Automated model generation of production lines in Plant Simulation

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History

1973 Several companies in the Turin area create COnsorzio Macchine Utensili
1977 Establishment of Comau Industriale with powertrain and body (welding, assembly and handling) divisions
1978 Comau S.p.A. is established incorporating Comau Industriale activities
1995 - 97 Comau opens plants and offices in Germany, Brazil, Argentina, France, and India
1999 Comau acquires Renault Automation in France and Pico in USA, Mexico, Germany, and UK
2000 - 03 Comau China, Romania, and Russia are established
2009 Establishment of Comau Aerospace
2010 Establishment of Comau Adaptive Solutions and eComau
2013 Comau China in expansion; new sites Kunshan, Shanghai, Dalian
2014 Comau Czech and Turkey are established; Comau opens office in Munich (DE)
2015 Comau São Paulo (BR) is established
Comau in the World

Body Assembly

Key Features
- Up to 80 Jobs per Hour
- Up to 4 Models
- Multi Materials Joining Techniques

References
- 20 Body Shops in EMEA, NAFTA, LATAM and APAC
- Steel and Aluminum Applications
Our Competencies

- Spot, Laser & Arc-welding
- Sealing, Drilling & Riveting
- Machining, Assembly & Test
- Monitoring & Control
- Handling & Logistics
- Maintenance Services
- Consultancy in Manufacturing Process
- Project Management
- Training & Education

Why Comau Uses Simulation

Define system during Proposal phase
System monitoring in Engineering phase

Logic analysis on plant management
Change impact analysis

Plant sizing
Support in decision-making process

Resource optimization
“Saving solutions” analysis and research

Risk reduction

Siemens Industry Software
Technical Availability Calculation

- Read layout, line content and cycle time diagrams
- Use corresponding database
- Make customer-specific availability calculation

Technical Availability Calculation - Overview

- Station-based availability calculation
- Availability, MTTR & MTBF are customer specific
- In the summary, availability of each protection area (PA) is calculated
**Generation of Production Lines**

Implemented in SimTalk

- Import information from Excel
- Generate line
- Update line
- Run model

**Importing Information From Excel**

Excel TAV calculation

Automated import

All stations related information is imported and mapped in a table of corresponding line’s frame
Generation of Production Lines

**Generated Objects:**

- **SingleProc**
  - Processing Time, Availability, MTTR, Failure Mode, Label

- **Assembly**
  - Processing Time, Availability, MTTR, Failure Mode, Label

- **LockoutZone**
  - Protection area

- **Connectors**

- **Interfaces**

- **Buffers**
  - Dwell Time, Availability, MTTR, Failure Mode, Label

**Parameters:**

- Processing time, Cycle time
- Availability - Technical availability
- MTTR - Mean time to repair
- Failure mode - Simulation/Operating/Processing time
- Label - Station description
- Dwell time - Buffer waiting time

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**Generation of Production Lines - Model**

[Image of a simulation model showing a production line with various components and parameters.]
Example - LIVE

Future Developments

- Further development of the tool for more complex lines
- More customer specific model generation
- Generation of Kanban elements
- Automated generation of inter-line connections
Summary

**Plant Simulation** allows implementation of Automated Model Generation tool
Which:

- Reduces modelling time
- Decreases probability of modelling failures
- Gives a fast testing opportunity
- Gives an overview of parameters modeled

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Thank You
For Your Attention

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