Total Integrated Automation For Pulp & Paper Industry

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ABSTRACT

Integrated technologies, vertical market expertise, services for greater productivity, energy efficiency and flexibility in Pulp & Paper Industry is need of hour.

This Paper represents the complete solution for Paper & Pulp Industry, out of which we shall showcase the DCS, TTA panels, i-MCC, EMS & IE motors, which can help reduce costs, downtime increase reliability & improve the bottom line of your organization. The solution addresses the major problems faced by the plant maintenance personnel namely, absence of preventive intelligence, unavailability of data wherever and whenever and alerts for preventive maintenance and schedules.

This paper also showcases the necessity of faster & massive communication in automaton technology using Ethernet/Profinet.

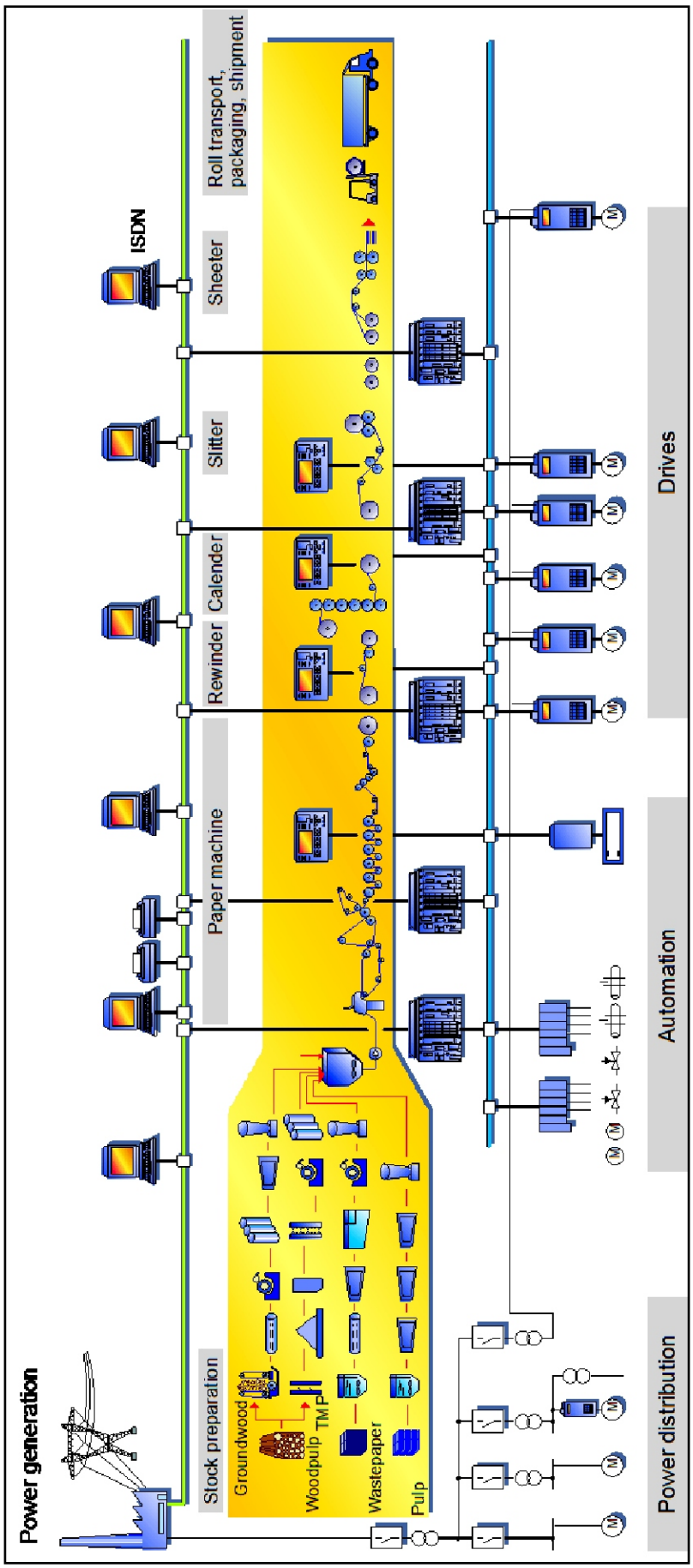
INTRODUCTION

End-to-end automation technology and industrial software, solid market expertise, and technology-based services are the levers to increase Industry's productivity, efficiency and flexibility.

In the light of the growing complexity of machines and plants along with rising engineering costs, efficient engineering is a key factor for success in the manufacturing industry. Totally Integrated Automation, Industrial automation makes engineering efficient. The open system architecture that covers the entire production process ensures the efficient interaction of all automation components. This is guaranteed with consistent data management, global standards and uniform hardware and software interfaces. These common features minimize the engineering overheads. This reduces costs, increase competitive strength & shortens the time to market and increases flexibility.

High end automation provides maximum transparency at all levels with reduced interfacing requirements covering the field level, production control level, up to the corporate management level. The result: maximum interoperability covering the controller, HMI, drives, DCS, SIEPAN, i-MCC, EMS & IE motors up to the process control system. This reduces the complexity of the automation solution in Paper plant. The main objective of maintenance manager of a paper plant is to provide maximum uptime of the paper machine, thus help maintain the production rate. To avoid the breakdown, the following solution is suggested.

Siemens Ltd, RC-IN-PDS NR LUC, Area, 28/45, Ashok Marg, Opp. Indira Bhawan Lucknow - 226001



LITERATURE REVIEW

The value DCS can bring three pillars- Flexibility, Scalability and Powerfulness.

The benefit offered are lower total cost of ownership, Improved product quality, Minimal operating and maintenance costs, Reduced raw material and energy consumption, Reduced safety risks, Controlled emissions, Centralized access to all devices, Increased plant availability Plant-wide automation, Customizable solutions, Easy operator interaction

i-MCC

The Most versatile and reliable motor management system shall come through with intelligent motor control relay, which can directly hook up by DCS.

Modularity and ease of maintenance, Powerful Engineering Software, Simple data communication over profibus/profinet, Extensive hardware configuration, High reliability and performance, Integration benefits with DCS. Enhanced protection of motors, Faster diagnostics, Reduced plant shutdowns, Transparency in operation, Easier engineering & commissioning, Faster project completion, Cost Savings

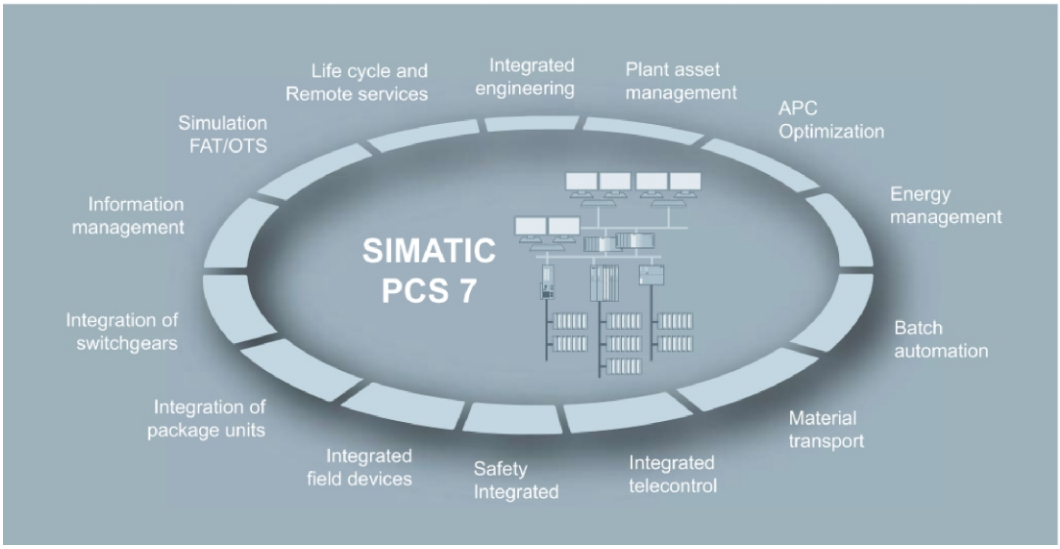
TTA Power distribution Panels

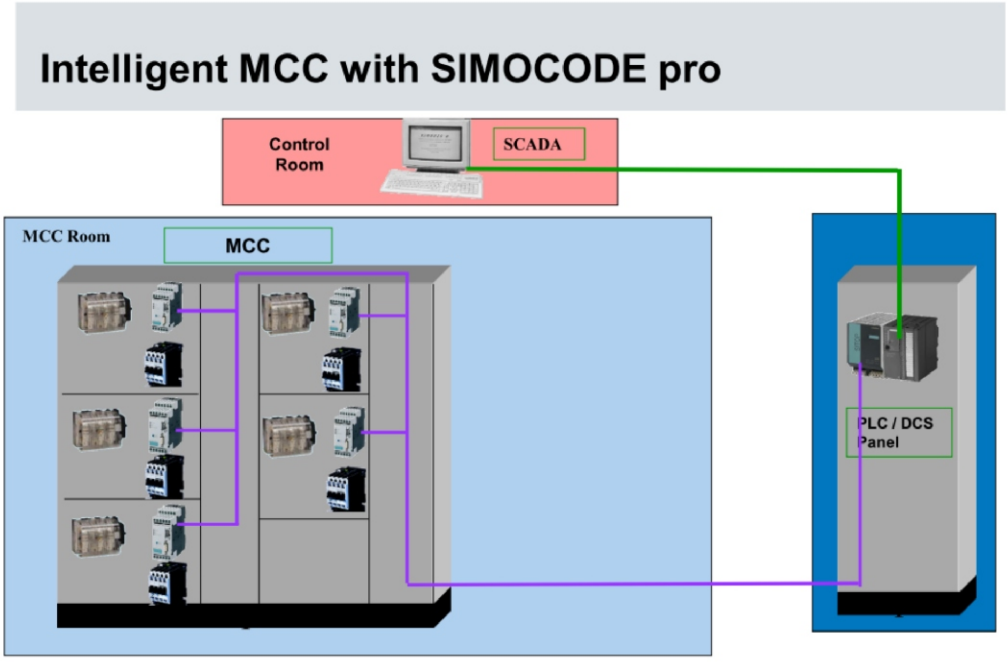
Low voltage main distribution boards offers the advantages of seamless integration between medium and low voltage distribution networks.

A type tested switchgear assembly (TTA) in compliance with IS 8623-1/ IEC 439, TTA Switchboards offers assured safety & reliable performance backed up by extensive testing for performance behavior under severe short circuit currents upto 65kA and withstand capability for seismic zone III & V.

TTA Panels are unique in terms of consistent compact dimensions saving space up to 40% of the utility room, coupled with choice between copper and aluminum bus-bars.
These Panels are fully compartmentalized limiting the effect of accidental arcs and fault propagation to a minimum in the event of a fault.

Quick navigation between plant areas, secure remote access.





Flexible, modular, bolted design is excellently suited the needs of the data centers as components can quickly and easily be replaced without extended service interruption.

Energy Management Systems

When and where is how much power consumed? A sustainable reduction of power costs first requires an analysis of the electrical system's current consumption and power flows. This is supported by power monitoring devices. They precisely and reliably detect the power values of electrical feeders and individual consumers. In addition, they provide important measured values for assessing the system state and power quality.

Whether in industrial applications or commercial buildings power monitoring devices can be employed wherever electric power is distributed. They detect various measuring values and comfortably illustrate them on a graphical LC display. For further processing of the measured data, the devices can be very easily integrated in superior automation/DCS and power management systems.

These devices must be equipped with versatile communication protocol (Ethernet/Profibus/modbus etc)/application range with ease of operation and configuration/installation.

Total Integrated Power tools

Planning power distribution in Paper Industry is highly recommended- the intelligent concept for integrated power distribution in industrial applications and infrastructure, ranging from medium-voltage switchgear to socket outlets. This comprises planning and configuration tools and support for power distribution systems as well as an optimally matched and comprehensive product and system portfolio. Via communication capable software modules the products and systems can be linked to industrial automation. This allows for exploiting the whole optimization potential of an integrated solution through-out the entire project cycle from investment via planning and installation to operation.
Benefits are Convenient electrical planning, Three efficient software tools, Intuitive and user-friendly, Intuitive and user-friendly with convenient documentation options for your planning results. End-to-end planning of all devices and systems from the medium voltage level to the power consumer, Automatic selection of matching components and distribution board systems. High degree of planning reliability while providing flexibility in the planning and implementation process

IE Motors

The IS:12615 (Energy Efficient Induction Motors - Three Phase Squirrel Cage) has undergone a revision to be in line with the global efficiency norms. This revised IS:12615-2011 is based on the International Standard IEC 60034-30 (2008) which defines New Efficiency Classification for single speed, three phase, induction motors.

The new IS:12615 covers single speed, three-phase, 50Hz, cage induction motors that have rated output voltage ≤1000V, 2,4 or 6 poles, meet frame size to output relation as stipulated in IS:1231, rated on the basis of duty type S1 or S3, capable of operating direct on-line, designed for operation on virtually sinusoidal and balanced voltage conditions as defined in 7.2.1 of IS/IEC 60034-1, designed for an ambient temperature not exceeding 40 degree centigrade and altitude exceeding 1000m, have high degree of protection IP44 or superior, method of cooling IC411 in accordance with IS 6362 / IEC 60034-6, service factor not exceeding 1.0.

The New IS: 12615 also stipulate that for motors to be classified as “Energy Efficient”, these must meet at least IE2 efficiency values.

CONCLUSIONS

Why should we consider a fully integrated solution? The reasons are as below.

- Plant efficiency improved
- Downtime reduced
- Electrical/process data at finger tips
- Reliability enhanced
- Quality of Paper improved
- Project execution cost reduced
- Different department can talk on Ethernet protocol
- Life cycle of products increased
- Maintenance cost reduces
- MIS report of production can be generated.

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