

Reconfiguring Production Lines for Maximum Efficiency

Schneider Electric
Stezzano, Italy

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Three Trades

Electric Distribution

Installation

Industrial Automation

Three Activities

Equipment and systems of high, medium, low voltage

Equipment and components for electric installation protection

Equipment and systems for the automation and the industrial processes

750M € Turnover (2007)
 2,000 Employees (2007)
 4 Plants: Stezzano, Savona, Napoli, Rieti

Stezzano Plant
 (Medium Voltage 'MV' Panels & Switches)

Turnover: 154Billion lira
 People: 800 Employees
 Plant: 15 Production Lines
 Area: 29.000 m²

Schneider Electric in Italia

Un gruppo mondiale
 una realtà locale



750
 milioni di euro
 fatturato*

2000
 dipendenti

* società del gruppo in Italia al 31.12.2006

5 Siti produttivi e logistici

- Stezzano (BQ) Media Tensione e materiali d'installazione
- Rieti Apparecchi modulari
- Casavatore (NA) Apparecchi scatole
- Cairo Montenotte (SV) trasformatori
- Venafra (FG) Centro logistico

8 Sedl commerciali

- Milano
- Bergamo
- Torino
- Padova
- Bologna
- Firenze
- Roma
- Napoli

6 Centri Formazione

- Bergamo
- Torino
- Padova
- Bologna
- Rieti
- Napoli



Overall Project Objectives



- Reconfigure production lines in order to...**
- Reduce Planning Time
 - Quickly adapt to Changing Market Demands
 - Optimize “What-If” Analysis for Better Decisions
 - Define Best Configuration for Lines
 - Evaluate Different Scenarios to Reduce Cost
 - Manage and Control all Production Parameters
 - Be more Competitive

Specific Project Highlights

Re-design of the POLI Assembly Line at Stezzano Plant

- Dimension and Optimize Buffers
- Identify Correct Number of Skids and Pallets
- Optimization of Shift Change
- Line-Balancing based upon Product Variants and Production Schedule



Project Scope

Digital Model Consists of...

- Entire line POLI
- Pre-Assembly Management
- Logistics of Material-Flow
- BOM and Order Management
- Excel Interface (BOM)
- Shift Change System Management

**Development Completed in just 10 Days
with Assembly Library!**



Data Management Highlight

EXCEL Interface

| | | | | | |
|--------|----------|--------------------------------------|----|------|----|
| SF2 | 21231324 | RONDELLE PLATE EP 2 | 24 | 0 | A2 |
| SF2 | 21222310 | ECROU AUTO FREINE M6 | 24 | 0 | A2 |
| SF2 | 888793 | VIS M6 LG 25 | 3 | 0 | A2 |
| SF2 | T | MONT S/A + COMPON | 1 | 9 | A2 |
| CARHE | T | CARICO VASSOIO HE | 1 | 1,17 | A2 |
| APH1 | T | CARICO HE: apri porte e innesta | 1 | 1 | A2 |
| SFHE1 | T | CARICO HE: riempimento he | 1 | 3,65 | A2 |
| SFHE1 | HE | HE | 1 | 0 | A2 |
| APH2 | T | CARICO HE: apri porte e disinnesta | 1 | 0,17 | A2 |
| SFHE2 | T | TEST | 1 | 5,65 | A2 |
| APS1 | T | CARICO SF6: apri porte e innesta | 1 | 0,17 | A2 |
| SFHE3 | T | CARICO SF6: riempimento SF6 | 1 | 6,15 | A2 |
| SFHE3 | SF6 | OLM SF6 | 1 | 0 | A2 |
| APS2 | T | CARICO SF6: apri porte e disinnesta | 1 | 1,5 | A2 |
| SFFI | T | PROVA ISOLAMENTO | 1 | 2 | A2 |
| SCARHE | T | SCARICO VASSOIO HE | 1 | 3 | A2 |
| CARPO | T | CARICO CARRELLO POLI | 1 | 1 | A2 |
| PREL1 | T | CARICAMENTO 3 POLI SU VASSOIO | 1 | 1,5 | A1 |
| SF1 | 1060210 | 00888220 MOLLA | 3 | 0 | A1 |
| SF1 | 1060212 | 00888225 DISTANZ | 6 | 0 | A1 |
| SF1 | 1060580 | 00888620 TUBO | 3 | 0 | A1 |
| SF1 | 1101179 | 00888649 VITE | 6 | 0 | A1 |
| SF1 | 1103883 | 00888616 INVOL.(K) | 3 | 0 | A1 |
| SF1 | 1105602 | 00888724 LEVA | 6 | 0 | A1 |
| SF1 | 1105603 | 00888793 ALBERO | 3 | 0 | A1 |
| SF1 | 1105604 | 00888987 RANELLA | 3 | 0 | A1 |
| SF1 | 1305683 | 00755435 ROND.IS. | 3 | 0 | A1 |

Dialog

Transfer data from Excel to Part Manager and Logistics

Object Name:

Part Manager:

Logistics:

Transporter:

Excel File:

Excel Table:

Excel assembly time units:

Trip There [sec]:

Trip Return [sec]:

Station to S++ obj:

Transfer to Objects:

Tabella Logistics:

Object:

assy_agv.Part_Manager.BillOfMateri...

File Edit Format Settings Extras Help

| object | stri | integ | real |
|--------|---------|-------|---------------|
| 1 | 2 | 3 | 4 |
| stri | station | part | number |
| | | | standard_time |
| 1 | ~Sect_1 | part1 | 1 50.00 |
| 2 | ~Sect_1 | part2 | 1 20.00 |
| 3 | ~Sect_2 | part3 | 1 20.00 |
| 4 | ~Sect_2 | part4 | 1 20.00 |
| 5 | ~Sect_3 | part5 | 1 60.00 |
| 6 | | | |

Benefits:

- Flexible Parameter Management
- Flexible Model Administration
- Flexible Variant Management

Specific Results



Quality Station:

- 50% Reduction of Skids
- Resource Optimization

Main Line:

- Pallet Reduction from 42-to-25
- Optimal Buffer Dimensioning
- Shift Optimization
 - Improved Utilization of Human Resources
 - Reduction in Investment Costs
 - Increased Throughput
 - Increased Flexibility
 - Improved Production Scheduling



Overall Project Return-on-Investment (ROI)

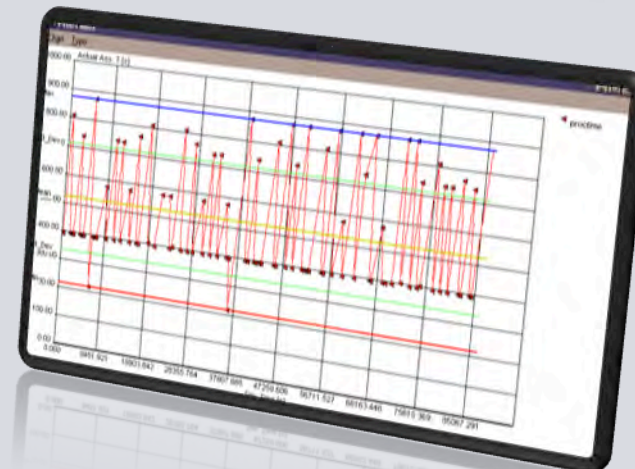
BENEFITS

- Better Adaptability to Market Requests (Mix & Volume)
- Increased Throughput
- Reduced Lead-Time
- World-Class Production Sequence Definition
- Improved Utilization of Human Resources
- Reduction in Capital Investments

RETURN-on-INVESTMENT

(based on 5 years calculation values)

- MONc/INV ~218%
- VANc/INV ~1.16
- **Payback Period 1 Year**



"During the project we had the time to carefully evaluate the Plant Simulation Assembly Library. We have verified that the Assembly Library is very efficient for implementing complex models of assembly lines, especially when concurrently modeling to try out various solutions in a few days. The library contains prepared building blocks that realistically address the everyday problems in the industry so the modeler does not have to be a simulation expert." - Ing. Alessandro Greico, Managing Engineer