TATA Pigments

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When a change in the manufacturing process affected the company's most popular product lines - deep shades of red - Tata Pigments was forced to roll up its R&D sleeves and experiment intensely in its search for a solution. Finding the perfect solution, in the form of a catalyst that worked 'wonders', saw the company discovering the pot of gold at the end of the innovation rainbow.

From reds to riches

Three years ago, senior executives at Tata Pigments stopped seeing red. This was truly unfortunate because the colour red happens to be the foundation of the company's business.

Reds and yellows are the colours of the iron oxide-based pigments that Tata Pigments has been producing for the last seventy years. The company is the only Indian manufacturer of synthetic iron oxides that are used to lend colour to paints, emulsions, plastics, cement, papers, inks, etc. The shades of red for instance, that can be found everywhere, from the undersides of trucks and train compartments, to branded paints, distempers, etc sold all over India. Tata Pigments is particularly proud of the popular shades of red that it produces.

For a number of years, red pigments had been manufactured through an older technology called the Copperas process. Tata Pigments, a Tata Steel subsidiary, worked with ferrous sulphate compounds (called Copperas) that are a by product of the steel industry. Copperas when treated gives high quality iron oxide which form a hard red pigment called copperas red.

Unfortunately this process was environmentally unfriendly as it resulted in the emission of sulphurous gases (also known as greenhouse gases). Then four years ago, the company went in for a cleaner, more environmentally friendly process called the direct precipitation process.

A not-so-rosy outcome : By 2005, all the units at Tata Pigments had changed over to the new technology to produce iron oxide pigments. Though the air around the plant was cleaner, the company immediately ran into trouble. The new technology worked well except that the iron oxides produced were too light in colour. "We tried very hard, we changed a lot of the parameters, but we could not reproduce the deeper shades of red that are so popular," says JB Gupta, Senior General Manager, Works.

This was potential disaster. The direct precipitation process worked well in the west as the shades of red it produced were compatible with local tastes. Tata Pigments' customer base is primarily located in India, where consumers favour the deeper shades of red for their ability to block head and ultraviolet rays.

"We were in deep trouble. We were already selling a range of colours to paint manufacturers. Our most popular shade numbers are 473 and 449, darker shades of red. And we were just not able to produce them, " says Mr Gupta.

The problem lay in the new process that the company had adopted. The direct precipitation process is a two-step chemical reaction : the first step is 'seed making' and the second one is 'seed growth'. The seeds are precipitates of ferric oxide (Fe_2O_3 or iron oxide) that are made by precipitating the iron in solution at different pH levels using alkalis and aerating the solution to oxidise the iron. This seed slurry is then transferred to a reactor loaded with iron scrap. Here, the seeds undergo hydrolysis and further aeration under high head conditions and they grow in size. The seed growth takes a long time and the colour gradually changes from light red to darker shades.

Mr. Gupta's team found that even after processing the seeds for 200 hours in the reactor, the iron oxides did not develop into the darker that they were looking for.

The Innovation

The company turned itself inside out looking for solutions. "We approached everyone we could think of - IIT Kharagpur; National Chemical Laboratory, Pune ; Indian Institute of Chemical Technology, Hyderabad and National Metallurgical Laboratory, Jamshedpur. No one had any answers to our problem. This technology is not taught anywhere. At the same time, our own R&D lab was working overtime," says S. H. Krishnan, Advisor, R&D.

The whole of 2006 was spent in looking for possible answers. Finally, the solution came in 2007 from the R&D lab that had been trying various options to develop redder oxides.

After experimenting with a number of metallic salts, the lab finally zeroed in on a zinc salt as a catalyst. Added to the slurry at the seed growth stage, the zinc catalyst worked like magic in precipitating dark red coloured oxides of iron. The company now calls the new process the Direct Red Precipitation Process.

The Payoff

The impact of the new process is hoped for. The catalyst helped the iron oxides reach a deep shade of red that had not been possible earlier. Plus, there was an increased yield as productivity went up by nearly 36 per cent. As an added benefit, it speeded up the process by nearly 25 per cent. The final seed growth stage could be reached within 150 hours, leading to a substantial saving in energy and fuel costs.

The catalyst had an even bigger impact on the company's bottom line; the addition of the catalyst meant that the iron oxide reaction needed far less ferrous sulphate than earlier (just half a tonne of ferrous sulphate per tonne of product, as compared to five tonnes earlier). In the market, ferrous sulphate prices had increased nearly five times from Rs. 11,000 tp Rs. 55,000 a tonne.

Whereas, pigments were selling at just Rs. 65,000 a tonne. "If we had not discovered the catalyst, we would have been sunk. Our bottom line would have been wiped out," says Mr. Gupta.

The discovery of the catalyst - a non-toxic, non-hazardous, environmentally friendly product - came in the nick of time for Tata Pigments. The direct red precipitation process is already working wonders at the company's plant. The impact on processing time, fuel costs and additional productivity all add up to a hefty 16 per cent in savings, making the bottom line even rosier.

Going Green

The story of how Tata Pigments developed the technology for the direct precipitation process is a tale in itself. The technology is now widely prevalent as it is considered to be far less damaging to the environment than the old Copperas process. But when Tata Pigments went looking for a prospective partner for the new clean technology, it ran into a stumbling block. "We were too small. All the companies we spoke to wanted to come in with big joint ventures. That was not in our gameplan," says JB Gupta, senior general manager, works.

Then Mr. Gupta went to present a paper at an international conference on iron oxide pigments in San Diego in December 1997. There he met with two retired veterans, GL Metcalf and WB Cable, who had worked with industry major Elementis. When they were detailed Tata Pigments' dilemma, they came up with a solution. They gave a broad road map to the direct precipitation process for a lump sum of US $25,000.00 No elaborate technology transfers, manuals, etc - just a guideline to the basic process itself.

It was a big risk but Tata Pigments took the plunge. After consultation with senior management, Mr. Gupta arranged the deal and Tata Pigments found itself the owner of a short written document that detailed the methodology of the process.

Thereafter, the company found itself in R&D mode. Setting up a new plant as per the required specification would have cost Rs. 140 crore. Instead, Tata Pigments tried to find a way to Indianise the process. All R&D had been done inhouse; apart from Tata Pigments, there is no other Indian manufacturer with knowhow on iron oxide pigments.

A pilot unit was put up in 2004 to study the mechanics (or the chemistry) of the process. Data was analysed and the process adjusted for full production. "We had to use a lot of ingenuity; this and our work experience was all that we had," says SH Krishnan, advisor, R&D. In the end, the company managed to implement the new technology with a capital cost of just Rs. 3 crore. By 2005, the direct precipitation process was implemented. And immediately Tata Pigments found that its deck of shade cards was woefully incomplete. It took another two years of R&D before innovation provided the answer.

Inauguration of GYM

On 17th September 2008, your company has added one more facility for its health conscious employees i.e., Gym in the Works premises. Mr. Prakash Sarode, our Managing Director has inaugurated the Gym and made it open for all the employees.

Suggestion Box

On 9th August, 2008 Suggestion awards were distributed in the Company. Our Managing Director, Mr. P. Sarode, Mr. J.B. Gupta, Sr. GM (W) Mr. B.S. Murty Manager (HR&A) chaired the function. The Sr. GM(W) announced the name of the recipient of the awards and Managing Director, Mr. P. Sarode awarded the cheques to the recipients and also announced that the awards winner will be given a free entry to Nicco Park with the family. The recipient of the awards are

1. Mr. B Suryanarayn
2. Mr. Rakesh Sinku
3. Mr. Md. Rafique
4. Mr. Baburam Mahato
5. Mr. Motu Bahadur
6. Mr. Kamlesh Sharma
7. Mr. Ramashreya Sharma
8. Mr. Budhan Baskey
9. Mr. Bhada Tudu
10. Mr. Parmeswar Das
11. Mr. Sunil Kumar
12. Mr. R.K. Yadav
13. Mr. J.K. Singh
14. Mr. D.K. Jha
15. Mr. R.K. Prasad
16. Mr. R.K. Singh

World Environmental Day

5th June 2008 was celebrated as World Environment Day in Tata Pigments. On this occasion besides other functions, our Managing Director, Mr. Prakash Sarode, Mr. J. B. Gupta, Sr. General Manager (Works), Vice President of Tata Pigments Workers Union Mr. Nand Lal and other employees have actively participated in planting sarplings.

Our MD, Mr. Prakash Sarode emphasized that all out efforts should be made by each and every one of us to reduce / eliminate / minimize the emission of obnoxious gases which are depleting the ozone layers and to reduce the Global Warming and Changing Climate. He further said that emphasis should be given for use of renewable energy and conservation of non-renewal energy, water and natural resources.

Annual Bonus

A Memorandum of Agreement was signed today, the 26th September, 2008 at 5.00 p.m. between the management of Tata Pigments Limited, Jamshedpur and its Workmen represented by Tata Pigments Workers' Union regarding payment of Annual Bonus for the year 2007-08.

The Bonus calculated on the basis of 50% for productivity and 50% on profitability works out to be 8.82% on productivity and 1.25% on profitability making a total of 10.07%. Thus, rounding the figure, employees were eligible to receive 10% Bonus. The President of Tata Pigments Workers' Union Sri. Rakeshwar Pandey requested management on behalf of employees to pay higher bonus because employees have contributed and put sincere effort to achieve satisfactory performance. The management as a good gesture agreed to pay 5.5% ex-gratia in addition to the Bonus to all employees excluding those who are covered by Company's Superannuation Scheme. Therefore, 15.5% Bonus will be paid to all eligible employees. This has been done in view of continuing co-ordial and harmonial relation between the management and employees of the Company. Though none of our employees are eligible for Annual Bonus as per the Bonus Act 1965, as they are being paid more Wages than stipulated in the Bonus Act, keeping into view our prevailing tradition, all the unionized employees are being paid Annual Bonus for the year 2007-08.

The minimum and maximum annual bonus payable to employees will be Rs.12,747/- and Rs.19,912/- respectively.

The agreement was signed by S/s.Prakash Sarode, Managing Director, J.B. Gupta, Sr. General Manager (Works), Pawan Kumar Pratap Singh, Works Manager, P.V. Rama Rao, Manager (Finance & Accounts) & K.K. Jha, Consultant (HRM) from the management side and from employees side S/s.Rakeshwar Pandey, President, Nandlal, Vice President & General Secretary, Suresh Prasad, Assistant Secretary, Parmeshwar Das, Treasurer and R.N. Sharma, Committee Member.

Inauguration of Advisor Room

To facilitate better working conditions to our visiting advisors and consultants, a separate office room with all facilities have been added. The office room was inaugurated on 17th September 2008 by our Managing Director, Mr. Prakash Sarode.

IMS - Surveillance Audit

As you are aware the Tata Pigments has adopted Integrated Management System (IMS) ISO 9001:2000; - ISO 14001:2004 and OHSAS 18001:1999.

As per schedule Surveillance Audit is being Carried out every year for validation of certificates. Accordingly Audit was conducted by Mr. A. K. Sengupta and Mr. Tilak Sen of British Standard Institution on 18th October 2008 and found no non-compliances and they have recommended for validation of certificates for a further period of one year.

Business Associates' Meet

Vendors / Suppliers / Transporters meet was organized on 30.12.208 AT 3.30 PM at Knowledge Centre, TPL, Jamshedpur. It was attended by 18 parties from Jamshedpur. Works Manager, Mr. P. K. P. Singh welcomed the parties and explained the objectives of undertaking this meet. They were addressed by Mr. P. V. Rama Rao, Manager (F&A), who explained the current economic scenario. Mr. P. K. P. Singh spoke about TPL's expectations from vendors and service providers and reporting procedures. They were also briefed about Tata Code of Conduct by Ethics Counsellor Mr. Bh. V. Satya Narayan Murty, global warming and its consequences and the Tata groups commitment to reduce the emission of carbon di-oxide and tri-oxide. The vendors raised various concerns. The meeting was extremely fruitful and helped in enhancing communication with the Vendors and Service providers.

Strategic Session

On 19th November 2009, a Brain Storming session on Strategic Management in respect of various activities of the company was conducted in TMDC, Dimna Centre. Besides officers of the various divisions of the company our important Business Partners viz., Mr. Shushil Agrawal of Jind Paints Manufacturing Company, Mr. M.K. Lakhotia of Universal Industrial Paints, Mr. S. N. Thakur of Grind Chem, and Mr. Narendra Sinha of Siva Inorganics attended in the morning session and contributed their views for overall growth of the company.

On this occasion all our important all India dealers and distributors were also invited to contribute their views in formalization of our strategy for overall growth of the Company in different segments. In the meeting all the dealers and distributors were informed about the companies various activities and future strategies; companies vision and mission and objectives, salient features of Tata Business Excellence Model and companies participation in the JN Tata / S Vishwanathan TQA and salient points of Tata Code of Conduct 2008.

TATA Code of Conduct 2008

टाटा कंपनी अपने लोगों को कामकाज हेतु एक सुरक्षित, स्वास्थ, स्वच्छ एवं अर्गोनॉमिक दृष्टि से उपयुक्त माहौल प्रदान करने का प्रयास करेगी। वह जिस क्षेत्र में कार्यरत है, वहां लागू स्वास्थ्य, सुरक्षा एवं पर्यावरण से संबंधित सभी नियमों का अनुपालन करेगी। टाटा कंपनी कर्मचारियों के स्वास्थ्य एवं सुरक्षा हेतु सर्वश्रेष्ठ प्रक्रियाओं को अपनाने के लिए प्रतिबद्ध रहेगी। यह प्राकृतिक संसाधनों का अपव्यय रोकेगी और पर्यावरण में सुधार, खासकर ग्रीनहाउस गैसों के उत्सर्जन के परिप्रेक्ष्य में, लाने के लिए प्रतिबद्ध रहेगी और अपनी सभी प्रकार की गतिविधियों में मौसम में बदलाव से होनेवाले प्रतिकूल प्रभाव को कम करने का प्रयास करेगी। टाटा कंपनी, अपने उत्पादों एवं सेवाओं के उत्पादन व विपणन के क्रम में आर्थिक, सामाजिक एवं पर्यावरण संबंधी संपोषणीयता हासिल करने हेतु प्रयासरत रहेगी।

All India Dealers & Distributer Meet

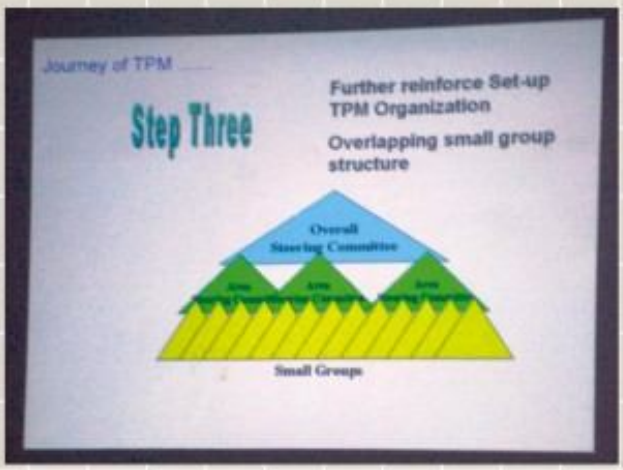
Korean Delegates

Korean delegates were here in Jamshedpur to attend a seminar organized by National Metallurgical Laboratory. During this period, besides visiting other tata group organizations, they have visited our factory to exchange business ideas. Mr. J. B. Gupta, Sr. General Manager (Works) highlighted our achievements in pigments and paint segments.

TPM Kick off And TPM Awareness Programme

TPM kick off was initiated by our Managing Director Mr. Prakash Sarode on 23.12.2008 He said that we are confident that the team members of Manager Model Machine will carry out an excellent job to enhance the efficiency of machines and their success stories will give inspirations to every one to horizontally deploy TPM in our entire organization successfully. On this occasion Mr. Ajay Upadhyay, Sr. Manager, TQMS, conducted awareness programme. 25 participants attend the programme in which the following topics were broadly covered :

- ☐ Introduction of TPM
- ☐ 8 Pillars of TPM
- ☐ Performance Parameters of TPM
- ☐ Major Losses
- ☐ Overal Equipment Effectivenss (OEE)
- ☐ Autonomous Maintenance (Jishan Hozen)
- ☐ Types of Abnormalities



Before deployment of TPM horizontally across the whole plant and machinery it was decided to apply TPM initially in some selected machines which are known as Manager Model Machines. Head of the departments are process owners of these model machines. Two Manager Model Machines are selected namely Boiler and SFD.

We are confident that TPM drive will enable the Company to achieve new targets month after month.

Fire Fighting

Fire Fighting Mock drill programme was organized in the company premises in which all employees had actively participated. Representatives of authorize dealer of Minimax M/s. Global Supply was kind enough to educate the employees on the various fire extinguishing equipment to be used for different types of fires. they have also demonstrated how to make use of these extinguishers in emergency situations.

Disaster Management

Disaster Management and preparedness training was organized on 19th September 2008 to judge the alertness of the employees in the factory premises. Whooper was blown. About ninety eight emloyees including contractors & visitors assembled at theassembly point. Mr. Ojha Education Officer, Central Board for Workers Education, was kind enough to make available himself to educate the purpose of such mock drills to all employees. Sr. G.M. (W) also addressed the gathering.

E - Learning

It is our consistent endeavour to make our employees more knowledgeable on on-line and off-line topics and also on various subjects and activities, an E-Learning facility has been added in our Knowledge Centre. The Centre was inaugurated by our Managing Director, Mr. Prakash Sarode and dedicated to the employees.