MSF10357 | Visualize real-time steel production status in Advance Steel model

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This class will show how to access real-time production-rich data ‘graphically’ from the field, on the move, or from your drawing office with a connected cloud-based BIM workflow.

Take advantage of Autodesk Advance Steel, A360 Drive and GRAITEC Advance Workshop connected workflow to gain access to intelligent digital BIM data related to actual production and delivery.

Share this with stakeholders in the field to improve delivery coordination, reduce change order requests and minimize errors. Autodesk cloud changes the way live production information is accessed whilst on the move.

Bi-directional links between Advance Steel and Advance Workshop helps take full advantage to deliver production status information graphically in real-time anywhere any time.

Working in a live and connected BIM workflow at the sharp end of the project also enables time and costs savings to be achieved across the whole construction phase.
At the end of this class, you will be able to:

- Use (some) Autodesk cloud services
- Visualize the production status of your projects in Advance Steel
- Access critical fabrication data to make informed decisions from the field
- Deliver high-value/low costs service to your client with real time access to project production status via the cloud
Introducing GRAITEC...
- 30 years expertise developing CAD, BIM and Design solutions for structural engineers and designers

- 25 offices in USA, Canada, UK, France, Germany, Italy, Czech Republic, Romania, Russia, Poland

- Global coverage with authorized reseller network

- One of the biggest worldwide Autodesk partners
FACTORY 4.0

THE FULLY CONNECTED WAY OF MAKING THINGS

Industry 4.0 is based on new and radically changed processes in manufacturing companies: Factory 4.0. In this concept, data is gathered from suppliers, customers, and the company itself and evaluated before being linked up with real production. The latter is increasingly using new technologies such as sensors, 3D printing, and next-generation robots. The result: production processes are fine-tuned, adjusted or set up differently in real time.

CYBER SECURITY
- Stronger protection for internet-based manufacturing
- Technology products with longer life

CLOUD COMPUTING

BIG DATA
- Making sense out of complexity
- Creativity
- Collaborative manufacturing

RESOURCES OF THE FUTURE
(WIND, ALTERNATIVE/ NON-CONVENTIONAL, SOLAR, GEOTHERMIC)
- Clean and renewable energy generation
- Energy storage
- Alternative new materials

SENSORS
- Zero defect/deviation
- Reactivity
- Traceability
- Predictability

ADVANCED MANUFACTURING SYSTEMS
- Cyber-physical systems (CPS)
  - Numerical command
  - Full automation
  - Totally interconnected systems
  - Machine-to-machine communication

AUTONOMOUS VEHICLE
- Fuel optimization
- Increased security
- Lower costs

LOGISTICS 4.0
- Fully integrated supply chain
- Informational systems
- Perfect coordination

3D PRINTING/ADDITIVE MANUFACTURING
- Scrap elimination
- Mass customization
- Rapid prototyping

MASS CUSTOMIZATION
- Customer and marketing intimacy
- Flexibility
- Perfect match of customer's needs with mass production efficiency
- On-demand manufacturing

ADVANCED MATERIALS
- Smart value-added products
- Technical differentiation
- Connectivity

INTERNET OF THINGS
- Object tagging
- Inter-device communication via low power radio
- Real-time data capture
- Optimized stocks
- Reduced waste

AUTODESK UNIVERSITY 2015
Disruptive Changes

40% of the worldwide manufacturing (a total of EUR 6,577 bn) is held by emerging countries. They have doubled their share in the last two decades.

1,350 bn To assume a leading role in Industry 4.0, Europe will have to invest EUR 90 bn a year over the next 15 years – a total of EUR 1,350 bn
Section 1: Autodesk Cloud Services
Autodesk Cloud Services

Free Cloud Services

- ACCESS FOR THE ENTIRE TEAM
- ANY DEVICE, ANYWHERE, ANYTIME
- PROJECT-CENTERED
- VIEW, SEARCH & SHARE
- ALMOST ANY DATA TYPE

Advanced Cloud Services

- ENERGY ANALYSIS
- FIELD MANAGEMENT
- DESIGN
- STRUCTURAL ANALYSIS
- RENDRING

Collaborative Cloud Services

- Architect using Building Design Suite (with Revit)
- Cloud services: Energy, water, and structural analysis, rendering, and more
- Engineer using BIM 360 Glue
- Project manager using BIM 360 Field
A360 Drive (Free with Autodesk Account)
A360 Drive (Free with Autodesk Account)
A360 Team

- Managed Collaboration (sold separately)
Check Point

- Easy to get started with A360 Free Cloud Service
Section 2: Connected BIM Workflow
Analysis & Design to Revit
Analysis & Design
BIM Workflow – Analysis & Design

- Model can originate from Revit ↔ Advance Design / Robot / A.N. Other
- Structure optimized and designed to local codes
- Building intelligence & FEM results sync’d with Revit
- Revit model developed to include RC cages, MEP services etc
- Structural steel adjusted as required and transferred to Advance Steel for fabrication detail
Connected BIM Workflow

Analysis & Design

Coordinated multi-discipline

Production

Fabrication
Coordinated Model Export
Import in Advance Steel
Connected BIM Workflow
Section 3: Ready for Production
Connected BIM Workflow

Analysis & Design

Coordinated multi-discipline

Production

Fabrication
Production Management Process

- **Manage**
  - 000’s of Drawings
  - Material / Cutting Lists
  - Human Resources, Machines

- **Plan and allocate jobs based on**
  - Lot/Phase
  - Work type - allocate material, cut/drill…
  - Skills, capabilities, qualifications…

- **Special processes such as**
  - Weld types / preparation
  - Plate processing / profiling
  - Non-standard section types
  - …
Processing a Single Part

- Allocate Stock > Drill > Cut > Mark > Sandblast > {Trace} > {Weld} > Coat > Pack > Ship
Single Part NC file
Define Resources

Machines/People

Processes
Define Capabilities and Conditions
Automatic Job Allocation & Routing
Managing Production
Advance Workshop Summary

- One-click allocation and routing of jobs (manual and CAM driven)
- Quickly identify ‘specials’ (i.e. for outsourcing)
- Real-time tracking of parts
- Complete management of all resources
- Reduced material wastage
- Analyse to-the-minute performance
- Optimized efficiency
Scheduling production status updates

- Status updates can be scheduled at regular intervals (hour, day, week...)
- File location can be specified per project (Shared cloud/A360 folder?...)
- Each file appended with date and time for full traceability
Attach Fabrication Data to your Model
Share on A360
Cloud Link with PP
Summary

- Attach Production Status data to your AS model per instance or progressively
- Fabrication Status is graphically represented and attached to the model (traceability, COBie, reference, disputes…)
- AS Model (with status applied) can be shared on A360 as a 3DDWF and viewed from a browser
  - The PowerPack will publish to A360 as soon as it is possible
  - Plus a new tool to ‘attach the latest production status and automatically save a 3DDWF file’
Section 4: Access Fabrication data from field
A360 App

- IOS & Android
- Access A360 Drive on the move
A360 App

- View standard docs (pdf, xls, doc…)
- View CAD files (dwg, rvt, dwf…)

New versions of A360 will include LMV (Large Model Viewer)
A360 Mobile
A360 Mobile
Connected Live-Workflows
Link Data(bases) to Models

- In the near future…
Summary

- A360 Mobile App lets you access 3DDWF from any Android or IOS mobile device
- Access to critical information about status, quality, planned delivery date, delivery status to improve planning and react quicker to disruptions
  - Plus more details about contributors involved in the fabrication process
  - From next version of AS it will be possible to share even more fabrication data with AS model
Section 4: Access data from field… one step further
Structural Fabrication Suite 2016
Everything Structure in one box!
Send to Navisworks
Bonus material “Navisworks Simulate”
Bonus material ... Infraworks!
Conclusion
Get Connected & Deliver high-value low-cost services

- Utilize Autodesk integrated A360 cloud service
- Visualize production status of your projects in Advance Steel
- Access critical fabrication data to make informed decisions from the field
- Real time access to project production status via the cloud
- Deliver high-value/low costs service to your clients