
Sustainable Development through Enhanced in-house capability building Through Training, and Mentoring: A Case Study

Vision of Directors / Management

A project is carried out at a medium size rolling mill. The management is passionate about making the rolling mill of world class and developing it to increase production by multiple times. They are very clear in thought process that unless an in house team is built the company can not survive in the global competition and also with the team efforts current operations can be optimized to enhance profits, growth and deliver better return on investment for the shareholders.

The management must be given credit to have a long term vision and patience towards team building. As a first part, the mill has employed around 20 engineers which itself is a new vision considering that in India, many of the medium size rolling mill industries are having very less to no engineers. These mills are completely dependent on the foreman for production and for maintenance they are totally dependent on outside parties including the equipment suppliers.

Exercise

As a first part of team building and development, comprehensive training plan was designed to create a solid foundation by strengthening the fundamentals. Rolling mill industry expert shouldered the responsibility of design.

Training Programme

Training was delivered by eminent experts having brilliant academic background and having long industry experience. It was not just the academic training but involved lot of practical and case studies sharing of knowledge gained over years. The total duration of training was for one month (calendar time of four months) for each batch and likewise two batches were conducted.

The broad topics covered during training included

- Metallurgy, Material Properties
- Reheat Furnace
- Fundamentals of Rolling Process
- Machinery Used for Rolling / Production
- Operation & Maintenance of Furnace & Rolling Equipments
- Utility (Pumps, Compressors, Water)
- Pneumatics & Hydraulics
- Electrical & Energy Conservation
- Instrumentation & Automation
- Mechanical (piping, valves, transmission & drives, bearings, lubrication)
- Soft Skills including Communication Skills, Technical Report Writing, Team Work

During the training, examinations were conducted regularly to assess the knowledge gained and ensure the complete participation and involvement / devotion of all participants.

Mentoring Concept

Having completed the training, the team was entrusted to work on the internal projects. However it was evident that the team was still unripe to work independently and would need guidance to see that the projects are moving in the right direction and on time to deliver positive results.

Mentoring is the main motto of SAN Techno Mentors and it was felt that this would be an ideal opportunity to undertake the mentoring project to develop the in house engineering and project management capability within the team. SAN Techno Mentors accepted the challenge and a group of experts was formed at SAN Techno Mentors which was lead by the rolling mill industry expert Mr. Shantaram Mayadeo.

Several assignments were identified and initiated, various teams of rolling mill staff including engineers, technicians, and fitters were formed and a team leader for each team was defined. Several tests and examinations were conducted to assess thinking capacity of engineers in technical subjects.

Assignment cum internal projects consisted of giving the teams some technical projects which would be challenging. It was decided not to spoon feed the teams. Various assignments taken together were so designed as to give a in-depth understanding of processes and engineering aspects involved. All assignments had an invisible thread through them.

Some of the technical assignments included:

1. Reel Bearing Assembly Modifications
2. Role Force Calculations
3. Chimney Weight Calculations
4. Thermocouples & Other Instruments Calibration
5. Furnace Heat Calculations
6. Furnace Efficiency Study
7. Reconstructing Mill Assembly Drawings with understanding of design concepts
8. Writing Mill Operating Manuals / Standard Operating Procedures(SOPs)
9. Training on Vernier Caliper, Micrometers
10. Failure Analysis Case Studies

One simple example of mentorship can be narrated as under:

One of the exercises was to teach how to use Vernier and micrometer and fits/tolerances. First 5 engineers were taught with shop floor practices. When they become well versed, they were asked to teach other engineers as well as fitters, turners etc. About 60 people were so trained. Although topic is elementary, for all engineers and fitters/turners it was an eye opening exercise, they started looking at each component in terms of end use, fit,

tolerance, how previously their lack of knowledge was resulting in a mess, reworking, and so on. They were operating in dark so to say. Now there is light.

Engineers were taught PERT/CPM. This they immediately started using in in-house projects that they were handling. Engineers felt they learned a very good and practical subject.

While working on the technical projects, SAN Techno Mentors also conducted workshops and training sessions to develop the soft skills of the team. The idea was to develop the HR and Project Engineering and Management skills of the team members. These included the skills related to Team Work, Inter Personal Relationship, Communication, Technical Report Writing, Decision Making, Presentation, and Documentation etc. Several team games and specially designed “Scenario Based” Role Plays were conducted. This enhanced the ownership and bonding between the team members and also built the confidence to tackle any issues and day to day working challenges.

Another indirect benefit was that many who could not talk 5 sentences correctly were now courageously coming on the stage and talking. Where boys would hardly talk to each other except on account of some work, now their reserve dissolved, there is now free mixing up of engineers of diverse backgrounds, and team spirit has increased.

What they also learned from these case studies is that, each issue has many sides. It is necessary to examine each side before the decision making.

Support from Foreman and his team

A special mention and appreciation is required for the foreman and his team who supported all the projects wholeheartedly. It was because of the harmony between the production and maintenance teams the success was guaranteed. The role of engineers was to support foreman in improving mill efficiency by using all analytical and engineering techniques and putting efforts to refine manufacturing processes.

Female Engineer’s Contribution

In this mill significant numbers of female engineers are induced in the team. These engineers have made a big difference in enhancing the team spirit and have shown the courage to work in the steel industry which otherwise is considered to be difficult for the females.

SAN Techno Mentors’ Value Addition

Throughout this mentorship exercise, the technical director in the rolling mill never gave any outline, any syllabus, any road map, nothing. SAN Techno Mentors totally designed and implemented the way it thought it should be done. Many of the exercises, assignments, case studies were based on the SAN Techno Mentors’ Expert’s perception of what needs to be done.

Results

The team worked passionately to make the projects successful and deliver positive results in time. Although immediate payoff in RS terms is difficult to evaluate in ALL areas however in some areas the rolling mill has already started getting rich dividends on their investment on training and mentoring.

Through the mentoring assignments and internal projects the said rolling mill has got many benefits listed below:

1. Successful completion of new automated bar bending project
2. Successful completion of new gasifier project
3. Successful handling of emergencies
4. Reduction in reel bearings consumption due to modified lubrication assembly
5. Reduction in furnace temperature (Reduction in energy / power consumption)
6. Establishment of quality circle
7. Development of mill operating manuals and SOPs
8. Development of procedures and documentation practice
9. Less Dependence on suppliers/vendors/ machinery manufacturers

Number of additional benefits includes:

1. Retention of engineers and human resources due to challenging work
2. Ownership of responsibilities
3. Accountability for results
4. Increase in self confidence
5. Development of analytical skills
6. Enhanced technical knowledge
7. Excellent team spirit and team work
8. Improved communication skills
9. Improved technical writing capability
10. Ability to tackle emergencies & capability to handle day to day challenges
11. Increased dialogue and understanding between maintenance and production teams

Conclusion

It is proved that the performance excellence can be achieved by undertaking internal projects. The best method to achieve this is to build an internal team and achieve sustainable development through enhanced in-house capability.

“Survival, Growth and Excellence of the Fittest” is the latest saying.

“Training and Mentoring” Is the new mantra which has become mandatory to make the internal team competent to take on challenges of the real world and lead the path to success.