VALMET MILL ENGINEERING - GLOBAL QUALITY WITH LOCAL FLAVOR

Sankar Choudhury

Girija Misra

Abstract :

Mill Engineering is the discipline and profession of applying engineeringskills and excellence for the optimization of equipment, processes, to achieve better maintainability, reliability, efficiency and availability of equipment. In order to get better runnability or for a new installation in plant we need to keep the equipment's and process in a healthy condition. Valmet's modular maintenance solutions consist of maintenance, reconditioning and upgrade aptly supported by decades long proven engineering excellence which makes us different in the Industry. It also helps mills to decide on Optimal cost effective solutions which can bring improvement in Operation, Production and Maintenance.

Introduction

Mill engineering is responsible for executing project engineering widely in Pulp, Paper & Recovery Island in integrated Paper industries. During the Pre-Engineering phase, Valmet engineers start to prepare concept plans for project implementation with specific targets that mills has envisaged. The concepts are mainly based on modular or standardized designs. When it comes to execution, Valmet engineers get on to basic and detailed engineering and a 360 degree full proof engineering scheduled action plans with technical documentation according to the various International quality and safety standards & norms are prepared which works as a Project milestones

Besides "traditional engineering" (producing manufacturing drawings and bills of material), our engineers have numerous roles during the project execution. In fact, these roles play the major part of Chief engineer's total work hours in the project.

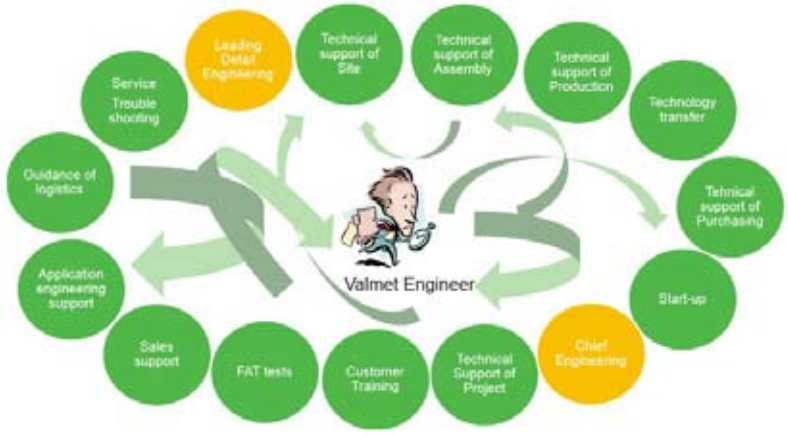
Responsibilities:

The team is responsible for the dimensioning of PlantProcessPiping engineering and sizing, foundation& layout engineering and several technical calculations for process systems required for Plant. In larger projects, the team is responsible for the plant and process engineering for the whole mill. The most advanced and widely used softwares are Catia V6, Inventor, PDMS etc.

Besides, the whole mill engineering, Valmet can also support on sectional rebuilds, retrofits and single equipment installation projects. Our dedicated and experienced Indian Mill engineering in Chennai works seamlessly work with our Global Centralized engineering department in Finland. Chennai is offering cost effective value added, time bound, high class engineering at your doorstep.

Services offered

- Plant dimensioning
- Equipment sizing
- Piping design
- Basic & detailed engineering for Whole mill or sectional rebuild
- Roll Maintenance engineering



VALMET MAINTENANCE SERVICES- PRACTICE WITH PERFECTION

Introduction

With efficient maintenance solutions, a paper mill can reach its goals and deliver the value needed when facing challenges related to machine or operational performance. Valmet provides optimal maintenance solutions and services for whatever the maintenance need or strategy at a mill is. Cooperation brings out and combines the best expertise of both parties. It is about focusing on each mill's business

goals. Together we can find solutions that are cost-effective, reduce downtime and improve runnability. Our extensive benchmarking data and broad know-how and experience play a key role in improving the efficiency of machine lines. Maintenance services help papermakers plan and optimize maintenance operations. These services include rolls and spare parts, automation and field services, studies, upgrades, process development cooperation, maintenance management, upkeep agreement and outsourcing support.

As a maintenance partner, Valmet can act as an advisor in a support role or handle specific areas such as the maintenance of one machine section, like a winder, or, can take charge of maintenance management and development, or be responsible for all maintenance. Professional resources and know-how are available to deliver a solution to meet the needs of the customer, from emergency repairs, OEM replacement parts or consumables all the way to a full-scope machine section performance boost. Unexpected breaks or failures requireprompt action as they are costly for a mill. With our wide range of solutions and proven expertise, problems can be solved with minimal downtime.

Tailor-made maintenance agreements

More efficient maintenance services are based on tailored maintenance agreements. Each agreement is designed to match the specific mill and its culture with the target of maximizing mill maintenance and production efficiency. In these cases, Valmet operates as a doctor. Through careful studies we diagnose the main challenges and suggest a cure for the problems.

Faced with increasingly tough competition, papermakers are actively seeking maximum profitability and optimum production efficiency in their operations. One success factor is a reliable and effective predictive maintenance culture.

The studies can be divided into two levels: machine condition and operational. At the machine condition level, the measures include audits, troubleshooting and condition testing. Data from the studies gives direct answers to a mill's challenges. At a more operational level, typical procedures include audits, analyses and surveys. Based on Valmet's large installed base and long experience, results can be benchmarked with similar machines and production lines around the globe. This gives clear guidelines on how to improve procedures.

Maintenance work concentrating on production line development includes various audits, analyses, and studies. With these careful studies, it is possible to make an accurate situation analysis and long-term production development plans. The information gathered can be benchmarked using Valmet's large global network. For example, it provides vital information about Vibration study the operation of machine frames, cylinders, rolls, and other components. It helps our Machine analysis, Bottleneck analysis and customers to identify possible bottlenecks or to plan a machine rebuild. Valmet's customer training ensures high competence through knowledge transfer. In many cases, training is included in the performance agreement but it can also be offered separately. Valmet's delivers several advantages, such as customer training effective and safe use of the machine, quick resolution of fault situations and correct maintenance practices.

Preventive maintenance and upkeeping programs increase reliability

The optimal solution for machine maintenance is to plan almost everything in advance. Proactive solutions that reduce unplanned shutdowns and breaks improve availability. Maintenance planning is most effective as part of a maintenance management program. Valmet has developed a preventive maintenance plan that can be incorporated into a mill's computerized mill maintenance system (CMMS). This preventive maintenance plan givesall the relevant information needed regarding the necessary maintenance elements, such as routed preventive maintenance plans, spare part information, drawings, bills of materials, documents and machine cards. New upkeeping programs have been developed to control all operations on a production line or in a selected area of the machine line. They include tasks and observations ranging from normal preventive maintenance checks to process support and service packages. The main benefits of the upkeeping program typically come from the detailedinstructions and training of maintenance and production personnel. "Who, what, when and how? The upkeeping program answers these questions in a very detailed way. This makes maintenance work clear and reliable, which then extends to the whole papermaking line.

Profitability through maintenance outsourcing

In maintenance cooperation, the most comprehensive service solution covers complete maintenance outsourcing at the mill site. It means that Valmet takes full responsibilityfor a pulp or paper mill's maintenance operations, including hiring the required maintenance personnel. Maintenance outsourcing enables a mill to decrease the number of unplanned maintenance-related shutdowns and to lower maintenance costs compared with the industry

average, resulting in significant savings. The annual value of reducing unplanned shutdowns by one per cent can amount to one million euros. In addition, a mill has access to themachinery supplier's know-how and resources, and only one contact for all maintenance operations.

Services offered

- Headbox, Press, Coater, Calender, Pope reel& Winder service
- Twin Roll Reconditioning
- Shutdown services
- Process, Mechanical, Energy & Water Audits
- Steam, Condensate and Vacuum study
- Plant optimization
- Vibration analysis
- Recovery Boiler Process and Mechanical inspection
- Compounded Fluid Dynamic study

CASE STUDYSUMMARY:-30% better dry weight profiles through headbox reconditioning

Customer challenge :- Customer had problems with quality rejections, frequent slice jamming, and profile variations. They also wanted to reduce web breaks and improve machine runnability.

Solution :- The headbox of BM 1 was thoroughly tested and reconditioned in cooperation with Valmet's service experts from both Thailand and India.

Results :- Dry weight profiles have improved by 30%, and the basis weight 2-sigma has improved by 25%. This has also enhanced runnability and improved productivity. Web breaks have fallen by 10%.

Customer comments :- "After Valmet's servicing, our slice jamming problem has been significantly reduced"

DETAILED CASE STUDY

Dry weight profiles on one of the leading mills in India in their BM 1 showed a 30% improvement after headbox reconditioning. The basis weight 2-sigma has improved by 25%.

The mill is a leading manufacturer of packaging and graphic boards in South Asia. It has a production capacity of 375,000 tonnes per year of virgin and recycled board. BM 1 is 3.75 meters wide with a design speed of 350 m/min. It produces cupstock, coated board, and kraft paper in the basis weight range from 170 to 360 g/m2.

BM 1, which is 33 years old, had been experiencing problems with quality rejections, frequent slice jamming, and profile variations. In addition to solving these issues, the mill also wanted to reduce web breaks and improve machine runnability.

Valmet had previously carried out headbox service and reconditioning on their BM 4 machine. Pleased with the results, the mill naturally chose Valmet for this job as well. In April 2012, a service team from Valmet Thailand carried out the work during a three-day service shutdown.

Tests reveal headbox condition

The tests at the mill had two targets. The first was to reveal the mechanical condition of the rectifier roll headbox; the second was to identify the mechanical faults causing flow disturbance in the slice jet and poor CD paper profiles. The headbox was examined in detail. Investigation of the slice opening revealed that it was distorted. Bending, grinding and polishing the apron front edge allowed the team to remove the defects and recondition the apron to its original shape.

Visual inspection of the top slice beam revealed that it was too short, which can cause flow disturbances, profile problems, and stock leakage. Valmet recommended replacing the slice lip with a longer one so that it would be wider than the pond. This would create some margin for end clearance adjustment. The internal flow surface was also polished, and the breast roll and forming board realigned.

Targets exceeded

The test results helped the team define the reconditioning need and make the necessary repairs. The results have been positive.

“After Valmet’s servicing, our slice jamming problem has been significantly reduced. Dry weight profiles have improved by 30%, and the basis weight 2-sigma has improved by 25%,” says their General Manager at mill site.

The mill has also observed that headbox reconditioning and better dry weight profiles have enhanced runnability, improving productivity. Web breaks have fallen by 10%.

Customer comments “After Valmet’s servicing, our slice jamming problem has been significantly reduced,”

Such a major improvement in dry weight profiles has a number of positive effects. Better profiles reduce the amount of fibers

and thus reduce raw material costs. Better dry weight profiles also improve runnability and shorten recovery times from web breaks, thereby increasing production.