric Modelling: An Approach to Energy Efficient Building Envelopes and their Interaction with Urban Environment**. In: Proceedings Abstracts of the UK - Ireland Planning Research Conference 2010 - Diversity and Convergence: Planning in a World of Change, Track: Climate Change, Sustainability and Ecology. Anglia Ruskin University, Chelmsford, Essex. Liverpool University Press, Routledge, Taylor & Francis Group

NEBOJŠA JAKICA, PhD

RESEARCHER, DEVELOPER, INNOVATOR, LECTURER

WORK EXPERIENCE

RESEARCHER

2013-PRESENT

POLITECNICO DI MILANO, MILAN-ITALY

Cutting-edge research on emerging technologies in Solar Design, High-Performance Facades, Renewables and Zero Energy Buildings
Development of Innovative, Integrated and Performance-Based Design Methodologies & Tools on various scales and complexity
Implementation of Active and Passive Solar Design Strategies & Multi-Criteria Optimisations for Zero Energy Buildings
Optical and Thermal Simulation, Material & Components Characterization, Daylighting, Physically-based Visualisation
Performing and managing design, simulation and outdoor/laboratory testing activities with team members, clients and partners
Scientific writing and publishing (papers in journals and conferences, books, book chapters)
Defining and strategizing research objectives, activities, partners competences and facilities
Writing grant applications, preparing and managing documentation
Representing Politecnico di Milano in research networks and community including Associations, Actions, Conferences, Workshops
Leader of Action 5 on BIPV design and simulation of International Energy Agency - PVPS Task 15 on BIPV
Managing activities for patent application (Documentation, , Illustrations, Feasibility studies with producers, Performance assessments)

TEACHING ASSISTANT, LECTURER

2016-PRESENT

POLITECNICO DI MILANO, MILAN-ITALY

Master course 1: Construction of Architectural Works
Master course 2: Design of Ultra-Lightweight Building Systems
Organizing course structure, students expectations, toolsets, exams
Teaching theoretical foundations, performance-based and computational design methodologies
Teaching advanced 3D parametric modelling for complex free-form structures (Rhino, Grasshopper)
Teaching sustainable design strategies - Daylighting and Building Energy
Teaching High-Performance Facades (Radiance, EnergyPlus, Ladybug, Honeybee, DIVA)
Tutoring for master degree
Holding design reviews

SENIOR DESIGN ARCHITECT, DIGITAL DESIGN SPECIALIST

2011-PRESENT

FREELANCE, MILAN, BRUSSELS, NEW YORK

VITTORIO GRASSI ARCHITECT AND PARTNERS, MILAN-ITALY

Creating high-aesthetic innovative design visions, concepts & solutions for facades and buildings
Proposing design visions, Leading & Collaborating on multiple winning international competitions
Leading and participating in design reviews
Positioning and matching client values, project requirements & design vision
Implementation and transfer of digital design process know-how into project values
Identify project & business opportunities in relation to implementation of innovative design processes & technologies
Managing & coordinating activities to meet client, team, partners and project values, expectations & deliverables
Communicating ideas within project team, partners, clients, producers & contractors to help resolve project issues & coordination
Presenting design vision, progress reviews and project deliverables to clients and client representatives
Writing meeting reports and minutes & track project progress
Streamlining design process from early design studies to the detail design ensuring design idea is consistent and properly executed
Consultancy & responsibility in synchronisation , implementation & facilitation on Advanced Integrated Digital Design Strategies
BIM implementation in design process from conceptual design to Integrated Project Delivery (IPD)
Developing innovative digital design workflows & tools and facilitating their implementation
Supervising & Preparation of conceptual, schematic, design development documents including drawings, visualisation and illustrations
Collaboration & participation in international architectural venues, initiatives, actions, scientific and professional associations
Education and support of multidisciplinary design teams on digital design & presentation
Organising & mentors team members and their expectations to meet Design, Modeling and Project deliverables & deadlines
Identifying & learning from successful practices, projects and cases

JUNIOR DESIGN ARCHITECT

2009-2010

NOVI DOM, NOVI SAD-SERBIA

BIM management, Creation and maintenance of the BIM (ArchiCAD) template files according to the office standards
Automating routines (Quantity take-offs, layouts, drawings) in BIM to support design and improve productivity
Managing digital file transfer and exchange with project partners
Assist staff in BIM project setup and design, Providing ArchiCAD internal beginner and advanced training to staff
Identifying trends and business opportunities relating to BIM
BIM implementation in schematic and design development phases of Theatre, Residential, Commercial and Mix-use projects

NEBOJŠA JAKICA, PhD

RESEARCHER, DEVELOPER, INNOVATOR, LECTURER

TECHNICAL SKILLS

BIM & PARAMETRIC MODELING

■ RHINOCEROS 3D
■ ARCHICAD
■ 3DS MAX
■ REVIT
■ AUTOCAD
■ GRASSHOPPER
■ DYNAMO
■ KANGAROO

BUILDING ENERGY DAYLIGHTING

■ ENERGYPLUS
■ RADIANCE
■ DIVA FOR RHINO
■ HONEYBEE
■ LADYBUG
■ ARCHSIM
■ LBNL WINDOW
■ LBNL OPTICS
■ LBNL THERM

PHYSICALLY-BASED RENDERING

■ VRAY
■ IRAY
■ MENTAL RAY
■ CORONA
■ UNREAL ENGINE

COMPUTATIONAL DESIGN & PROGRAMMING

■ PYTHON
■ VISUAL STUDIO
■ C#

GRAPHIC DESIGN

■ ILLUSTRATOR
■ INDESIGN
■ PHOTOSHOP
■ ACROBAT PRO

SELECTED AWARDS

Nomination for the MIT Technology Review – Innovators Under 35, Italian edition Award. 2016

3rd place - the National Competition for the "Musealization of the Violin stable" in Aquileia, Italy, 2015

1st place - the International Design Competition for the Masterplan of the former industrial area ZIM Site Usines Maslennikov in Samara, Russia, 2014

1st place - the International Design Competition for the design of the Cultural Centre and the Park dedicated to the Yakut heroic epos Olonkho in Olonkholand, Yakutsk, Russia, 2014

Selected - Shenzhen Bay Super City International Competition, Shenzhen, China. 2014

1st place - the International Design Competition for the requalification of the Velodrome Maspes-Vigorelli in Milan, Italy, 2013

1st place - Tekla BIM Award Italia 2013 for the project Sports Hall in Lamezia Terme, Italy. 2013

1st place - the International Design Competition of the Military City of Cecchignola in Rome, Italy, 2012

PATENTS

Patent for community design application (As a main inventor, Co-inventor Prof. Alessandra Zanelli)

Patent number: 002824847-0001, Patent registered: 16 October 2015, Status: Pending

Patent for industrial invention (As a main inventor, Co-inventor Prof. Alessandra Zanelli)

Application method for building-integrated photovoltaic modules

Patent number: 102015000061983, Patent registered: 16 October 2015, Status: Pending

MEMBERSHIPS

International Energy Agency IEA - PVPS Task 15 BiPV – Leader of Action E.5 on BiPV design and simulation

TENSINET – The Association for Tensioned Membrane Construction

COST 1303 – Novel Structural Skins

ACADIA – The Association for Computer Aided Design in Architecture

IBPSA Italia – International Building Performance Simulation Association, Italian Regional Affiliate

CIB – International Council for Building

IASS – International Association for Shell and Spatial Structures

LANGUAGES

Serbian (mother tongue)

English - proficient

Italian - average

REFERENCES

Prof. ALESSANDRA ZANELLI
Politecnico di Milano, Milan, Italy
CLUSTEX, TEHTILESHUB
Associate Professor

Arch. VITTORIO GRASSI
VGA and Partners, Milan, Italy
RIBA, Principal

Dr. FRANCESCO FRONTINI
SUPSI, Lugano, Switzerland
Head of Swiss BiPV
competence Center

Dr. HISASHI ISHI
LIXIL Corporation, Tokio, Japan
Research and Development Division
ZEB ZEH Research Group
Group Leader



PORTFOLIO

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+39 388 90 10 841

Milan, Italy
May 2017



RESEARCH PROJECT TIFAIN

TURIN, ITALY

PROJECT: TIFAIN (Project No. 30221157)
Building Integrated Photovoltaic Modules
for Innovative Architectural Applications

PERIOD: 2013-2014

FUNDING BODY: Region of Lombardy, Italian Ministry of
Education, Universities and Research

PROJECT PARTNER: Politecnico di Milano



Ministero dell'Università e della Ricerca



CONCEPTUAL DESIGN

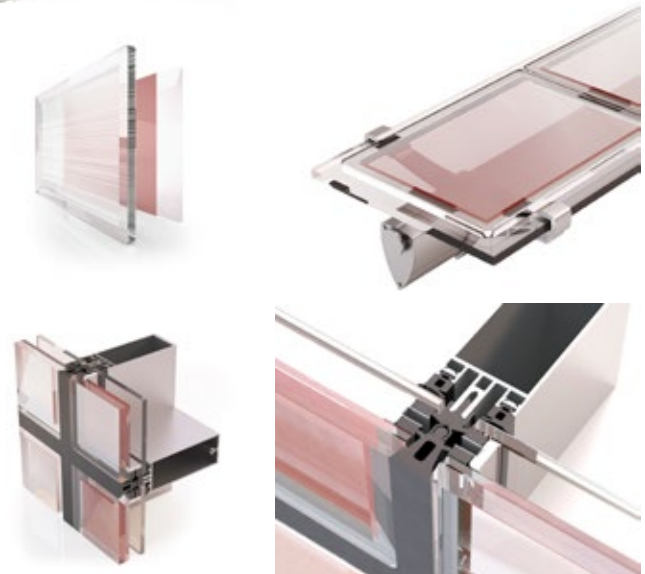
COLLABORATING ON DEVELOPING UNIQUE PROJECT VISION
MEETING PROJECT VALUES BY DESIGN & PERFORMANCE
MEANS

PROJECT & TEAM MANAGEMENT

MAINTAIN PROJECT BRIEF AND REQUIREMENTS
COMMUNICATING DESIGN IDEAS IN MULTIDISCIPLINARY TEAM
ORGANIZE PERFORMANCE-BASED DESIGN PROCESS
REPRESENTATIVE AT PARTNER MEETINGS
MANAGING ACTIVITIES RELATED TO DESIGN & SIMULATION
COORDINATING OUTDOOR/LABORATORY TESTING ACTIVITIES
MANAGING ACTIVITIES FOR PATENT APPLICATIONS

PROJECT REPORTING & DISSEMINATION

MONTHLY AND FINAL PROGRESS REPORTS & PRESENTATION
SCIENTIFIC PAPERS, POSTERS
CONFERENCE PRESENTATIONS





PHD THESIS

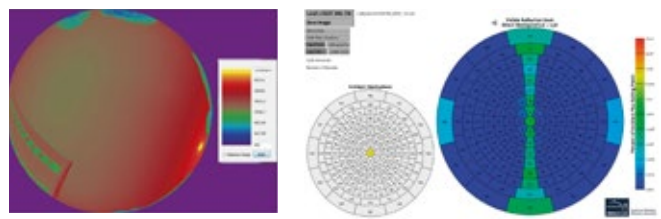
PERFORMANCE-BASED ARCHITECTURAL DESIGN, SIMULATION AND OPTIMIZATION OF COMPLEX BIPV

DEGREE: Doctor of Philosophy
in Technology and Design
for Environment and Building

PERIOD: 2011-2015

UNIVERSITY: Politecnico di Milano

SUPERVISOR: Prof. Alessandra Zanelli



ZERO ENERGY BUILDINGS

ACTIVE AND PASSIVE SOLAR STRATEGIES
MULTI-CRITERIA OPTIMISATION
COST-EFFECTIVE STRATEGIES
THERMAL-ENERGY SIMULATION

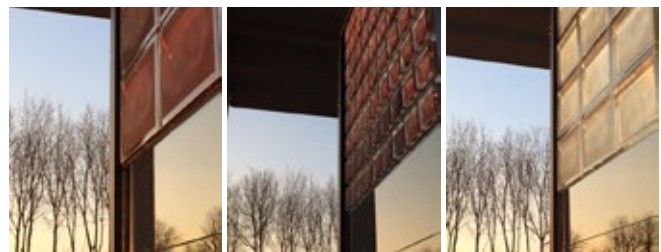
OPTICAL CHARACTERIZATION

GLASS MODULES
COMPLEX FENESTRATION SYSTEM BSDF
PV CELL



DAYLIGHTING SIMULATION / RENDERING

DAYLIGHTING RADIANCE THREE PHASE METHOD
DAYLIGHTING ASSESSMENT
PHYSICALLY-BASED PHOTOREALISTIC VISUALIZATION
RENDERING SETTINGS OPTIMIZATION
SPEED VS. QUALITY TRADE-OFF
SOLAR HEAT GAIN BALANCE



SOLAR RADIATION MAPPING

MAPPING SOLAR POTENTIAL FOR BIPV

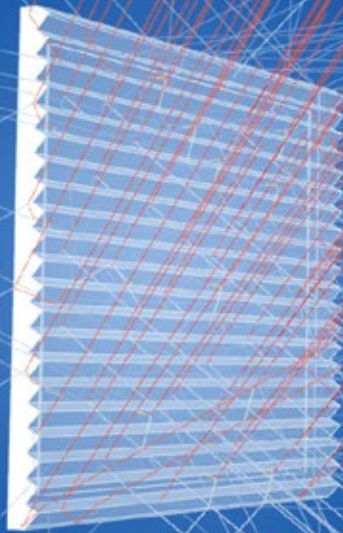
BIPV ENERGY YIELD & FINANCING

PV ENERGY YIELD SIMULATION
RETURN OF INVESTMENT

EXPERIMENTAL VALIDATION

OPTICAL-DAYLIGHTING SIMULATION VALIDATION
FULL SCALE FACADE MOCKUP DESIGN





STINGRAY

RAYTRACING PLUGIN FOR GRASSHOPPER

PROGRAMMING

PYTHON SCRIPTING FOR GRASSHOPPER
DEVELOPING CUSTOM RAYTRACING TOOL
MULTI-THREADING
COMPLEX DATASETS MANAGEMENT AND CONTROL
MULTIPLE RECURSIONS, TREE-BRANCHING, RAY SORTING

NUMERICAL SIMULATION

OPTICAL SIMULATION
BEER-LAMBERT, FRESNEL, SNELL FUNCTIONS
DETERMINISTIC
STOCHASTIC (MONTE CARLO) - UNDER DEVELOPMENT

COMPUTATIONAL DESIGN

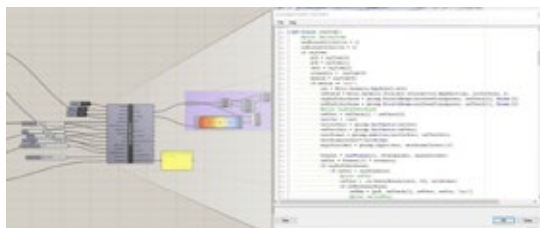
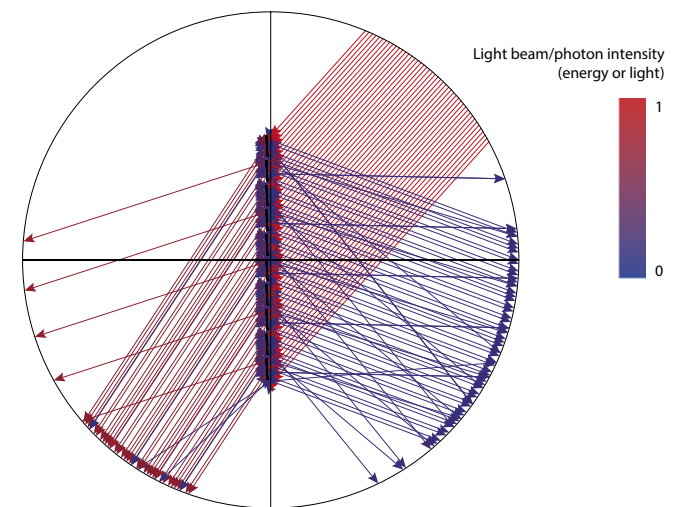
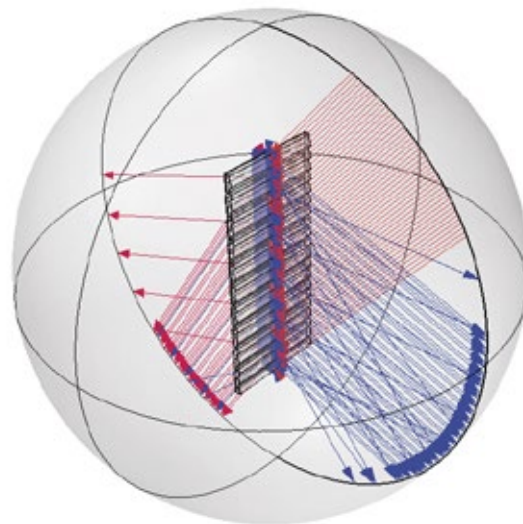
DIGITAL DESIGN WORKFLOW ORGANIZATION
DATA-DRIVEN DESIGN, PLANNING & INTEGRATION
FINAL DESIGN INTEGRITY

BIPV ENERGY YIELD SIMULATION

ANGLE-DEPENDENT PV ENERGY YIELD CHARACTERIZATION
BSDF INCIDENCE ANGLE MODIFIER

OPTICAL CHARACTERIZATION

GLASS MODULES
COMPLEX FENESTRATION SYSTEM BSDF





TIFAIN DIAMOND

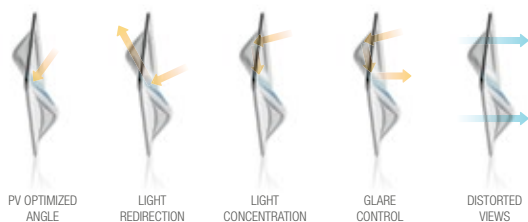
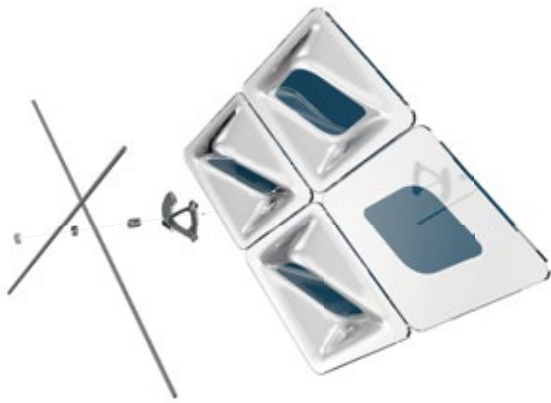
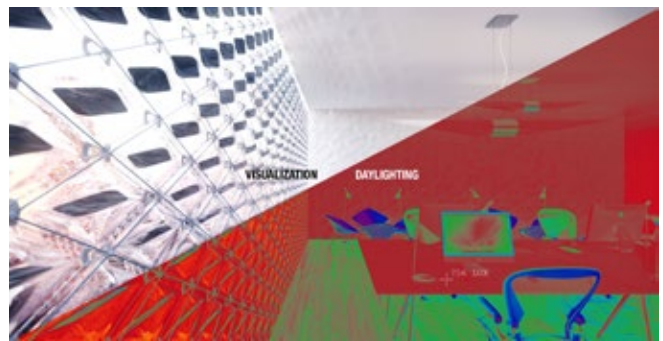
BUILDING-INTEGRATED PHOTOVOLTAICS FACADE CONCEPT

PERFORMANCE-BASED FACADE DESIGN

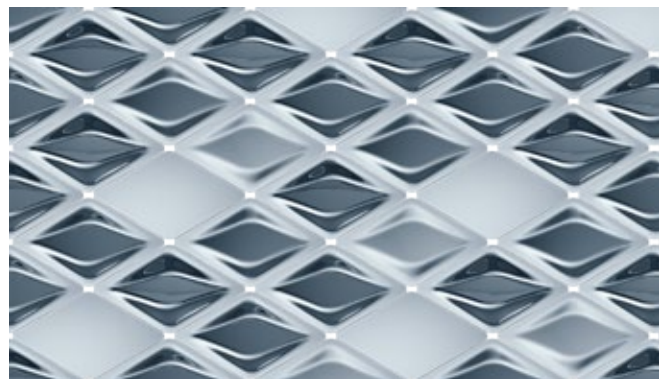
- FACADE GLASS MODULE DESIGN
- OPTICAL & PV PERFORMANCE IMPROVEMENT
- STRUCTURAL SUPPORT SYSTEM DESIGN
- PERFORMANCE-BASED FACADE MODULE DISPOSITION

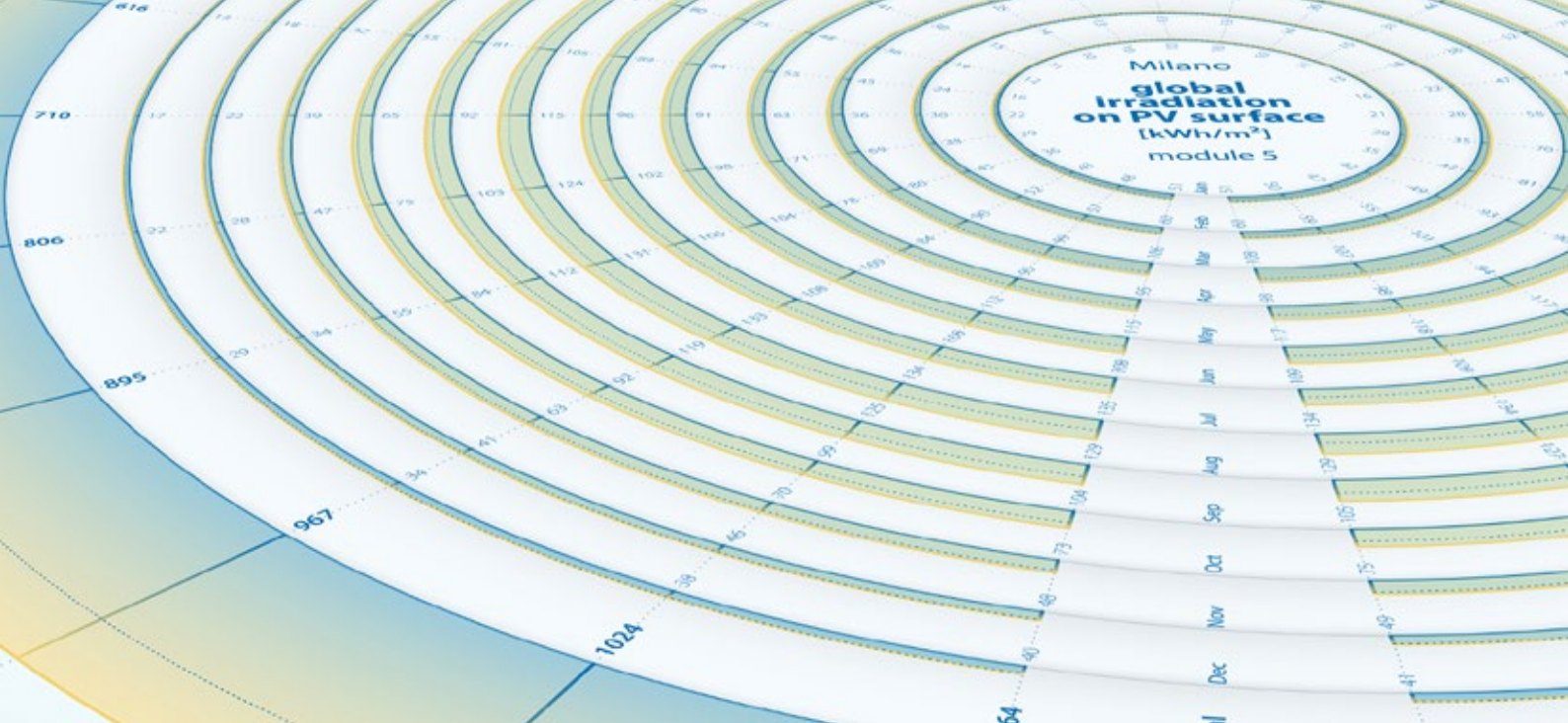
PARAMETRIC DESIGN & MODELING

- FACADE MODULE BIM FAMILY



PV OPTIMIZED ANGLE LIGHT REDIRECTION LIGHT CONCENTRATION GLARE CONTROL DISTORTED VIEWS





INFOGRAPHICS

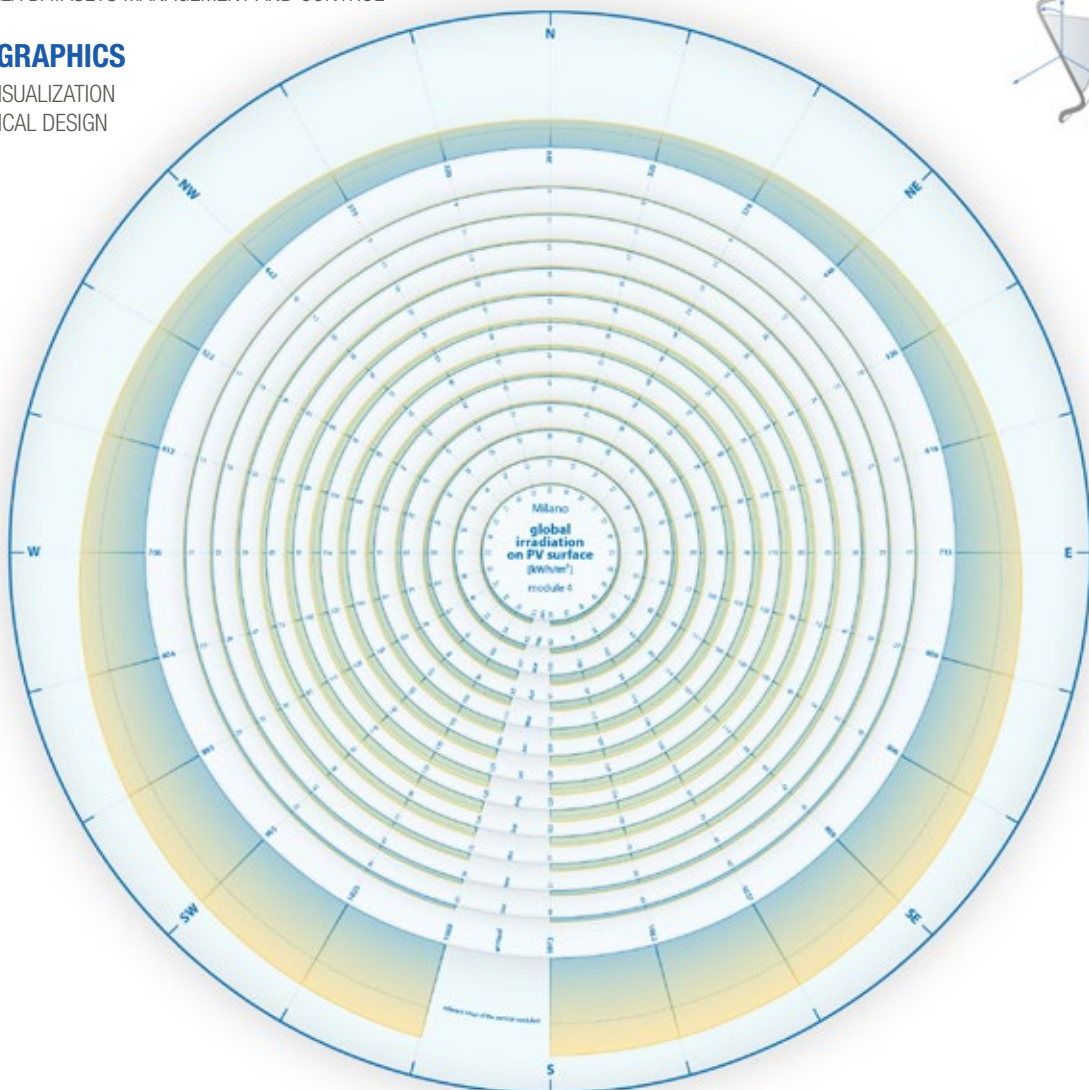
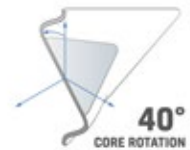
COMPLEX DATASETS MANAGEMENT & VISUALIZATION

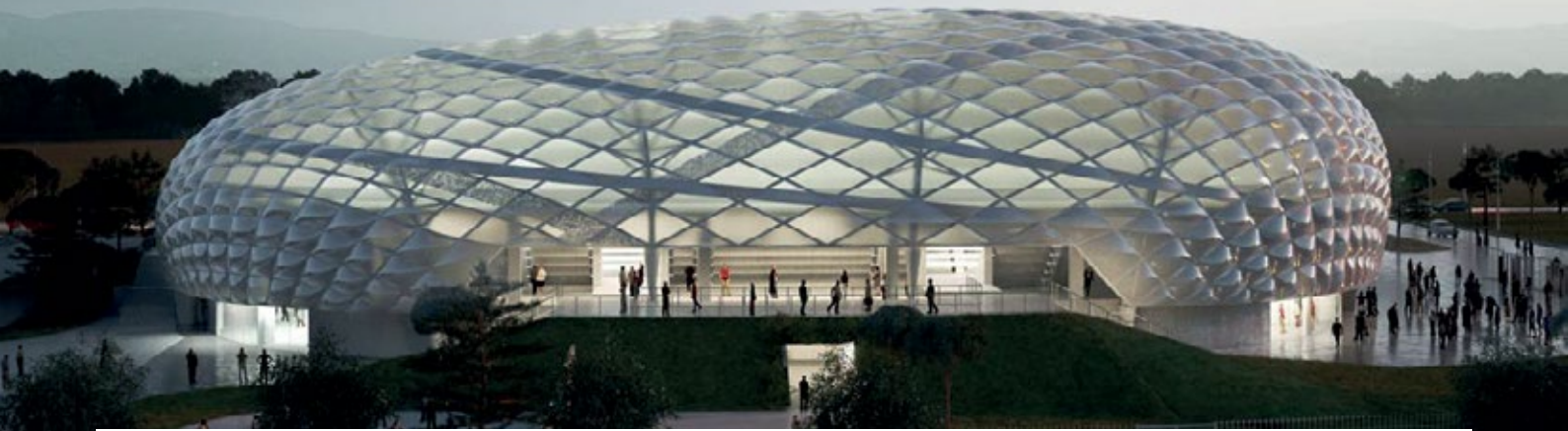
PROGRAMMING & AUTOMATION

AUTOMATION SCRIPT FOR PERFORMANCE ASSIGNMENT
COMPLEX DATASETS MANAGEMENT AND CONTROL

INFOGRAPHICS

DATA VISUALIZATION
GRAPHICAL DESIGN





SPORTS HALL

LAMEZIA TERME, ITALY

ARCHITECTURAL DESIGN: Vittorio Grassi Architetto & Partners
 CLIENT: Municipality of Lamezia Terme
 PERIOD: 2010-2012
 STRUCTURAL DESIGN: AI Engineering Srl
 ENVIRONMENTAL DESIGN: AI Engineering Srl
 LOCAL SUPPORT: Arch. Nunzio Santoro
 DESIGN PHASE: Schematic design
 Design Development

BUILDING & ENVELOPE DESIGN

DESIGN AND 3D MODELLING
 COLLABORATING ON DEVELOPING UNIQUE PROJECT VISION
 MEETING CLIENT VALUES BY DESIGN MEANS

COMPUTATIONAL DESIGN

DIGITAL DESIGN WORKFLOW ORGANIZATION
 DATA-DRIVEN DESIGN, PLANNING & INTEGRATION
 FINAL DESIGN INTEGRITY

DATA MANAGEMENT

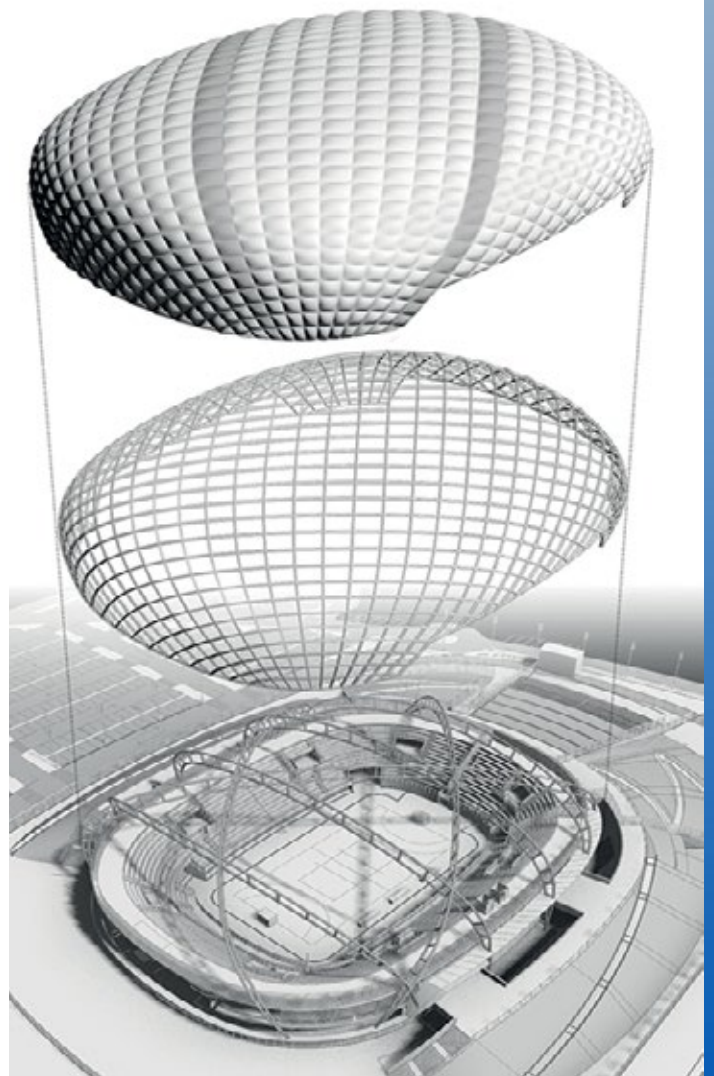
COMPLEX DATASETS MANAGEMENT AND CONTROL
 CROSS-DISCIPLINARY INTEGRATION & COLLABORATION
 GEOMETRY & DATA INTEROPERABILITY

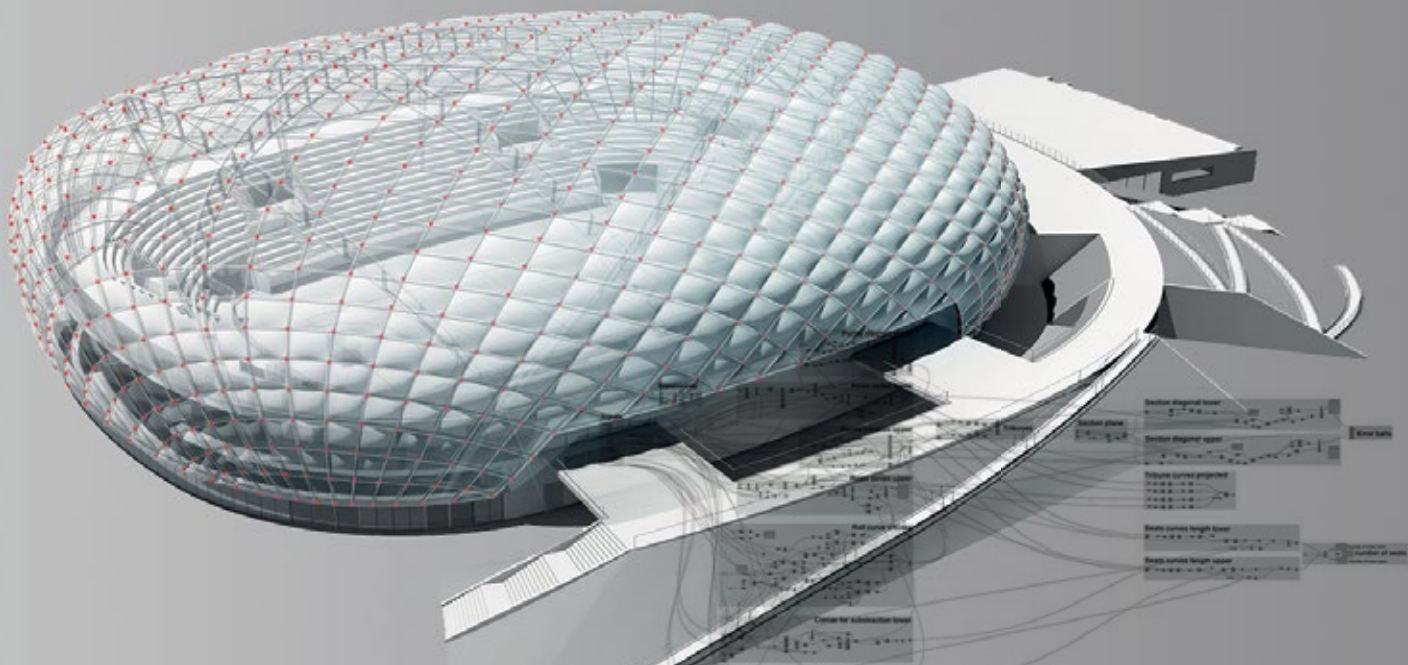
RESEARCH AND DEVELOPMENT

STATE-OF-THE-ART RESEARCH ON DESIGN PROCESSES
 KEEPING TRACK ON LATEST TRENDS AND DEVELOPMENTS
 DEVELOPMENT OF INNOVATIVE PROJECT-BASED SOLUTIONS

EDUCATION & SUPPORT

DEFINING KNOWLEDGE EXPECTATIONS FOR TEAM MEMBERS
 IN-HOUSE PROJECT-FOCUSED WORKSHOPS & TRAINING
 CONSULTANCY & SUPPORT FOR PROJECT PARTNERS





SPECIALIZING MASTER THESIS

PARAMETRIC FRAMEWORK FOR PERFORMANCE-BASED STRUCTURAL DESIGN OPTIMISATION OF THE SPORTS ARENA

PERIOD: 2010/2011
 DEGREE: 2nd level Specializing Master in
 Architecture, Structure & Technology
 UNIVERSITY: Politecnico di Milano
 Master School Fratelli Pesenti

PARAMETRIC DESIGN & MODELLING

TIERS AND SIGHTLINE
 COMPLEX FREEFORM ENVELOPE

RATIONALIZATION & OPTIMIZATION

TIERS AND SIGHTLINE QUALITY ASSESSMENT
 ETFE MESH SIZING & PANELLING
 FAIRNESS OF SEAMS
 ENVELOPE SURFACE CURVATURE
 AUTOMATED BUDGET CONTROL CHECKS

TECHNICAL DOCUMENTATION & REPRESENTATION

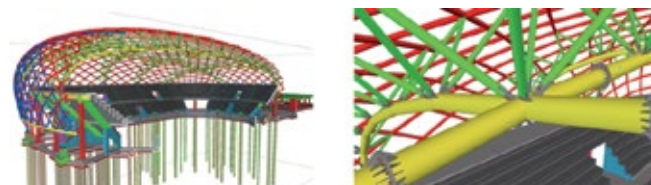
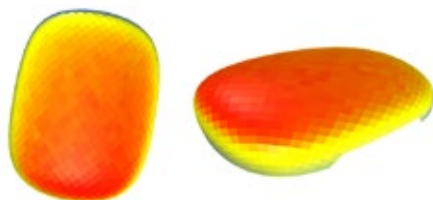
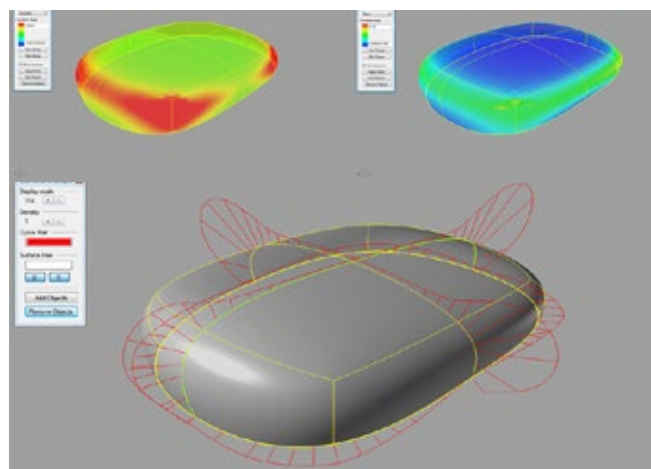
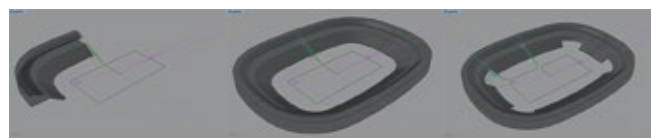
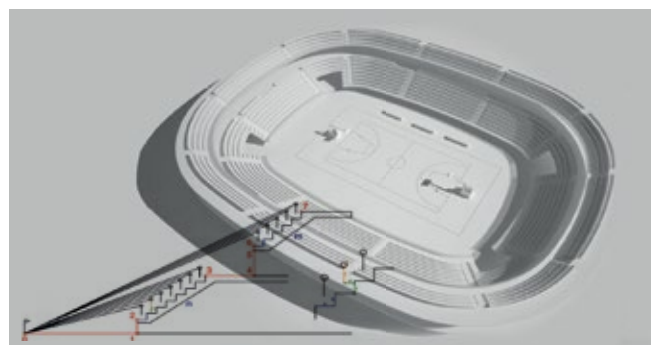
CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
 3D COMPLEX DETAILING AND DOCUMENTATION
 VISUALIZATION FOR VIEWS AND LAYOUTS

STRUCTURAL DESIGN & FORMFINDING

SPACEFRAME STRUCTURAL DESIGN
 STRUCTURAL RATIONALIZATION
 FORMFINDING AND MESH RELAXATION

SUN RADIATION ANALYSES

SILVER PRINT DENSITY AND DISPOSITION
 G-VALUE BALANCE BASED ON SOLAR RADIATION MAPPING





MASPES VIGORELLI VELODROME

MILAN, ITALY

ARCHITECTURAL DESIGN: Vittorio Grassi Architetto & Partners
 CLIENT: Municipality of Milan
 PERIOD: 2012-2013
 SPORTS DESIGN: Populous LTD
 STRUCTURAL DESIGN: schlaich bergemann und partners
 SERVICES DESIGN: Energo Engineering
 HEALTH & SAFETY: Gae Engineering
 PROJECT PHASE: Conceptual design

COMPUTATIONAL DESIGN

DIGITAL DESIGN WORKFLOW ORGANIZATION
 DATA-DRIVEN DESIGN, PLANNING & INTEGRATION
 FINAL DESIGN INTEGRITY

DATA MANAGEMENT

COMPLEX DATASETS MANAGEMENT AND CONTROL
 GEOMETRY & DATA INTEROPERABILITY

PARAMETRIC DESIGN & MODELLING

COMPLEX FREEFORM FACADE & ROOF SURFACE
 DIAGRID TESSELLATION
 SURFACE CURVATURE SMOOTHNESS

RESPONSIVE FACADE DESIGN

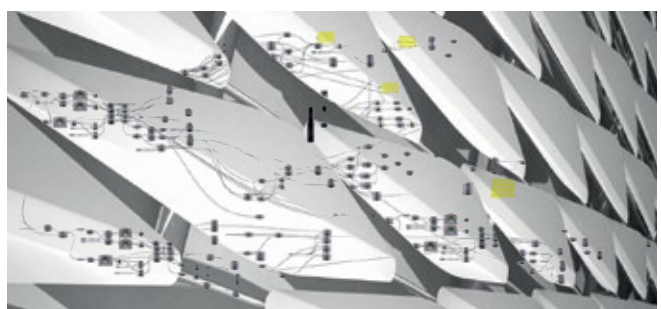
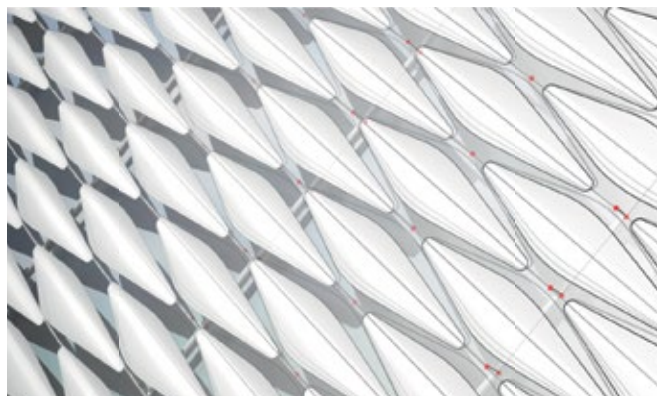
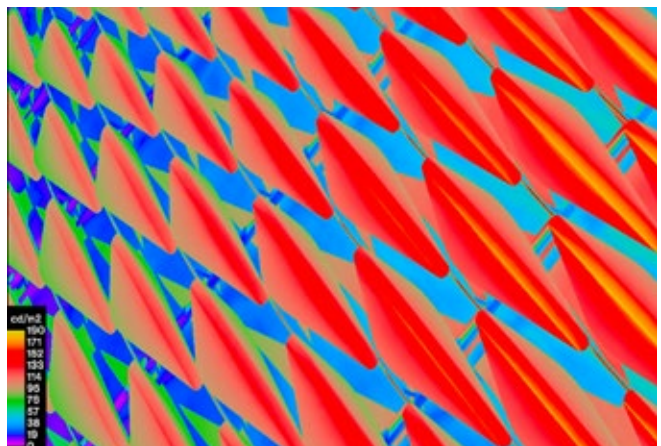
DYNAMIC SHADING DEVICES
 RESPONSIVE THERMO-BIOMETAL COMPOSITE MATERIAL
 IMAGE-BASED & SOLAR ANALYSIS-BASED ACTUATION

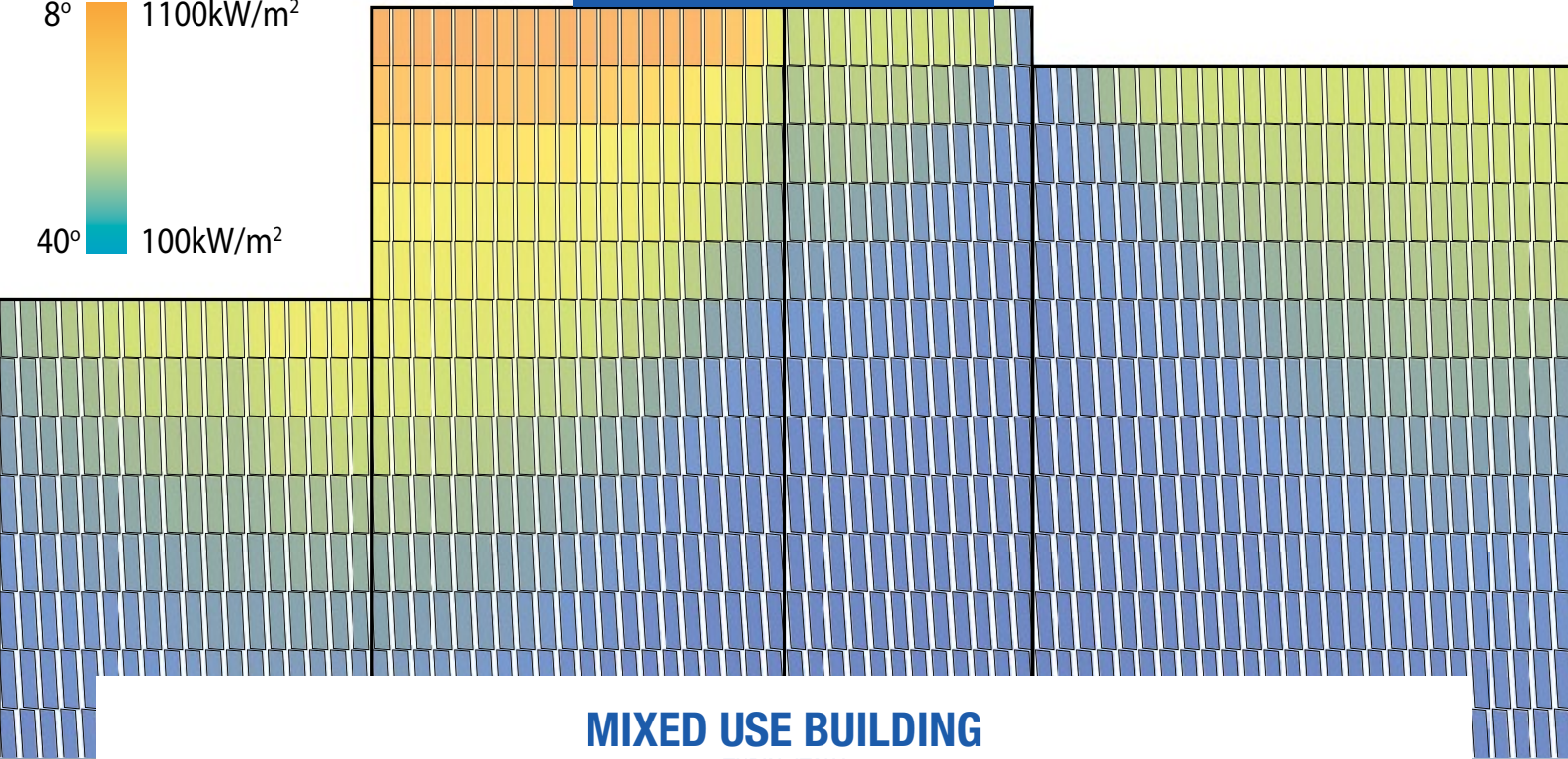
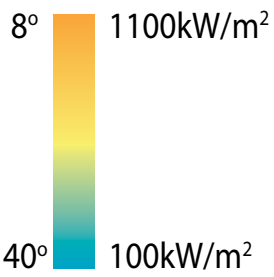
DAYLIGHTING & IRRADIATION MAPPING

IRRADIANCE ON FACADE SURFACE
 DAYLIGHTING

TECHNICAL DOCUMENTATION & REPRESENTATION

CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
 VISUALIZATION FOR VIEWS AND LAYOUTS





MIXED USE BUILDING TURIN, ITALY

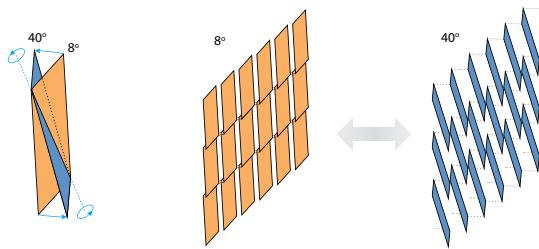
ARCHITECTURAL DESIGN: Vittorio Grassi Architetto & Partners
 CLIENT: Confidential
 PERIOD: 2015
 PROJECT PHASE: Conceptual design

PERFORMANCE BASED DESIGN

SIMULATION-BASED FACADE PANEL ROTATION & MATERIALS

PARAMETRIC DESIGN & OPTIMIZATION

FACADE DESIGN
 PANEL ROTATION

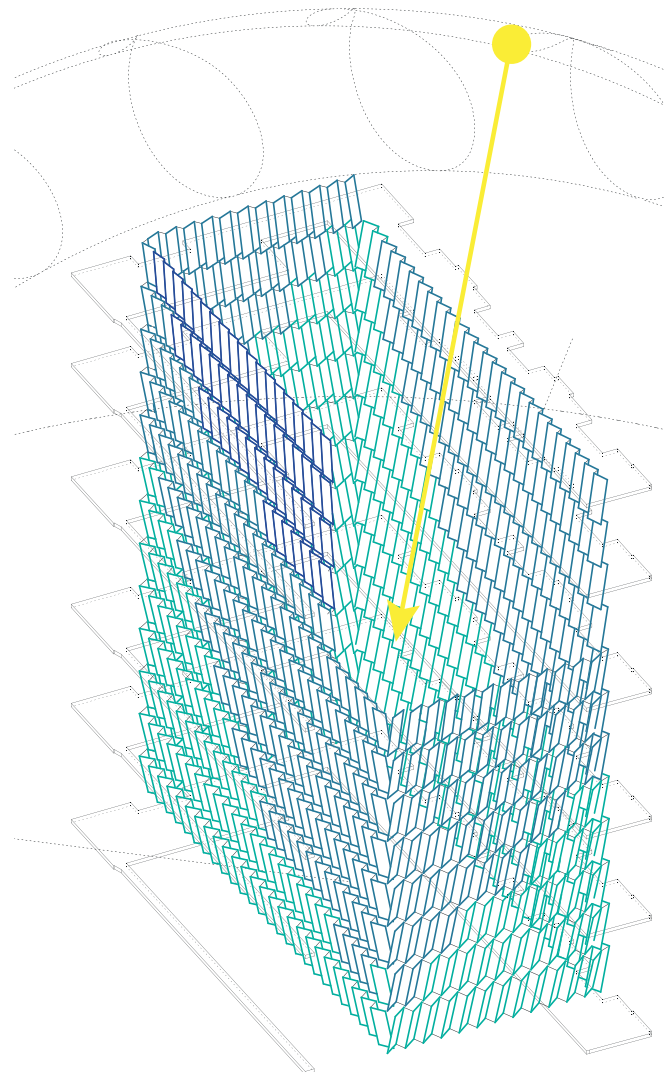
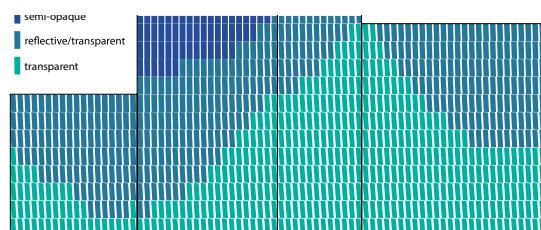


DAYLIGHTING ANALYSES

OPTIMIZING DAYLIGHTING LEVELS

SUN RADIATION ANALYSES

FACADE PANELS FRITTING
 OPTIMIZING TRANSPARENCY & REFLECTIVITY

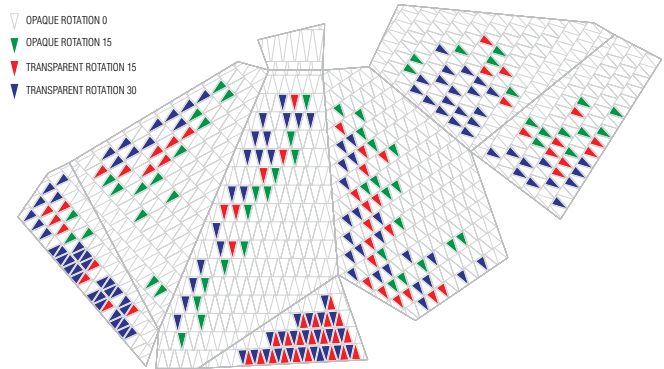




OLONKHOLAND COMPLEX

YAKUTSK, RUSSIA

ARCHITECTURAL DESIGN: Vittorio Grassi Architetto & Partners
 CLIENT: Olonkholand Foundation
 PERIOD: 2014-2015
 ENGINEERING: Yakutagropromproekt OAO
 ARUP Italia
 LOCAL SUPPORT: Mosdevelopment LLC
 PROJECT PHASE: Conceptual design



CONCEPTUAL BUILDING DESIGN

BUILDING MASSING AND TESSELLATION
 COLLABORATING ON DEVELOPING UNIQUE PROJECT VISION
 MEETING CLIENT VALUES BY DESIGN MEANS

COMPUTATIONAL DESIGN & MANAGEMENT

DIGITAL DESIGN WORKFLOW ORGANIZATION
 DATA-DRIVEN DESIGN, PLANNING & INTEGRATION
 FINAL DESIGN INTEGRITY

PARAMETRIC DESIGN & MODELLING

CUSTOM SOLUTION FOR CUTTING BUILDING VOLUMES
 REGIONALLY-INFLUENCED CUSTOM PANELLING

FABRICATION & RAPID PROTOTYPING

UNROLLING FACADE PLANES
 TAGGING AND LABELING PANELS
 CUT-OUTS FOR CNC MODEL MAKING

PROGRAMMING

CUSTOM-MADE TOOLS & COMPONENTS FOR PANELLING
 AUTOMATION SCRIPTS

TECHNICAL DOCUMENTATION & REPRESENTATION

CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
 VISUALIZATION FOR VIEWS AND LAYOUTS



在竞赛中，设计团队提出了以“曲线”为核心的建筑形式，旨在通过其独特的造型，体现深圳这座城市的创新精神。设计团队在竞赛中，提出了以“曲线”为核心的建筑形式，旨在通过其独特的造型，体现深圳这座城市的创新精神。设计团队在竞赛中，提出了以“曲线”为核心的建筑形式，旨在通过其独特的造型，体现深圳这座城市的创新精神。

中国
Shenzhen
Guangdong



The soaring profile of Shenzhen Bay dataPulse Towers defined through parametrical design method was determined after full consideration of its volume, body mass, design concepts and wind load effects. A large number of experimental design have been studied through the consulting process of professional structural engineers before the final shape has been obtained. The round corner outline as well as the appealing form of the tower through its rotation, while paying Shenzhen's emerging importance of Shenzhen's economy, also improved the tower's capacity to withstand strong wind forces. The floor plan starts from the oval circular tower core and generates outwardly, with the radius defined and contour accented by the curved facade with round corners. The plan layout of the three main towers with 120° rotation of each tower around the main vertical axis ensured the visual asymmetry of the tower's profile and maximal view of the pulse lines from all sides. The vertical profile of each tower as defined by a thin silhouette that emphasizes the tower shape with linear extension till the top, meanwhile highlights the key imagery of "rounded architecture", "city skyline", by means of facade material change and continuous (L) light bar integration, together with the combination of quantitative critical weather-tailored facade, the ultimately defined pulse lines can realize a dynamic simulation of Shenzhen Bay dataPulse Tower and combine aesthetic sense, visualization and geographic functionality together with the tower's high-tech building envelope in structure to enhance the urban skyline, synchronized urban data, and sense the full change of Shenzhen city of every moment. Shenzhen Bay dataPulse Tower will be the first landmark presenting the circular beam, and stage, through the systematic design methodology of city landmark, to remind and strengthen the public awareness of Shenzhen citizens. In order to achieve the vision and value of a clean, smart city and a cooperative city life among all, by optimizing the vertical spaces, the tower maintains huge through high ceiling space inside the core. Parametric lighting and group takes care of vertical transportation and create excellent public space for users and visitors.

SHENZHEN BAY SUPER CITY

SHENZHEN, CHINA

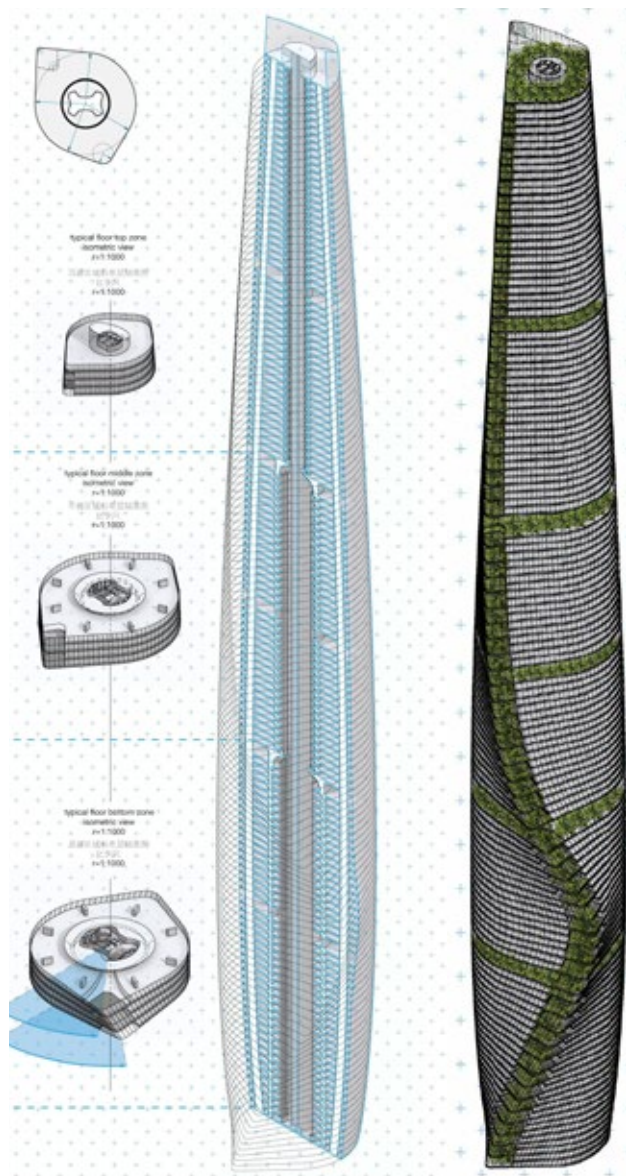
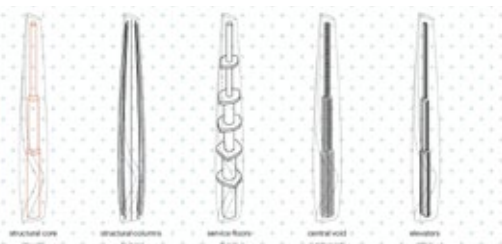
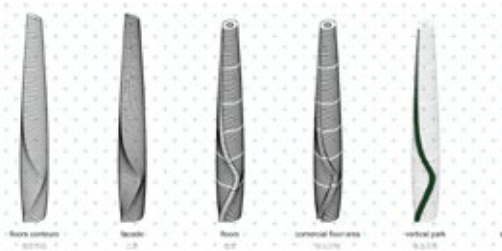
ARCHITECTURAL DESIGN: I (project leader), Arch. Slavko Milanovic, Arch. Bogdan Stojanovic, Eng. PhD Zhengyu Fan
 CLIENT: City of Shenzhen
 PERIOD: 2015
 PROJECT PHASE: Conceptual design

CONCEPTUAL BUILDING DESIGN

BUILDING MASSING AND SHAPE
 DESIGN OF SUPER-TALL TOWERS
 TARGETING CLIENT VALUES BY DESIGN MEANS

PROJECT & TEAM MANAGEMENT

MANAGE TEAM AND PROJECT COORDINATION
 COLLABORATING ON DEVELOPING UNIQUE PROJECT VISION
 MAINTAIN PROJECT BRIEF AND REQUIREMENTS
 ORGANIZE & MONITOR DESIGN PROCESS & INTEGRITY
 QUALITY ASSURANCE FINAL DESIGN DELIVERY



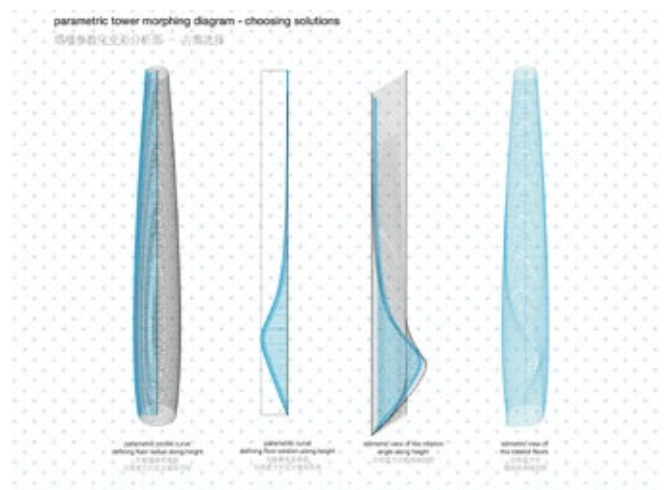
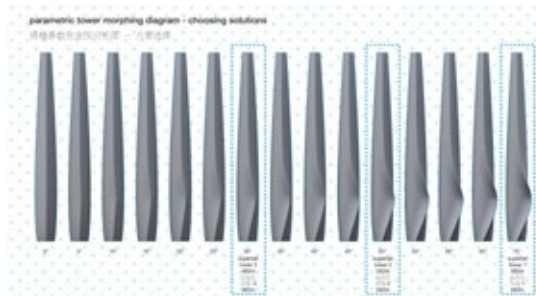


SHENZHEN BAY SUPER CITY

SHENZHEN, CHINA

PARAMETRIC DESIGN & MODELLING

- COMPLEX FREEFORM SUPER-TALL TOWER
- FACADE TESSELLATION
- FLOOR GENERATION
- FLOOR AREA / BUILDING VOLUME SIZING

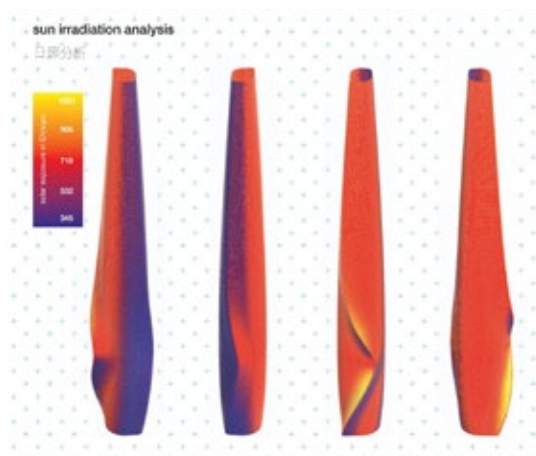


TECHNICAL DOCUMENTATION & REPRESENTATION

- CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
- VISUALIZATION FOR VIEWS AND LAYOUTS

DAYLIGHTING & IRRADIATION MAPPING

- IRRADIANCE ON FACADE SURFACE
- DAYLIGHTING

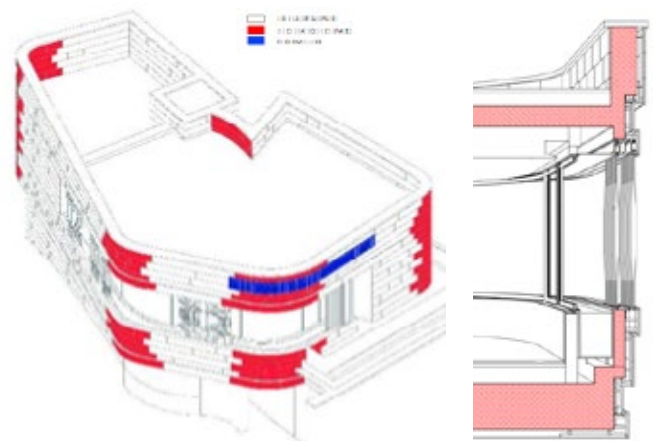




PRIVATE VILLA

SHUWAIKHI, KUWAIT

ARCHITECTURAL DESIGN: Vittorio Grassi Architetto & Partners
CLIENT: Confidential
PERIOD: 201-2016
STRUCTURAL DESIGN: Buro Happold Ltd
PROJECT PHASE: Schematic Design
Design Development
Construction Documentation



CONCEPTUAL BUILDING DESIGN

BUILDING MASSING AND FACADE TESSELLATION
COLLABORATING ON DEVELOPING UNIQUE PROJECT VISION
MEETING CLIENT VALUES BY DESIGN MEANS

COMPUTATIONAL DESIGN

CUSTOM-MADE TOOLS & COMPONENTS FOR PANELLING
DATA-DRIVEN DESIGN, PLANNING & INTEGRATION
AUTOMATION SCRIPTS

PARAMETRIC DESIGN & OPTIMIZATION

FACADE PANELLING AND FITTING
OPTIMIZATION OF SEAMS DISPOSITION AND MATCHING
AUTOMATED BUDGET CONTROL CHECKS

TECHNICAL DOCUMENTATION & REPRESENTATION

CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
3D COMPLEX DETAILING AND DOCUMENTATION
VISUALIZATION FOR VIEWS AND LAYOUTS





PRIVATE VILLA

SHUWAIKHI, KUWAIT

STAIRCASE DESIGN

FROM CONCEPTUAL TO DETAIL DESIGN

PARAMETRIC DESIGN & MODELLING

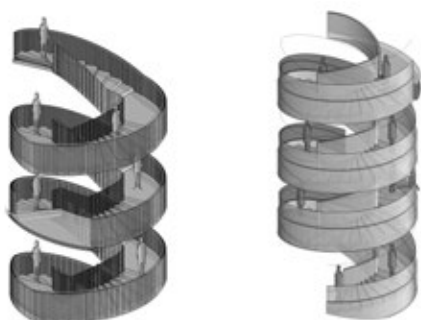
MULTIPLE DESIGN SOLUTIONS
VARYING STRUCTURE, MATERIALS, DETAILS

DESIGN VISUALIZATIONS

PHOTOREALISTIC RENDERINGS
POSTPROCESSING

TECHNICAL DOCUMENTATION

CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
3D COMPLEX DETAILING AND DOCUMENTATION



EX MASLENNIKOV AREA ZIM MASTERPLAN

SAMARA, RUSSIA

ARCHITECTURAL DESIGN: Vittorio Grassi Architetto & Partners
 CLIENT: Delta-Stroi LLC
 PERIOD: 2013 Competition Shortlist
 2013 Competition Second Phase
 ENVIRONMENTAL DESIGN: Buro Happold Ltd
 LOCAL SUPPORT: Mosdevelopment LLC
 PROJECT PHASE: Conceptual design

CONCEPTUAL BUILDING DESIGN

TOWER & SHOPPING MALL DESIGN
 BUILDING MASSING AND SHAPING
 FACADE DESIGN
 COLLABORATING ON DEVELOPING UNIQUE PROJECT VISION
 MEETING CLIENT VALUES BY DESIGN MEANS

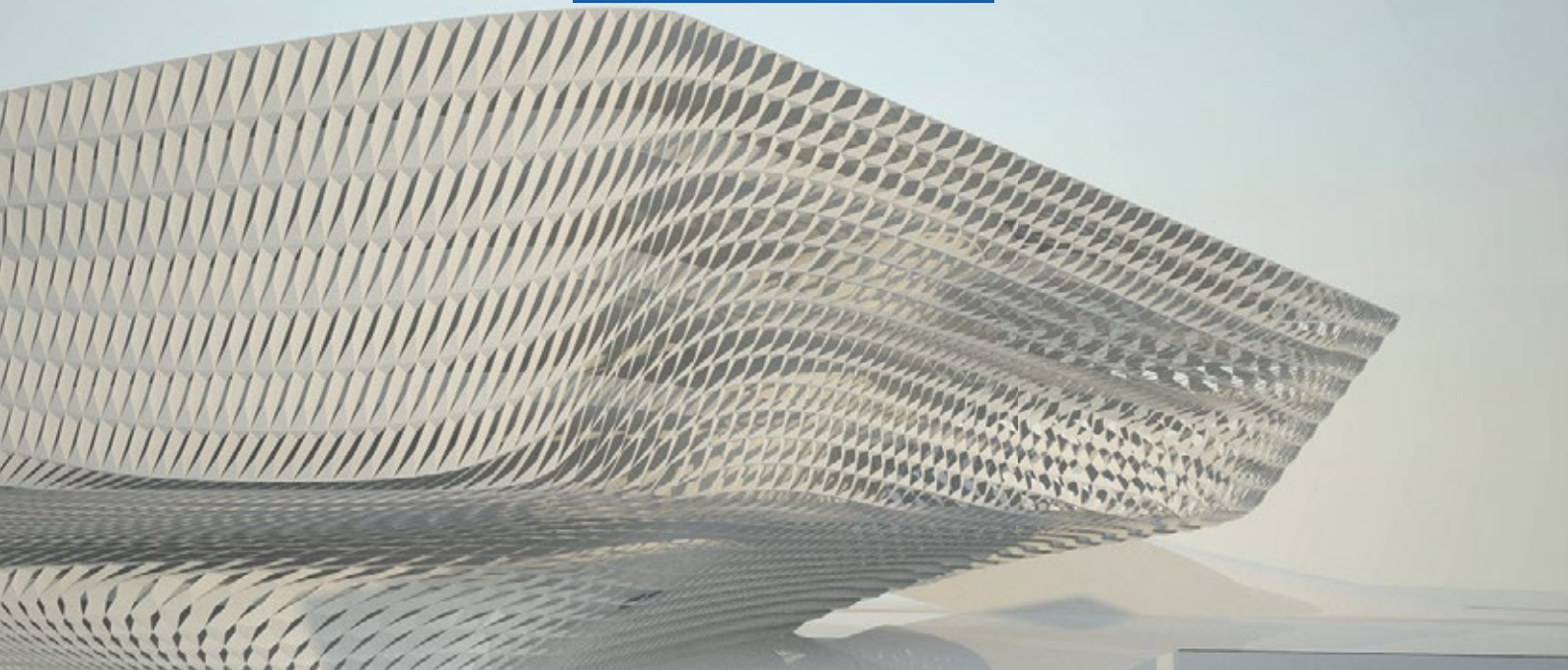
PARAMETRIC DESIGN & MODELLING

COMPLEX FREEFORM TOWER
 FACADE TESSELLATION
 FLOOR GENERATION
 FLOOR AREA / BUILDING VOLUME SIZING

TECHNICAL DOCUMENTATION & REPRESENTATION

CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
 VISUALIZATION FOR VIEWS AND LAYOUTS





MASTER THESIS

CENTER FOR INNOVATION IN NOVI SAD - PARAMETRIC DESIGN STUDY

DEGREE: Master in Architecture
 PERIOD: 2003-2009
 UNIVERSITY: University of Novi Sad
 Faculty of Technical Sciences
 Department for Architecture and Urban Planning

CONCEPTUAL DESIGN

BUILDING MASSING & SHAPING
 DESIGN STUDIES
 PARAMETRIC EFFECTS



PARAMETRIC DESIGN & MODELLING

FACADE DESIGN
 PANELING AND MODULE POPULATION
 MODULE ADAPTATION

COMPUTATIONAL DESIGN

DIGITAL DESIGN WORKFLOW ORGANIZATION
 DATA-DRIVEN DESIGN, PLANNING & INTEGRATION
 FINAL DESIGN INTEGRITY

RESPONSIVE FACADE

FACADE MOVEMENT & ACTUATION
 ADAPTATIVE & KINETIC BEHAVIOR
 BALANCING SOLAR HEAT GAIN

SOLAR RADIATION MAPPING

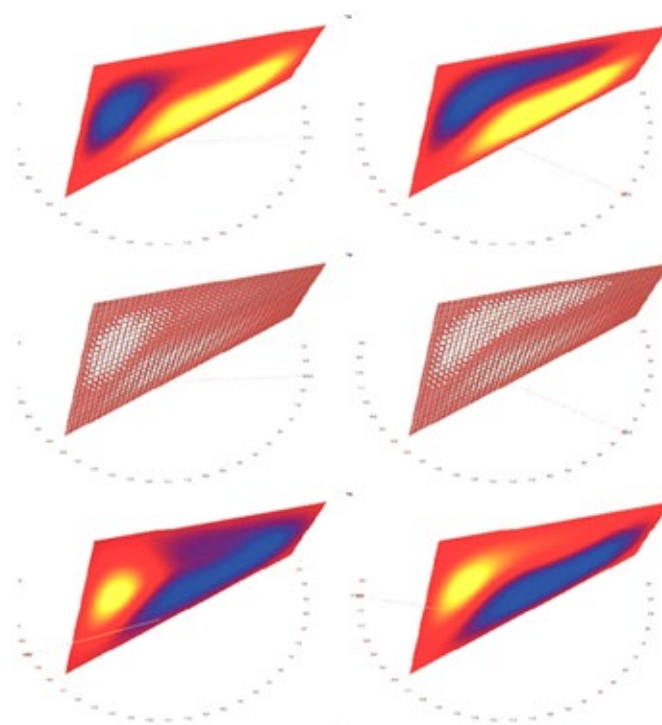
MAPPING SOLAR RADIATION FOR ACTUATING MOVEMENT

DESIGN VISUALIZATIONS

PHOTOREALISTIC RENDERINGS
 POSTPROCESSING

TECHNICAL DOCUMENTATION

CONCEPTUAL DIAGRAMS & ILLUSTRATIONS
 3D COMPLEX DETAILING AND DOCUMENTATION
 TECHNICAL DRAWINGS





OPTICAL AND THERMAL CHARACTERIZATION

CITYLIFE MILAN, GAZPROM HQ LAKHTA, MANAMA, BARI, IMOLA

OPTICAL CHARACTERIZATION

OPTICAL (UV-VIS-NIR) CHARACTERIZATION
 TRANSPARENT MATERIALS AND STRUCTURES (ETFE, PTFE...)
 HEMISPHERICAL REFLECTANCE AND BSDF
 G-VALUE / SOLAR HEAT GAIN COEFFICIENT (SHGC)
 SHADING COEFFICIENT (SC)
 COLOR RENDERING INDEX (CRI)

THERMAL CHARACTERIZATION

THERMAL CHARACTERIZATION OF MATERIALS
 TEXTILE/MEMBRANE WALLS AND ENVELOPES
 U-VALUE (CENTER OF GLAZING, CUSTOM FRAME AND
 TOTAL)

