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Class Summary


Topics to be covered:
- Factory Design Utilities Interface
- Components of Material Flow
- Analyze Transportation
- Analyze Machine Utilization & Power
- Collaborate and Reuse Data
Interface

- AutoCAD Architecture
- AutoCAD Mechanical
- Specialized Palettes
- Application Settings
AutoCAD Factory Suite Layouts

- Stations
- Products
- Routings / Jobs
- Analysis
- Suite Workflow
Interface and Layouts
Before we go too far in…

- Expectations

- Clearly defined capture
  - Through Machine?
  - Through Assembly Line?

- Averages or Split Jobs

- Adjust Default Settings

- Use an existing process as a baseline analysis
Factory Suite Layouts – Stations

- Complex Geometry
  - From Scratch
  - From Asset Library
- Simplified Geometry
  - Basic Station Footprint
- Connector Point
Stations
Factory Suite Layouts – Products

- Item for which you want to analyze movement
- Nest-able to create assemblies
Factory Suite Layouts – Routings

- Routings = Jobs

- Jobs Consist of Movement from Station to Station

- Desired Production Rate
  - Attainment Goal for parts (per # of time)

- Part Quantity
  - Number of parts complete in a job

- Batch Size
  - # of Parts in a batch = parts x # of Jobs
Analyze Transportation

- Transportation Indicators
- Dynamic Node Adjustment
- Flags
  - Red Flags are indicative of high traffic
  - Changes made to these nodes will have the greatest impact on material flow
- Garbage in...
Analyze Transportation – Indicators

1. **Transportation Cost** = Travel Time x Cost Rate
2. **Total Cost** = Transportation Cost + Machining Cost
3. **Travel Time** = Total Travel Time
4. **Travel Distance** = Total Travel based on Connectors

- Click on the Settings button to adjust sensitivity of the colored flags
  - **Part Qty** – Relative to the number of parts moving
  - **Part Qty x Distribution** – Part Qty Adjusted for length of segment
  - **Transport Cost** – adjusts # of stations flagged with color bar
Adjusting the sensitivity can more easily identify bottlenecks in the transportation system.
Analyze Factory Transportation
Analyze Machine Utilization & Power

- Single or Multiple Jobs
- Utilization Indicators
  - Red – Over
  - Yellow – Under
  - Green – Utilized Properly
Analyze Machine Utilization & Power

- Total Power Meter
- Settings: max power level
- Station Utilization Meters
  - Individually turned on
  - Hover on station for quick look
Analyze Machine Utilization & Power
Import & Export

- Export data to XML
- New file from Template in Excel
- Use Developer Tab to load XML
- Load through Import
- Placeholder geometry only
Material Flow Reports

- Comparative Analysis
- Generate Report
  - Transportation Time
  - Transportation Cost
  - Production Cost
  - Total Cost
  - Travel Distance
  - Total Energy Consumption
- Graphs
  - Number of Jobs
  - Machine Utilization
Flow Reports
Appendix – Settings & Glossary of Terms

- Application Options (OPTIONS)
  - AutoCAD Architecture
  - AutoCAD Mechanical

- Defaults
  - Transportation
  - Operation
  - Station
  - Shift
  - Job
Summary

- Highly visual layout of process and movement
- Great Initial Costing and Comparative Tool
  - More / Less Machines
  - More / Less Shifts
- Best in “What If” scenarios
- Quickly reuse completed material flows
- Create consistent drawing packages
Thank You

Mark’s Blog: Blogs.rand.com/manufacturing

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