

CSP Production Scheduling and Information System Using Web-browser Technology

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The system implemented at HYLSA includes a Database Server and application Web Server (Internet Browser). Production schedules can be monitored and modified on a real time basis. Production and information can be browsed via the internet.

INTRODUCTION.

HYLSA upgraded recently its CSP plant (or Second Phase) by installing a second Melt Down Furnace, a second Ladle Metallurgy Furnace, a second Caster and a second Tunnel Furnace Heating and Shuttle section. These improvements increased the capacity to 1.5 MTPY.

From startup, or first phase, CSP Plant has had comprehensive automation facilities covering Automation Levels.

Level 1 – Basic Automation

Level 2 – Process Control

Level 3 – Production Coordination

Level 4 – Production Planning

Figure 1 shows the Automation Equipment arrangement in CSP Plant.

Level 1 and 2 were included as part of scope of supply of main process equipment under supplier specifications. Level 3 was specified by HYLSA and contracted to a software development oriented supplier. Level 4 was handled in a particular way, since HYLSA already had in operation a Production Control System, developed in house which schedules and track material for process lines from Melt Shop and Hot Strip Mill # 1 (ingot based) trough Cold Mills and Batch Annealing. MIS group modified that system in order to accommodate scheduling and tracking for Hot Strip Mill # 2 (CSP) which supplies material in parallel with existing Hot Strip Mill # 1.

Phase 2 operation has imposed requirements that demanded flexible yet speedy interaction with Level 3 by facing changes to

scheduling caused by tight coordination in operation between CSP Melt Shop and Mill.

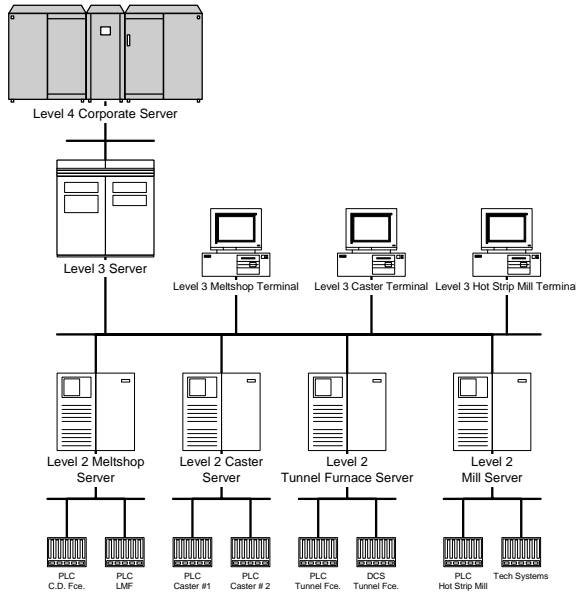


Fig. 1 Overall CSP Plant Automation Configuration.

PRODUCTION PLANNING AND SCHEDULING.

Production Planning and Scheduling is based on Shop Orders, which are coil production batches (built from Customer Orders) required from CSP Plant considering Melt Shop, Caster and Mill constraints.

Shop Orders once in CSP Plant are managed by a Level 3 function, Production Coordination System.

Shop Orders requires from CSP Plant what to produce but Operating personnel decide when to produce it considering operating constraints in a weekly basis.

Once in production, Shop Orders results in references to Level 2 Process Control Systems and actual production is sent back to Level 4 Production Planning System for coil tracking in next processing lines.

Fig. 2 shows the Production Coordination model used.

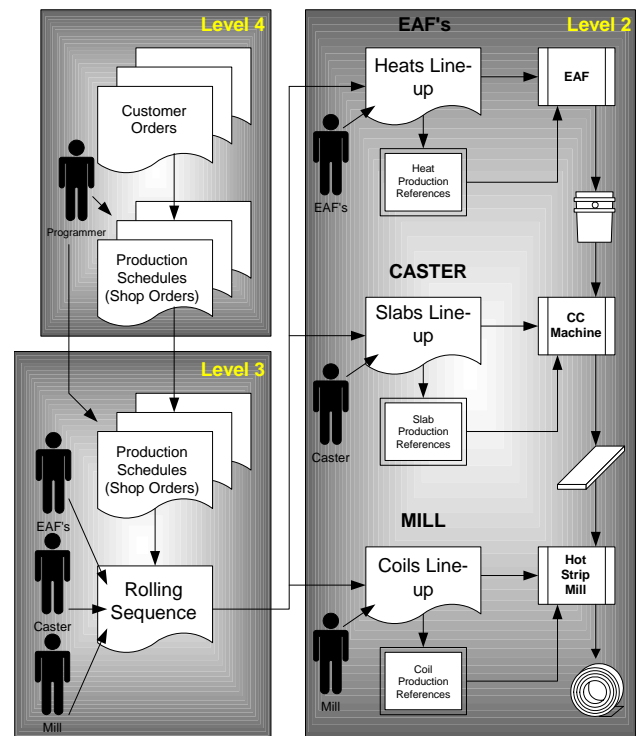


Figure 2. Production Coordination Model.

DATA COLLECTION

Modern steel processing plants are based on high performance yet cost effective automation equipment. This kind of devices allow CSP personnel to have data logging and transmission to external massive storage systems at no additional cost at all. CSP Plant benefits by collecting a big amount of data that let not just to produce detailed production reports but also to log pertinent data about product quality and process behavior that help process and maintenance engineers to improve plant operation.

Currently a high-speed network is used to interconnect automation equipment. A Data Base Server stores more than 25 Giga Bytes of information for 1 year, where more than 80% of this capacity is for quality and process data. Figure 2 shows Equipment involved in Level 3 functions.

State of the art hardware, software and digital communications based on industry accepted platforms and standards are being used.

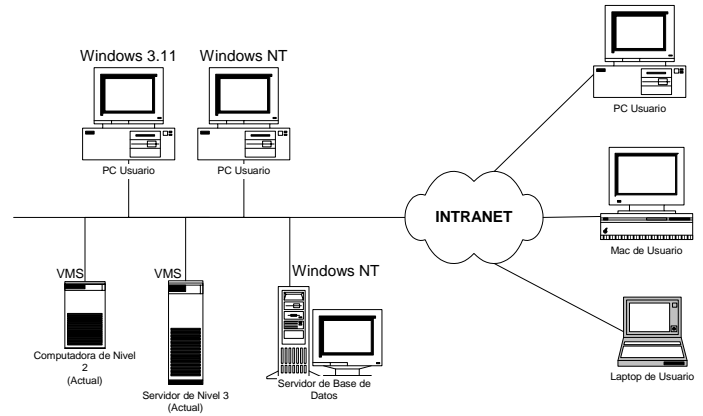


Fig. 2 Level 3 Network Configuration

INFORMATION AND INTRANET

Collected data is used for several purposes:

- Production Reports
- Quality Reports
- Product and Process History

Production and Quality reports are accessed through Intranet while History is accessed by process engineers using standard data base retrieve software.

An Intranet Server is installed in order to allow access to CSP Plant data by using standard Web Browser, the same one used to access Internet.

This data access method results in a more easy way to deploy, maintain, set up and use of CSP

Plant information since applications are installed in only one machine, the Intranet Server and customers only need to set up one application in their computers, the Web Browser.

Web Browser applications allow not only to show data but also charts, pictures and snapshots or live video in a very easy way.

CONCLUSIONS.

Modern Steel Plants benefit from high performance automated equipment that hooks up easily to plant wide high-speed communication networks.

Level 1 and Level 2 are dependent on particular process equipment design and operation. Level 3 and Level 4 are dependent on plant production and operation practices. These levels are more sensitive to changes because of customer and market requirements change at faster pace than process does.

Production Control includes planning, scheduling, quality management and material tracking functions. Different plants allocate these functions in different ways, some of them allocate all of them

in Level 3, and some others spread them over Level 3 and Level 4.

Use of information technology based on Intranet and Web Browser technologies allows all level plant personnel to access data in a simpler and more efficient way.

HYLSA have used successfully available industry standards in automation, information technology and digital communications to obtain benefits on Operational and Production Control.

At the end, the wise use of all of these technologies when tied to bussiness objectives helps steel plants to maintain its competitive position in the market.