The importance of BIM workflow for steel fabrication

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The importance of BIM workflow for steel fabrication

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Content

- Our companies in brief
- Changing industry
- Information management
- Summary
FICEP in brief

FICEP

- **FICEP manufactures automatic CNC machines, software & systems worldwide** for steel construction and forging

- **Founded 1930 in Gazzada, Italy** by the family of present owners

- **R&D and manufacturing facilities**
  - 5 manufacturing plants – 70,000 m²
  - ~5% of annual sales are reinvested in R&D

- **Global presence**
  - 500 employees
  - Subsidiaries in 9 countries
  - Nearly 100 Agents globally

- **Customers in 90 countries**

- **Ficep Academy of Technology**
STEEL PROJECTS in brief

- Software Business Unit of FICEP Group
- Founded 1994, in France
- Production management software for steel fabrication
- Part of FICEP Group, involved in the development of “Intelligent Fabrication”
- 3rd generation of software: Steel Projects PLM
STEEL SERVICE CENTER / METEKO in brief

- **METEKO**
  - Established in 1993 by Mr Athanasios Moshos
  - Steel structures fabricator
  - Capacity: 800 tons/month

- **STEEL SERVICE CENTER**
  - Established in 2003
  - Steel service center
  - Capacity: 3000 tons/month

- **SDENGINEERING**
  - Established in 2010 by Mr Aris Theodorou
  - 3D modeling and engineering
• Demand for automation in steel fabrication increasing all the time
  The changing value offering of FICEP

• Higher level of automation
  – Automatic robotic welding & surface treatments
  – Automatic material handling and management of machines
  – Safety & higher quality with less operators present
Changing industry

• **Information management / Software**
  – Managing the lifecycles of assemblies
  – Planning and monitoring production processes in real time – change management
  – Connect steel fabrication processes to BIM workflow
  – EN1090 : Tracking and managing the additional information of materials, inspections, etc.

• **Knowledge management**
  – Demand for training and knowledge as the systems get more intelligence
  – Wider understanding of the production process – not individual operation
• Tekla and Ficep / Steel Projects working together over 10 years globally
  – More complete management of information flow
  – Higher level of automation to the assembly phase

• Automating Assembly phase
  – Automatic marking / Scribing technology

• 4D in production management
  – Production information feedback

• IFC standard for steel fabrication
  – Ficep, Steel Projects, Tekla, HGG started in 2009 to define and develop the IFC specification to meet the requirements of fabrication. AISC leading the project at the moment.
Information management

- Tekla design model
- Detailed Tekla model
- Production drawings and reports
- Project mgmt with 4D model

Steel Projects Estimation / Purchasing

Steel Projects Production planning and mgmt

FICEP CNC fabrication, scribing, assembly

Steel Projects Project tracking
3D software and BIM management
=> has resulted in increasing projects’ complexity

Process management software
=> has resulted in increasing production tracking and data output

FICEP + STEEL PROJECTS + TEKLA
=> has resulted in having production feedback and 4D modeling
Management with 2D software
Try that project with 2D software...

240 tons
more than 14000 pieces
with around 40000 holes
Already using « BIM Workflow » in 2009:

- Basic engineering in Madrid, Spain
- Connections’ calculation in Xanthi, Greece
- Detailing in Volos, Greece
- Final BIM model in Madrid, Spain
  - DGN and SDNF files
  - Final approval on model (no drawing)
- Fabrication in Thessaloniki, Greece
- Erection site in Athens, Greece
Information management

Managed with 3D software… but NC (DSTV) files

- 14000 pieces => more than 2500 drawing files
- No assemblies’ description

2/17/2014
Information management

Managed with 3D software... but NC (DSTV) files
Information management

Managed as BIM model, using XML / IFC files

Johnson Matthey fabrication plant in Skopje (Macedonia)

3200 tons
more than 15000 assemblies
fabricated and erected in 3 ½ months
Managed as BIM model, using XML / IFC files

- One file for each drawing / phase
- Assemblies and pieces description
- Production monitoring
- Shipping / Erection optimization
- Automatic 4D information back to BIM

Fabrication is a part of the BIM workflow
Managed as BIM model, using XML / IFC files
Information management

Managed as BIM model, using XML / IFC files
Information management

Managed as BIM model, using XML / IFC files

TEKLA

Steel Projects PLM

Workshop

BIM
Information management

Managed as BIM model, using XML / IFC files

Intelligent fabrication
Information management

Managed as BIM model, using XML / IFC files

Analysis & Reporting
4D feedback as a part of BIM workflow:
Information management

4D feedback as a part of BIM workflow:

4D Model: 31/07
Information management

4D feedback as a part of BIM workflow:

4D Model: 31/08
Information management

4D feedback as a part of BIM workflow:

Steel fabricators need traceability (EN1090) data to be integrated in BIM model.

BIM model has to include all information regarding the lifecycle of the building.
Summary

The steel fabrication process must become part of the BIM workflow!
The General Contractors need to start demanding from steel fabricators much more in terms of project information management!
Thank you for your attention!