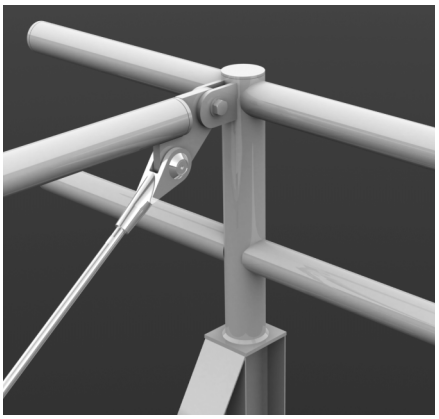
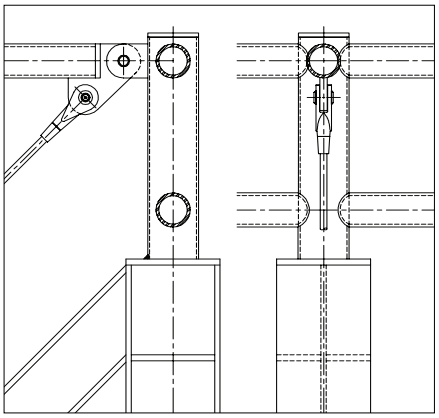
AES-System

Architecturally Exposed Steel

Structural System





Front: First National Center, NE
Architect: Leo A. Daly

System Components

01. Mild steel is typically fabricated in accordance with AESS requirements
02. Finishes can be painted or powder coated depending on size and substrate
03. Profiles can be standard or custom built

Applications

01. Used in custom applications where standard systems are not applicable
02. A requirement exists for larger elementized pieces
03. Where connections and finishes are crucial for specific design criteria
04. Primarily used where geometries are not too complex

System Attributes

01. High quality architectural steel work
02. Accommodates curved components
03. Tapered profiles and oblique angle connections achievable
04. Manufactured in Novum facilities or by strategic global partners to Novum quality standards
05. Factory finishing and careful packaging reduces the requirements for field painting
06. Designed and produced by a systems oriented team with expertise in quality of details, finishing and installation
07. Structures are designed by Novum's in-house engineers
08. Integrates with all Novum Glazing Systems and Structural Component Systems

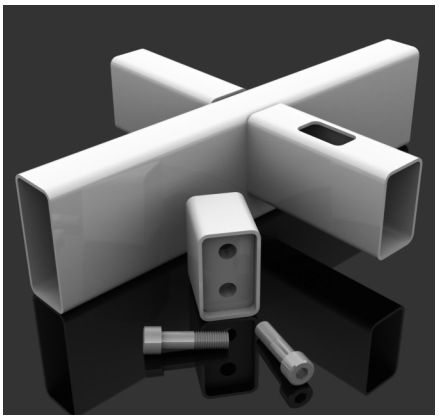
Options/Materials/Finishes

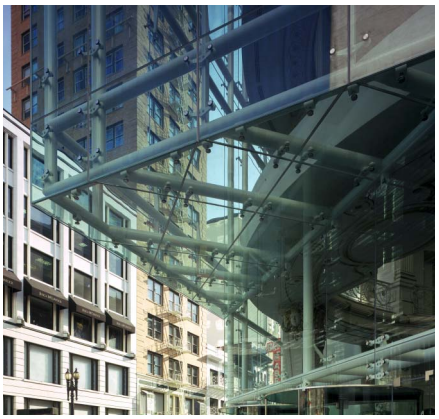
01. Available in different levels of weld quality
02. Standard product is primed and painted mild steel with a high performance polyurethane top coat
03. Product available in stainless steel or mild steel
04. Hot dip galvanizing is available as a substrate for additional corrosion protection

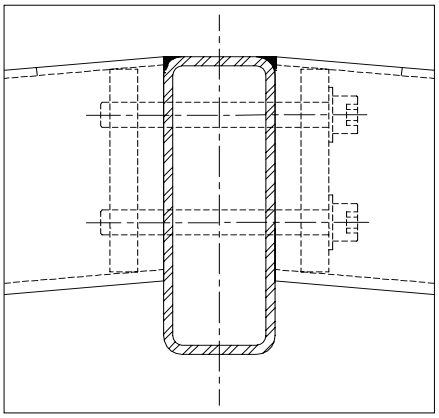
BB-System

Beam to Beam

Structural System







Front: Overture Hall Performing Arts Center, WI
Architect: Pelli Clarke Pelli Architects

System Components

01. Nodeless system typically using hollow sections as structural members
02. Hot dip galvanized and liquid painted members are standard
03. Concealed high strength steel fasteners with dacromet corrosion coating
04. Bolts are typically DIN 912 Grade 10.9 or A490

Applications

01. Single layer grid type structures requiring bending moment connections
02. Typically used for regular form planar geometries
03. Frequently used as a simple infill component for Novum Block Knoten or Free Form Systems
04. Where nodeless solutions are desirable

System Attributes

01. Contemporary hidden connection design aesthetic
02. Hidden bolted connections which structurally permit close to the full section capacity to be developed
03. Semi rigid or bending stiff connections provide excellent stability and good spanning capability
04. Structural profiles are optimized using varied wall thicknesses
05. Grid sizes are determined by applied loading or cladding type
06. Readily designed to achieve modest angular changes in surface planes
07. Structures are designed by Novum's in-house engineers
08. Integrates fully with Novum Edge Clamped Glass, Linear Supported Glass, Point Supported Glass Systems and other Novum Structural Systems

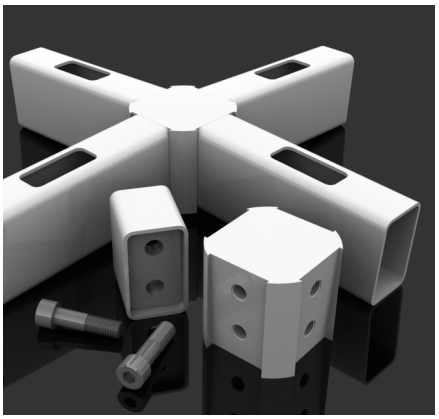
Options/Materials/Finishes

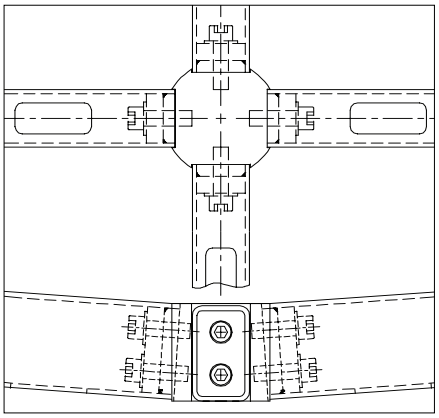
01. Finish options include high performance polyurethanes or polyester powder coating over hot dip galvanizing
02. Alternative finishes and materials are without galvanizing or stainless steel
03. Access holes can be capped or open

BK-System

Block Knoten (Block Node)

Structural System





Front: Mirage Casino and Resort, NV
Architect: LJB Group, Inc.

System Components

01. Nodes are from C45 forged steel, plated and painted
02. Structural members are typically hollow rectangular sections A500 Gr B or equal
03. Hot dip galvanized and powder coated tubular members are standard
04. Concealed high strength steel fasteners with dacromet corrosion coating
05. Bolts are DIN 912 Grade 10.9

Applications

01. Single layer grid structures
02. Typically used for regular form non-planar geometries such as domes and vaults
03. Designed to achieve modest angular changes in surface planes
04. Used where flat cladding panels require support along their edges

System Attributes

01. Contemporary technology design aesthetic
02. Nodes are custom machined for tight tolerance and complete geometric flexibility using CNC equipment
03. Hidden fasteners
04. Semi rigid connections easily provide spans to 80' (25m) or more
05. Structural profiles are optimized using varied wall thicknesses
06. Grid sizes are determined by applied loading or cladding type
07. Requires no secondary steelwork as an interface between structure and cladding
08. Structures are designed by Novum's in-house engineers
09. Easily integrates with other Novum Systems (Kugel Knoten or Disc Clamp) to enable stiffer structures with increased spanning capability
10. Integrates fully with Novum Edge Clamped Glass, Linear Supported Glass or Point Supported Glass Systems

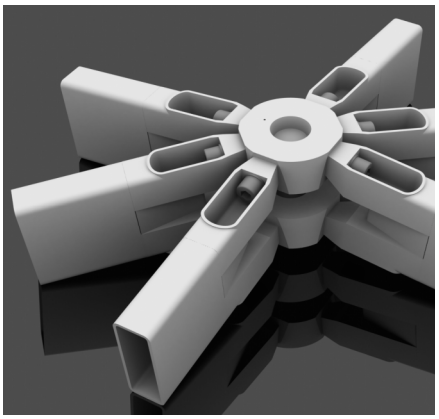
Options/Materials/Finishes

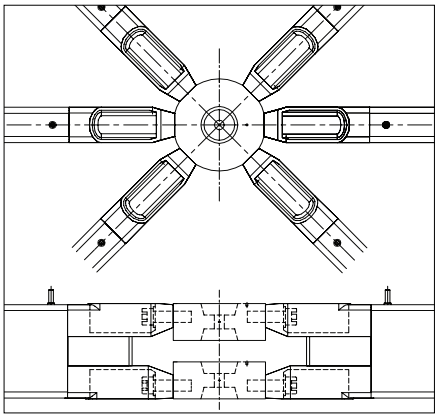
01. Standard member finish is hot dip galvanized inside and out after fabrication and then thermoset polyester powder coated
02. Finish options include liquid polyurethanes over hot dip galvanizing

FF-System (Patent Pending)

Free Form

Structural System





Front: New Trade Fair, Milan Italy
Architect: Massimilliano Fuksas

System Components

01. Nodes are C45 forged steel plated and painted
02. Structural members are 3" (75mm) wide rectangular hollow sections A500 Gr B or equal
03. Proprietary beam to node connectors are cast steel
04. Concealed high strength steel fasteners DIN 912 Grade 10.9 with dacromet corrosion coating

Applications

01. Single layer grid structures
02. Incredible flexibility of the system design enables true free form geometry
03. Bending stiff connections also permit axial load transfer hence grid or shell action is easily accommodated

System Attributes

01. State of the art system approach from the market leader in three dimensional structural systems technology
02. First commercially available "standard" system for free form surface architecture
03. Double bolt moment connections are achieved with pre-stressed hidden fasteners
04. Industry leading bending stiff connections by the use of nodal connections
05. Double node technology solves free form geometric issues of beam twist
06. Exciting and creative for projects of any size
07. Advanced product system is matched with process design allowing virtually fully automated design, engineering, fabrication, drawing and production by the use of solid modeling
08. Complex forms are achieved from standard components
09. Nodes are custom machined for tight tolerance using CNC equipment
10. Lateral bending of members from cladding is easily accommodated
11. Grid sizes are determined by applied loading or cladding type or geometry
12. Requires no secondary steelwork as an interface between structure and cladding
13. Structures are designed by Novum's in-house engineers
14. Integrates with Novum Edge Clamped Glass or Point Supported Glass Systems

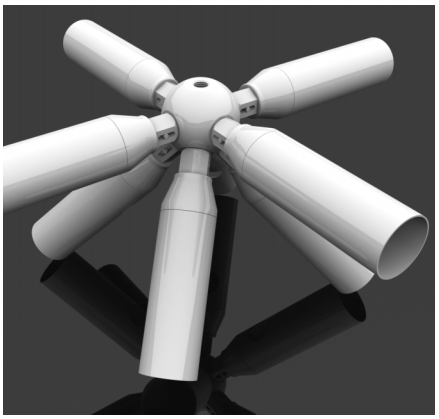
Options/Materials/Finishes

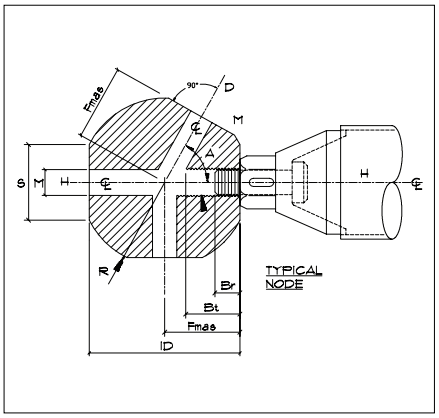
01. Tube depth sizes range from 6" to 12" (150mm to 300mm)
02. Nodes sizes are typically 8" diameter (200mm)
03. Standard member finish is high performance polyurethane over a corrosion resistant epoxy primer

KK-System

Kugel Knoten (Spherical Node)

Structural System





System Components

01. Nodes are C45 forged steel, plated and painted
02. Structural members are circular hollow sections A500 Gr B or equal
03. Structural members are hot dip galvanized and powder coated
04. Bolts are DIN 267 Grades 5.6, 8.8 and 10.9

Applications

01. Typically double or triple layer grid structure
02. Can be used in curved single layer structures with adequate boundary conditions
03. Ingenious flexibility of design enables true free form geometry

System Attributes

01. Classic technology first pioneered by Dr. Mengeringhausen in Germany during the 1940's and used on thousands of projects worldwide
02. Timeless design of lattice work and minimal size connections
03. Affordable and elegant for projects of any size
04. Standard components allow spans to 300' (100m)
05. Nodes are custom machined for a tight tolerance and complete geometric flexibility using CNC equipment
06. Single bolt pin ended connections are achieved with hidden fasteners
07. Structural members are optimized with varied diameters and wall thicknesses
08. Grid sizes are determined by applied loading or cladding type and the geometry can be optimized to accomplish highly transparent and lightweight designs
09. Secondary steelwork is used as the interface of structure and cladding and simply attaches to the nodes allowing integration of traditional claddings such as metal roofs, opaque or translucent panel systems
10. IAS quality control certified
11. Structures are designed by Novum engineers
12. Integrates fully with Novum Aluminum Supported Glass, Edge Clamped Glass, Linear Supported Glass, and Point Supported Glass Systems

Options/Materials/Finishes

01. Mild steel is standard. Aluminum and stainless steel versions are available
02. Standard member finish is hot dip galvanized inside and out after fabrication. Galvanizing is followed by a thermoset polyester powder color coat
03. Additional finish options include liquid polyurethanes over hot dip galvanizing, powder coated aluminum or brushed stainless steel

Front: Presidential Circle, FL
Architect: Barretta & Associates