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Stepping Stones: ITC PSPD's Transforming Practices in 2 Decades of Excellence Journey

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Abstract: ***An organization's Business Excellence Journey is driven by two dynamics – Leadership Belief on Cultural Transformation and Continuous Adoption of Customized Best in Class Practices ahead of their times. Knowing that the pace of Excellence journey is long-term, the commitment demonstrated by the senior management ensures the results are irreversible. Aligning the technological know-hows with tools & methodologies, "not just which are available, but all which are necessary", builds the organizations' Stepping Stones towards Excellence. The committed leadership integrated all business tools and strategies under one umbrella, makes the stones stronger to land on for years. The organization's bespoken Business Excellence methodology integrated with other Systems of Safety, Quality, Environment along with philosophies of TPM, TQM, Lean Six Sigma and Industry 4.0, IoT, Data Analytics techniques with its high skilled workforce distinguishes the organization and propels it to global benchmarks.***

Key Words: Best Practices, Excellence, Employee Involvement, change management, Latest Technology, Industry 4.0, Process Optimization

Introduction :

Embarking on the Business Excellence journey is a strategic decision for any organization. Once Leadership decides to embark on this journey, the immediate questions that arise are what is the approach? Where and how to start? Selection of right approach at the beginning is critical for the successful journey. Each organization is unique and challengers are unique. One solution does not fit all organizations and even the same organization at different time periods. During the midway of the journey, if organization realizes that the approach adopted is incorrect, they already lost a lot of precious time! Also, it will confuse employees if organization changing the approach often. A study says that less than 2% of companies sustain the Business Excellence journey beyond 5 years. Is this because of selecting a wrong strategy or drifting towards "What's New & Proven Today?" approach.

The solution is "adopting the customized version of all philosophies at right time" under a single initiative. ITC-PSPD (Paperboards and Specialty Papers Division) embarked on its Excellence journey in 2002. Significant and sustained Business results have been achieved over past 2 decades. The Division adopted Manufacturing Excellence Model, brought all the relevant approaches and customized them as required and integrated with other management systems. This brought all the best practices together on people, assets, processes and technology front, made the journey smoother and aligned the goals and set the roadmap clear in achieving the results consolidated on PQCDSME dimensions.

Based on clear objectives and goals, five focus areas are set for the World Class Journey.

- People Involvement with Ownership
- Asset utilization with Lean & Green Manufacturing
- Process Optimization & Reliability Improvement with Digital Interventions
- Capability Building with Avid Workforce
- Branding with Tailored Customer Needs

Fig 1. Focus Areas of Excellence Journey

Roadmap to Excellence Journey

A comprehensive 4-Level Excellence roadmap was developed to accomplish the above focus areas and objectives. The basic two levels introduce the concepts and methodology; build basic condition of Man-Machine interface by creating ownership and stabilizes the asset care practices. It involves the workforce and ensures their engagement. Advanced two levels build the capability, integrate innovative improvement culture and empower the people towards global competitiveness.

Keeping the team members constantly motivated is equally important; every step & bit of success should necessarily be celebrated and taken forward. A suitable dynamic Reward & Recognition Scheme has been put in place and implemented at all levels and times.

Fig 2. Excellence Journey – Structure and Governance

Selection of right tool/approach for each of the above dimensions enabled the system and resulted in the desired results which are sustained throughout.

Basic Levels (Committed to Excellence)		Advanced Levels (Recognized for Excellence)	
Level-1 (Introduction)	**Level-2 (Refine & Standardize)**	**Level-3 (Build Capability)**	**Level-4 (Achieve Best in Class)**
Means ...			
Building basic conditions	**Building stability**	**Integration**	**World Class**
Through Employee ...			
Involvement	**Engagement**	**Innovation**	**Empowerment**
With the activities			
• Everyone Involved • Team Members doing routine checks • Introduce Daily Management • Operating Standards defined • Define & improve on Key Performance Metrics for Customers	• Identify Best Practices to do things • Adherence to Standards is made Easy To Do • Pillar Roadmaps for Excellence are defined • Identify variability drivers for critical KPOVs and develop action plans	• Define & Achieve Optimum Conditions • Practice Lean Management • Synchronize Supplies • Practice Maintenance Prevention • Achieve Flawless New Product Introduction • Operate through Process Based Self Managed Teams • Improve Competencies • Develop Sustainability Roadmap	• Achieve Optimum Conditions and benchmarks with reduced effort • Achieve 4-6 σ levels for significant periods • Practice full Self Management • Achieve Rapid Customer Response Capability • Practice Corporate Sustainability consistently
Results as ...			
• Change in Equipment • Reduction in Minor Stoppages • Reduction in Defects, Rejections etc.	• Change in Operators • Elimination of Minor Stoppages • Reduction in Breakdowns, Losses • Savings through Kaizens	• Change in Shop Floor • Close to Zero Breakdowns, Defects and Losses • Maximum Standardization and innovative Kaizens • Improved Profitability • Variability reduced, Predictability improved	• Change in Organization • Drastic changes in Profitability • Close to Zero inventory • Fully stabilized office routines

Fig 3. Levels on Excellence Journey Roadmap

Finally, a well-structured audit and review mechanism with the governance system is put in place that steers the progress of the entire journey, monitors the level wise expected results and directs timely calibration & course corrections in cases of deviation.

People Involvement with Ownership

Typically, "one who is closest to the equipment, processes and services knows the same better than anybody else". Hence, the TPM philosophy recommends the equipment ownership concept. Every individual in the shop floor is assigned and entire unit was brought under the drive "My Machine" which has created a sense of pride and ownership among them be it process or engineering functions. The habit of carrying out daily routine checks on the equipment they own, empowered the members to identify and rectify the abnormalities and deviations to their satisfaction in a fastest way.

Fig 4: My Machine – Equipment Ownership Boards Display for every individual

To handle the huge data capturing, a fully customized data management software tool has been hosted in the organization's intranet, from Day 1 of the journey. This enabled the teams to monitor, analyze and efficiently solve the problems. The system is being accessed over 7000+ users, clocking on average 1300+ transactions daily which includes Kaizens close to 120 per day. So far, 8.3+ lakh abnormalities have been rectified.

The ultimate benefit gained by the organization is a drastic reduction in minor stoppages and improved response time in case of any sort of upsets or deviations in the process.

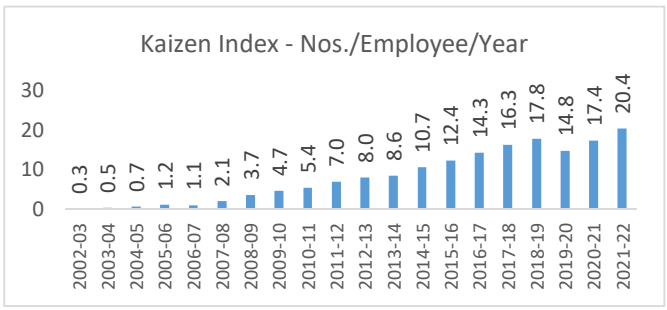

Fig 5. Trend of Kaizen contribution from employees

Sustaining People involvement and active participation was possible with various novel initiatives like constant engagement, appreciation forums, rewards, in-time support, role models and above all ensuring safe and pleasant workplace.

Senior Management visits shop floor with a focused agenda of appreciation. These visits motivate the members to be more committed and move ahead in the journey.

People were encouraged to become "Role Models". A systematic evaluation process is put in place and Role Models were recognized. 130+ such Role Models now lead the shop floor activities, improve the peer participation, manage the data and are active in problem solving.

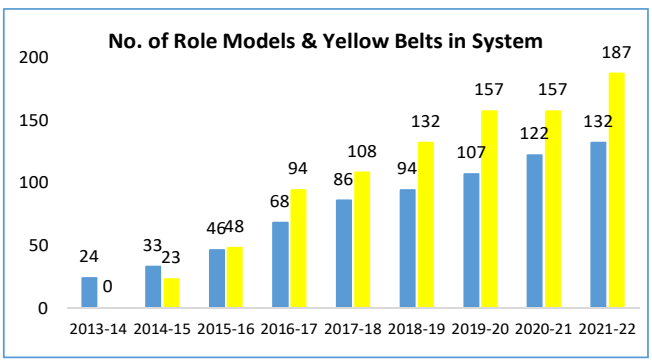

Fig 6. Trend of Role Models & Greenbelts developed over years

Over a period of time, members were developed as subject experts and multi-tasked. Add on to this, the problem-solving tools and techniques along with DMAIC approach inputs were provided to the workforce enabling them to take up improvement project at SWG level. They were certified as "Yellow Belts". Currently 180+ experts solve hundreds of shop-floor problems every year. Formal forums like Internal Kaizen Theme Competitions are being organized for them to present their case studies which would be then recognized and rewarded.

The employee involvement does get extended to contractual / floating type of workforce too; they were made a part of the shop floor teams and contributions are being recognized.

Asset utilization with Lean & Green Manufacturing

With our motivated and trained workforce, taking care of assets becomes more systematic, driven by the refined & customized engineering practices. Implementing the TPM methodologies of Preventive Maintenance (PM), Quality Maintenance (QM) and Focused Improvement (FI) Pillars helped in raising the knowledge of using right tools & techniques at right time. Leveraging advanced analytics with sophisticated maintenance tools and techniques enriched with the appropriate monitoring and control gadgets, IoT sensors and AI/ML supported logics & dashboards, place the asset efficiencies at significantly higher levels.

Following the basic maintenance and quality improvement practices, carrying out criticality assessment and condition monitoring, using MTBF, MTTR, FMEA, PM, ESFC & other improvement tools, CBM & TBM approaches, along with implementation of Loss & Cost reduction approaches, enabled the Unit to effectively bring back 100% of its equipment to its ideal state condition along with recommended refurbishments.

Debottlenecking and line balancing with firm adherence to preventive maintenance schedules raises the overall plant efficiencies and capacity utilization beyond the design capabilities.

With the multiple waves of "SARAL" projects which typically focus on ease of doing business and lean concepts garnered considerable internal efficiencies, thus aiding in strengthening the Unit's Cost Leadership position and its service delivery. This spanned not just across the manufacturing areas but also included support functions like Procurement, Finance, HR, Security, Internal Handling & Traffic Control, Ware House Management and Inventory Management wherein the processes got fine-tuned, streamlined and simplified through the Office Pillar Concepts and methodologies. Deployment of tools like VSM, waste elimination methodologies, digital technological interventions and automation helped in process simplification and better asset utilization.

Going Green, the Unit pioneers in adopting newer technologies like installation of India's 1st BCTMP with ZLD concept, Energy Efficient Bio-Boilers, State of art Ozone Bleaching, PCC Plant, Wind Farms, Biogas plant and has been the benchmark in control of emission, discharge, odor and solid waste management.

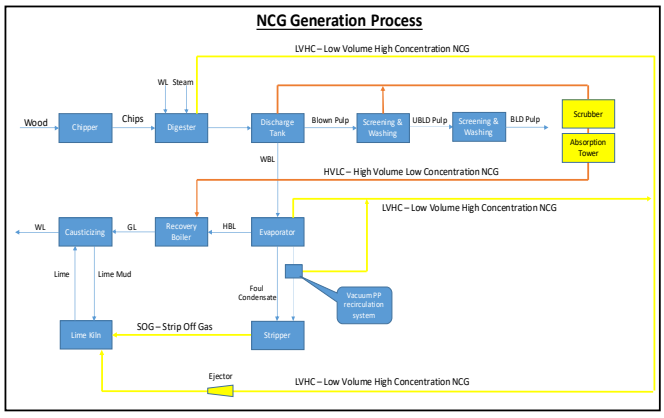

Fig 7. NCG Generation & Burning Systems

Under Odorless Plant Initiative, the sources of all the Non-Condensable Gases (NCG) were tapped, suitable collection and burning systems were installed for LVHC, HVLC and SOGs.

With Integrated Management System (IMS), all the Quality (QMS), EHS and Energy guidelines were smoothly supplemented in achieving the higher efficiencies. PSPD Bhadrachalam unit is the only Integrated Pulp & Paper Mill to achieve the GreenCo Platinum+ rating.

Fig 8. Go Green Practices & Achievements

Process Optimization & Reliability Improvement with Digital Interventions

With the OEE of various lines reaching world class benchmark levels and overall plant efficiency (OPE) achieving 85%+ level, PSPD now is moving towards a smart factory target.

A smart factory involves the use of smart machines, sensors and tooling to provide real time feedback about the processes and manufacturing technology. Digital manufacturing enables manufacturers to eliminate bottlenecks, reduce inventory, improve quality, shorten time to market, pivot quickly to meet customer needs, and expand the number of products made.

ITC has been able to develop an exciting and aspirational analytics transformation program with a clearly linked data strategy. It has executed use cases in sequence to demonstrate value, build momentum, and develop capabilities. The vast quantity of data available was connected through the utilization of Historian Data Infrastructure for improved visibility and quick data extraction. The data available has been utilized for 100+ use cases with a focus on optimizing KPIs such as throughput, quality, and cost reduction throughout the operations.

3 such use cases which have been deployed on Process Optimization and 3 on Reliability Improvement are summarized in this article.

(1) Image Analytics Use Case for Chip Brightness Measurement

Wood chip brightness is a critical input variable that directly impacts the pulp yield and bleaching chemicals consumption. Process control using Wood Chips Brightness measurement at Lab posed challenges due to the following issues:

- Lead time for Lab result was more than 24 Hours
- Wood Usage between sample collection and result reporting was 500MT, with a significant chance of difference between Lab result and current value
- Sample size was very small

Fig 9. Traditional method for Wood Chip Brightness Measurement

There was, hence, a need for real time measurement of wood chips brightness which would act as a feed-forward control for process optimization and help trigger actions to counter any variations in wood chip brightness. This use case aimed to measure chip brightness in real-time using image analytics and machine vision algorithms enabling dynamic decision making. An in-house solution was developed consisting of a camera system with light exclusion zones using opaque curtains, to control exposure accurately as shown in Fig 10. The camera readings were calibrated using lab measurements of wood chip brightness.

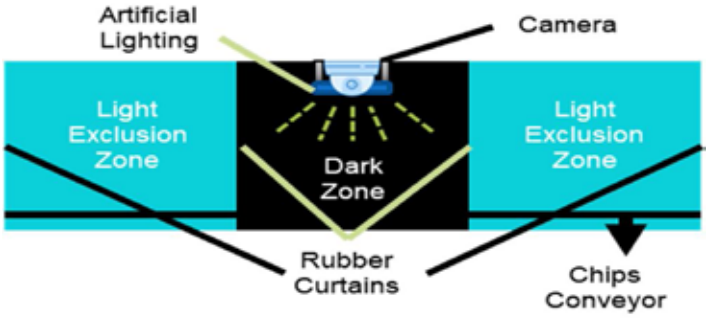

Fig 10 Creating light exclusion zones to eliminate impact of Ambient lighting

The main challenge was the high brightness variation frequency within and across images. Chip brightness variations of up to three units were observed within a single image and up to six units in a span of five minutes across images. Assigning an individual brightness value by taking one sample from an image was inaccurate and hence it was required to measure brightness at an individual chip level.

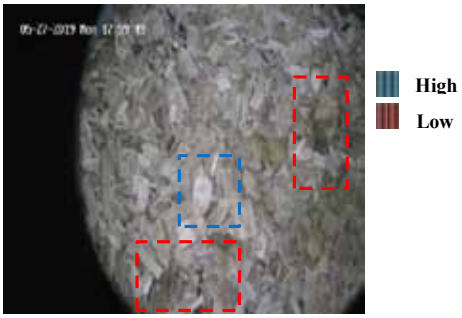

Fig 11: Variability of chip brightness in a single image

Image segmentation was performed through Convolutional Neural Networks. The model compared each pixel of each frame with the calibration input of individual chips, predicted the brightness of that pixel, and aggregated it across all the pixels. The system is placed at the inlet chip conveyors and with a measurement frequency of less than 2 seconds, captures around 70,000 images per day. This real time measurement along with the deployment of advanced analytic models for brightness control has helped in significant reduction of Bleaching chemicals consumption.

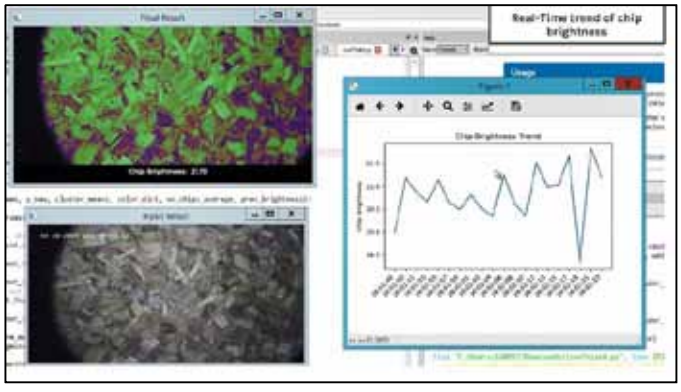

Fig 12. Real time display of chip brightness

(2) Advanced Analytics Use Case on productivity improvement in Super Batch Digesters

Super batch displacement cooking is an extended delignification process applicable to batch process where a proper cooking control is important to the pulp production. The process takes place simultaneously for six different digesters with the following steps:

1) Chip filling: In this stage, chips are filled into the digester and packed with steam
2) Pre-Heating: The packed chips are pre heated with LP Steam which helps in removing the air entrapped in the voids of chips, ensuring improved penetration of cooking liquor leading to improved cooking quality
3) Hot Liquor Filling: A mixture of Hot white liquor (HWL) and hot black liquor (HBL) is added in three stages to fill the digester with cooking liquor
4) Heating and Cooking: In this stage, the circulation of liquor from middle to top and bottom starts and the liquor is heated with direct steam. Due to reaction being highly exothermic, the need for direct steam is little.
5) Displacement: Once cooking is completed, cold black liquor is added to displace the hot black liquor
6) Discharge: The pulp is now discharged to fiber lines for screening, washing and bleaching.

Variation in quality parameters can be minimized by providing optimum cooking conditions for each batch. However, chip quality variations, lack of real-time measurements, long process delays and the inability to track quality variables during cooking makes identifying the optimum conditions difficult.

With a bottleneck of high solids firing in the boilers, the aim of the project was to reduce the solids to Soda Recovery Process and hence, maintain a higher kappa number by ensuring uniform cooking across all batches. The use case focused on optimizing the cooking parameters including active alkali charge and target H Factor based on the input material properties. A stage wise approach was adopted to analyze digester performance and control key parameters.

A) Chip Filling: Through the measurement of incoming chip moisture and chip filling rate, a dynamic auto control of packing steam pressure was deployed. This helped in reducing the cook to cook digester loading variations for each digester.
B) Pre-Heating: Through cluster analysis, the optimum value of LP steam flow for achieving a lower rate of change of temperature and better steaming of chips was captured.
C) Hot Liquor Filling: A closed loop multivariate regression model was created to optimize active alkali dosage to ensure a consistent outlet kappa. Several factors affecting outlet kappa of the current cook and the previous cook in the same digester were identified and captured.

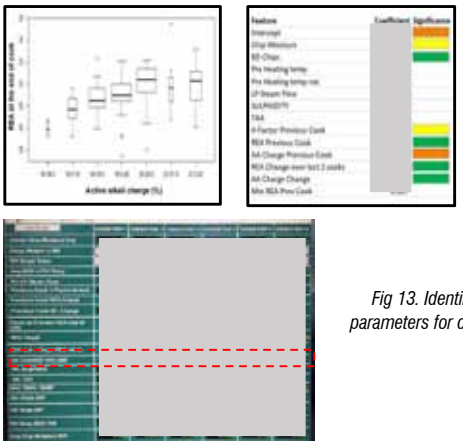

Fig 13. Identification of important parameters for determining active alkali charge

D) Heating and Cooking: Two actions were taken which greatly helped in ensuring reduced instances of overcooking of pulp resulting in higher solids to SRP. I) Prevention of high cooking temperature by predicting and controlling the HBL temperature. II) Dynamic control of H Factor by predicting end cook temperature and estimating the H Factor raise during DPL stage. A model which continuously predicted the end cook temperature had been created to dynamically correct the H Factor target.

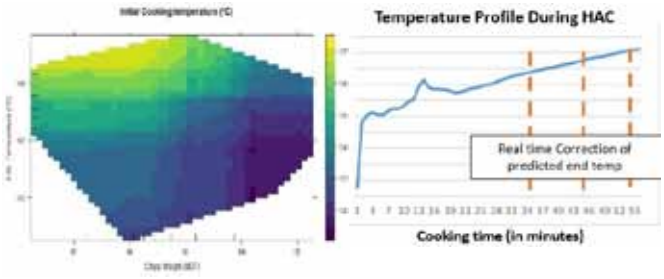

Fig 14. Ensuring optimum cooking temperature and prediction of end cook temperatures

E) Discharge: A classification model was built for identification of critical parameters affecting discharge volumes and control logics for such parameters were established to ensure reduced discharge volumes. This eliminated instances of low consistency discharges which would result in poor screening and reduced production rates.

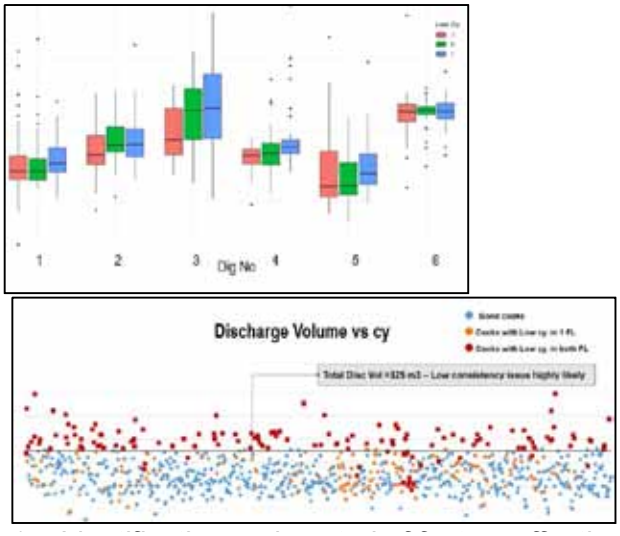

Fig 15. Identification and control of factors affecting low consistency issues

Through the combination of the aforementioned logics, 2.5% improvement in production rate, 20% reduction in kappa standard deviation and 4.5% reduction in Black liquor solids to SRP were obtained.

(3) Advanced Analytics use case on Bleached Pulp brightness standard deviation reduction

The target in Kraft pulp bleaching is to predominantly increase pulp ISO brightness along with handling traces of residual lignin. Various bleaching and extraction chemicals are used in a stage wise manner with each stage operating at a predefined condition. These conditions are set to optimize the rate of bleaching reaction for achieving the desired pulp brightness with minimal chemical dosages. Through the application of advanced analytics, the top control variables which affect the brightness gain were identified and optimized. Logics were defined to automate the dosage of bleaching chemicals as a function of these variables.

For any data driven improvement, the most important step is capturing and structuring of data. Through the utilization of historian, data for all significant parameters were captured along with the accurate calculation

Fig 16. Creation of a soft sensor through a combination of feedback and feedforward control

of retention times in each of the stages. The extracted data was cleaned to eliminate outliers and multi collinear variables were removed to avoid redundancies. Post data cleaning, different methods including Random Forest, Cluster Analysis and Gradient Boosting were used to identify control parameters. Based on these insights, multivariate regression was applied on the control parameters to obtain the desired equations for the bleaching chemicals.

Fig 17. Advanced Analytics use case procedure for Bleaching chemical optimization

The accuracy of the model was heavily dependent on capturing of the right values of the control parameters and any deviation in these values due to sensor errors would significantly hamper the desired results.

Despite calibrating the sensors on a time-based schedule, a frequent drift of the sensor values was observed with respect to the lab reported values. Since lab measurements used to happen every alternate hour, there was a possibility to measure the real time drift. To identify the exact correction factor to be applied to the sensor, the periods where the online sensor was performing the best was captured. The drift observed then was compared to the difference between lab and online values for the current period and a corresponding correction was calculated. This would be updated on a shift basis and helped in elimination of the frequent sensor drifting issues.

Fig 18. Dashboard for real time monitoring of sensor correlation with lab values

Another idea implemented was the measurement of real time correlation coefficient between the lab and online values. A reduction in the coefficient would possibly indicate the poor functioning of the sensor and the requirement to calibrate it. Through real time capturing, any sudden drop in the coefficient would send an alert to the instrumentation manager. The manager would calibrate the sensor at the next available opportunity. The periodic calibration approach was modified to a conditional based approach and this helped in greatly improving the reliability of the online sensors.

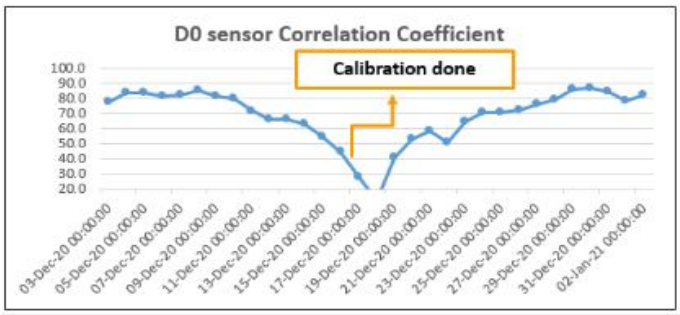

Fig 19. Tracking of real time correlation and immediate recalibration of sensor post reduction

The combination of both the dynamic auto control of bleaching chemicals along with identification and correction of the brightness sensor when required helped in reducing the final pulp brightness standard deviation to world benchmark levels. Through the implementation of Advanced Analytics logics and real time correction of the sensor, the following results were observed:

a) Reduction in standard deviation of final pulp ISO brightness by 35% approaching world benchmark levels.

b) Improvement of Final Brightness SLA adherence by 10%

c) Improved sensor reliability and reduced chemical dosages.

Equipment Reliability Improvement through Historian and Advanced Analytics

Condition based monitoring is focused on preventing equipment failures and increasing uptime by monitoring asset health to determine what maintenance needs to be completed and when. Traditionally, monitoring a machine included non-invasive measurements, visual inspections, performance data and scheduled tests and is completed at predetermined intervals. Condition based monitoring, however, looks at potential failure modes and their indicators, and then monitors for those.

Sensor technology, big data analysis, cloud technologies, mobile end devices, and real-time location systems are now being implemented to improve equipment life. The data acquired throughout the production process and I4.0 solutions have helped the Unit to be more efficient with assets at each stage of the process and are being used for predictive maintenance.

(a) Real Time Monitoring of Screw Pumps: Certain Chemical dosage pumps across the plant are screw type pumps which wear out over a period of time. Real time loads and RPM for given flow rates are monitored. Once the performance reduces to the specified limit, the standby pump is taken into circuit. Timely replacement ensures prevention of unexpected breakdowns and helps in maintaining quality of final pulp.

Fig 20. Dashboard for real time monitoring of screw pump parameters

(b) Equipment plate life prediction in BCTMP: Being a mechanical pulping process, the equipment wear-out and life was understood to play a critical role in pulp quality. Proxy parameters were identified through which equipment life could be predicted with the most critical equipment being Refiner plates. The plates were changed on a periodic basis and estimation of wear-out was essential before it resulted in quality complaints. Based on the changing time of last six plates, a model was built to estimate the plate life based on process parameters. Showing a good correlation with the test dataset, the model was deployed and based on the model prediction, the maintenance team was able to plan shutdowns well ahead in time before quality complaints occurred in the machines.

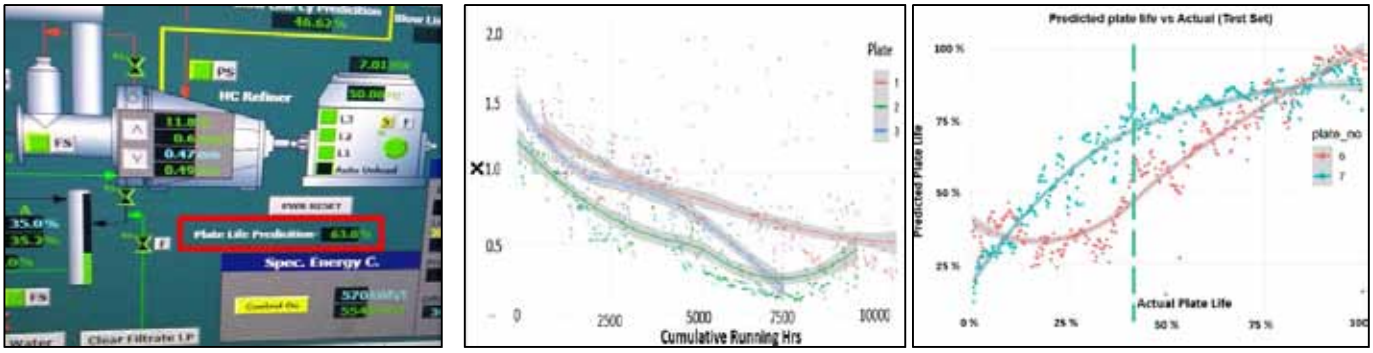

Fig 21. Equipment life prediction

(C) Heat Exchangers Heat Transfer Coefficient Monitoring: Some of the heat exchangers across the plant are susceptible to scaling. Once scaling is formed, it would result in an increased steam consumption as well as unplanned equipment downtime. Through the utilization of temperature and flow sensors, a proxy for Heat transfer coefficient was established and a real time monitoring of this value was created. Equipment cleaning planned in advance based on drop in coefficient helped in reduced steam consumption. Similar practices have now been established for chillers.

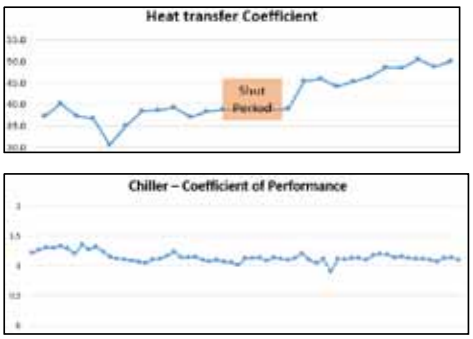

Fig 22. HT Coefficient for Heat Exchangers & Chillers COP monitoring

Capability Building

While upgrading the system and machineries with latest technologies, it is imperative that people competencies need attention in order to cope up with the speed of change in digital world.

An in-house model training center "Vidyalaya" caters to the basic technical and engineering knowledge and skill elements for the existing workforce and the future entrants.

Fig 23. Practical Training Center "Vidyalaya"

This has the complete setup of cut models, working models & simulation setups, well supported with intranet "PSPD Vidyalaya" hosting close to 1850 training packs, thus catering to the class room trainings followed by practical sessions from experts/faculties. The Learning & Development Pillar organizes gap-based training input sessions for the identified resources. The average skill index of total manpower is being monitored which shows the impact of training.

The passionate workforce started applying their learning on process and quality improvements. Supported by the QM Pillar's 10 step methodology, unit has achieved 100% of "Defects Free" critical processes and sub processes.

As the journey progresses, advanced training needs arise for which industry specific online courses (MOOC platforms) on technical as well as behavioral aspects were identified and imparted for the members. Every employee in the unit completed at least 1 online course and the overall tally is more than 800 as on date. L&D Pillar initiated "Teaching Tuesdays & Sharing Saturdays" sessions where external and internal faculties, vendors and OEMs share updates on the current and upcoming technologies and developments in on Tuesdays and non-technical developmental inputs through experience sharing on Saturdays. Further, simulation-based VR/AR modules are also being deployed to fast track the learning process.

On the other hand, to get more experts on problem solving and data analyses, structured statistical process control trainings are being organized and around 430 experts were developed. These resources were certified Black Belts and Green Belts in the system and are handling focused improvement projects. Multiple waves of Projects for losses reduction, quality improvement, downtime reduction, cost and usage optimization, process variation reduction, MTTR & MTBF improvement projects were taken up and completed successfully giving multifold benefits in a sustained manner.

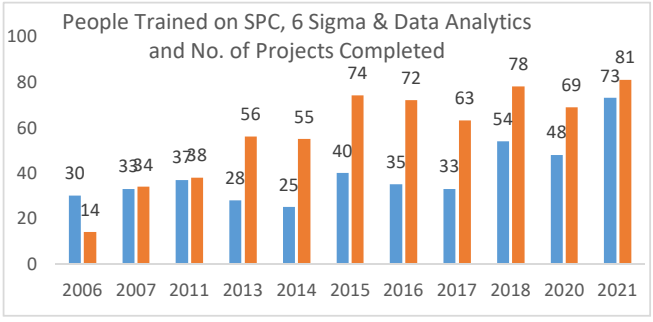

Fig 24. Details of People getting trained on six sigma and other tools along with the number of projects completed

Branding with Tailored Customer Needs

Creating Brands out of Commodities - PSPD pioneered the concept of Creating Strong Paper and Paperboard Brands. Earlier these products were referred to by their commodity names like Folding Box Board, Greyback Board etc. ITC Brands were distinguished by clear performance parameters and consistency and over time, these Brands have become synonymous with the Product Category itself.

Fig 25. PSPD's Iconic Brands

Leveraging Digital Tools

PSPD launched the Indian Pulp & Paper Industry's first Mobile App "Papyra" in 2015 to help users choose the right paper / paperboard for their printing and packaging needs. Our innovative products and initiatives are also promoted through our websites www.itcpspd.com & www.itcportal.com

The Websites and App serve as additional customer touchpoints, facilitate direct enquiries and feedback, and are vital to our Brand Promotion strategy.

Co-creating Brand Value

Collaborating closely with Brand Owners and Packaging Teams has enabled the co-creation of value as well as assured quality and supply for brands. Today, many of ITC PSPD's products are trusted and nominated by major brands in the country, right from India's top-selling face cream to its leading coffee chain!

PSPD made it a habit to gain voluntary certifications under the latest Global & Indian Standards relevant to Industry. Over the years, PSPD won numerous Industry Awards under different categories which add to Overall Brand Image, establishing the unit as the clear Industry Leader.

Going Digital for Customer Centricity

Unit's digital transformation initiative brought drastic improvements on process optimization, input control, process simplification. The Data Analytics driven Historian dashboards enabled the processes in fine-tuning the capabilities. The Golden Batch operating conditions for each product and grade level customization has improved the capability index. When a customer upgrades his processes and encounters new requirement/modification in product specification, the Unit is in a position to offer tailored solutions at every customer level.

Furthermore, a number of digital interventions are being extended in post-production areas too. TAT improvement from 30% to 85% in the outbound logistics is one of the best automations implemented by the Unit.

Celebration, Reward & Recognition Schemes

As cited above, every bit of success needs to be appreciated, recognized and celebrated to sustain the enthusiasm of the workforce and continuing the excellence journey. A dynamic Reward and Recognition Scheme is

appreciating the individuals' as well as teams' efforts with defined frequencies ranging from Monthly, Quarterly, Half-yearly and Yearly. Teams are being recognized on categories like Sustenance Awards, Best of the Month Awards, EHS, ENCON Awards, Innovator Awards, Faculty Recognition, Innovation Awards etc.

Some of the awards are based on systematic evaluation and the best performer is rewarded; whereas in other types, teams get recognized when crossing a milestone in the journey. Further, in these recognition events, family members of the involved employees too are included to create a sense of ownership and pride in the families

Fig 26. Showcasing Excellence Journey Achievements and Success Stories to Family Members

On the other hand, annual awards are being organized at a large scale as "Business Excellence Night" celebrations and best performance awards on all PQCDSME dimensions are recognized.

Participation in Internal & External Kaizen Competitions encourages the individuals and the organization continues to garner traction on problem solving.

Conclusion

The results of continuing and sustaining a successful Excellence journey are phenomenal, both in terms of the tangible and intangible aspects. These results stand testimony to the belief that as organizations adopt any change and bank on the cultural transformation, driven by the leadership commitment, the change process becomes that much more effective and the results shall be sustainable. PSPD's belief in adopting the right practices ahead of their times made this excellence journey a critical lever in gaining and sustaining its leadership position in the industry and is enabling the organization to be future ready. The institutionalization of the new and best practices that the organization adopts and establishing strong monitoring and review processes have aided in ensuring that the organization stays ahead of its competitors in its processes and outcomes, thus garnering a sustainable competitive advantage.