INDROX GLOBAL PVT LTD.

HYDROCHLORIC ACID REGENERATION PLANT & IRON OXIDE PRODUCTION FACILITIES

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52nd Rolling Mills Operating Committee (RMOC) Meetings

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Prime objective of this meeting is to discuss various developments & Technological Advances in Rolling Mills for improving the performance of the Mills and for better quality of the product. The technological development should also contribute to overcome the Operational challenges faced by mills. The final recommendations and outcome of the present summit is to be implemented in the mills to improve the overall performance and better techno-economic achievement through better quality parameters.

In order to achieve the above goal, we Indrox Global would like to present and share our experience and expertise in the field of Acid Regeneration process, which will help in achieving greater efficiency to produce high quality cold rolled sheets. Besides improvement in the quality of cold products our Acid Regeneration process controls the negative impact on the environment.
Our brief Introduction

Before I proceed with the technical presentation, I would like to give a brief introduction about our company - Indrox Global Pvt Ltd.

The company Indrox Global came into existence with the noble idea of a Technology known as - The Acid Regeneration Plant, for the treatment of the Waste Pickle Liquor acid by separation of Iron Oxide from the Waste Pickle Liquor and supply of fresh acid to the plant. Basically, it is the process of converting a harmful waste into fruitful utility item at the same time protecting the environment from hazard acidic pollution.

The plant initially came up with association of M/s International Steel Services Inc. Pittsburg, USA in the year 2000. Subsequently, Indrox Global became an independent Indian partnership company.
Indrox Global main function is to Design, Engineering, Supply, Installation & Commissioning of Acid Regeneration Plant on turn-key basis and marketing of Iron oxide.

Now, Indrox is one of the leading technology suppliers for Acid regeneration and recovery of Iron Oxide from Waste Pickle Liquors. It is also established as one of the leading organization for doing operation & maintenance of Acid Regeneration Plant, supplier of spare, components & consumables and leading marketers and exporters of Iron Oxide all over the world.

We are capable of taking up Design, Manufacture, Supply, Installation, Commissioning of the Acid Regeneration Plant for commercial production of any capacity small or big.
Our Expertise for Acid Regeneration Plant (ARP)

• Total Turnkey solution: Design, Engineering, Supply, Install & Commissioning

• Study & Upgrade: Pre-Project Studies, Feasibility Studies, Plant Upgrades & Replacements

• Operation & Maintenance (O & M) - Operate & maintain plant efficiently to give long life and efficient output.

• Marketing of Iron Oxide: Monitor & Control parameters to produce oxide of different grades to meet client’s requirement depending on application

• Spare Management with Central procurement system, World Wide Sourcing of Equipment, Re-Engineering with local substitution, Stock analysis.
INDROX GLOBAL PVT. LTD.

- Design
- Engineering
- Procurement
- Erection
- Project Management
- Turn Key Capabilities
- Plant Upgrades
- Sourcing of Equipment
- Operation & Maintenance
- Oxide Marketing

Design

Installation

Iron Oxide

Oxide Marketing
Our activities in India:

To set up Acid regeneration Plants for Indian steel companies and manage the operation & maintenance of these plants with marketing of Oxide produced.

IGPL employs more than 200 personnel in field of engineering, production, procurement and marketing.

Presently, IGPL is handling and processing about 75 million liters of waste pickle liquor per year, at its own plant at Tarapur and SAIL/Bokaro Steel Plant. The total Iron Oxide produced in the process is sold by the expert marketing team of Indrox Global to the Industries involved in manufacturing, pigments, paints, ferrite etc.

IGPL has its own Acid Regeneration Plant at Tarapur, Maharashtra where it processes waste pickle liquor generated from TATA, JSW, ESSAR, BAJAJ Electricals, STERLITE, BHARAT Wire & Ropes and UTTAM GALVA steel mills since 2004.

Our Tarapur plant also certified ISO 9001: 2015 for QMS & ISO 14001:2015 for EMS.
Waste Pickle liquor (WPL) is an acidic effluent generated by Pickling Line in Cold Rolling Mill of Steel Plant. Being acidic in nature it’s been a potential hazard to the environment even after neutralization treatment. The Acid re-generation technology has been developed such that it provides total relief from Environment hazards in disposal of these acidic effluents. The technology used is Pyro-hydrolysis of Waste Pickle Liquors in Spray Roaster by recovering hydrochloric acid & Iron oxide.

The economics of the process is promising as apart from regeneration of usable 18% strength Hydrochloric acid (yield 99%) which can be used back in Pickling process, it also produces saleable quality Red Iron Oxide, generating revenue from the sale proceeds.
Contribution of ARP in improving the quality

Generally product of the Cold Rolling Mill is used by automobile and other important industries. The cold rolled coils produced are used in the everyday utility vehicles in the form of two wheeler, three wheeler and multi wheelers, as such any defects may cause damaged to human life or the property in larger scale. It should be always kept in mind that manufacturing of cold product should not have any negative impact on our environment at the same time the global users should not have any negative feedback or complain about the quality of the product. No one can rule out the global opportunities which are knocking the doors of Indian economy. Indian entrepreneurs must have to achieve manufacturing excellence and have to carefully work upon competitive enhancement for their final product. Keeping these factors in mind, the quality concept is generally focused over four "S" i.e. Shape, Size, Surface and Safety.
The major contribution of Acid Regeneration Plant is improving the surface quality of strips or the Cold Rolled Sheets. Acid Regeneration reduces the trace impurities in the regenerated Acid produced from the plant which is used in pickling of strip/Coil, resulting into much better surface finish as compared to the surface finish obtained in the process through fresh acid purchased from the market.

Further enhanced reduction of impurities is achieved by using DM water in Acid regeneration plant. The reduction of impurities like Calcium, Sodium and Manganese reduces the spotting on the strip surface, which is very much needed for a better quality of cold rolled product.

At present Auto Sectors, which are the major consumer of cold rolled strip/coils always prefer strips/coils with minimum spotting on the surface, which can be better achieved by using re-generated acid from ARP.
We, Indrox Global are committed to produce such re-generated acid through our ARP route which can assure the best quality of cold rolled sheets/coils/strips with much improved surface quality.

In order to further enhance the quality of Regenerated acid, many countries like USA, Japan, EU, China are adopting the process of pre-treatment of Waste Pickle Liquor (WPL). In some of the plant Silica Reduction Process (SRP) is used for pre-treatment of Waste Pickle Liquor (WPL). SRP not only improves the quality of Regenerated Acid but also improves the quality of Iron oxide produced from ARP. Though SRP is very common in USA, EU & China, it is yet to be part of ARP in Indian Steel industry.

In India, we “Indrox Global” have the privilege of having Acid Regeneration Plant with SRP facilities at our Tarapur plant. SAIL, Bokaro Steel Plant is another facility to have the SRP in ARP-3 (CRM – III).
Observations

Due to Economic globalization industry is facing severe competition from foreign competitors. To get success in this business environment, the industries significantly improve productivity and quality and reduce the wastage in their products.

In addition to that the energy consumption is the one major factor which has to be considered for being competitive in the market. SAIL/Bokaro Steel Plant has taken major steps for effective process quality control their by drastically reducing the rejection in the end product i.e. Cold Rolled product. This has also been highlighted in the International journal of Scientific & Engineering research mentioning- “A lot of work has been carried out at SAIL/Bokaro Steel Plant to minimize the defects in Cold Rolling Products”.

We are a privileged partner to such organization with our contribution through Installation, Operation & Maintenance of Acid Regeneration Plant. SAIL/Bokaro Steel Plant is using DM water plant and the Regenerated Acid from our ARPs, which has resulted into tremendous improvement in the surface quality of Cold Rolled Products. Reduction of impurities like Calcium, Sodium and Manganese is also helping in reducing the spotting on the strip surfaces.
Conclusion

Sometimes it is challenging for the Strip/coil produces to justify economically to have ARP with SRP or even without SRP. Though for large and mid size strip producer, benefit of eliminating pollution and improving the strip quality is enough justification to install ARP.

For smaller strip producer, it may be difficult initially to justify having ARP due to its relatively high installed cost compare to Effluent treatment plant but in long run and considering present Environment condition it is always better for smaller mill to go for ARP. For this IGPL offer central processing plants, so that financial burden is shared.

IGPL being a specialist in the field of supplying ARP with or without SRP also has considerable experience in operation and maintenance of plants as well as production and marketing of Iron oxide. IGPL can install a central processing plant for processing of waste pickle liquor produce from several mills, thereby reducing the financial burden to the strip producers.
In summary, IGPL has the following special benefits:

- Install central processing ARP unit to reduce the financial burden particularly on smaller strip producers.

- Operate and maintain the ARP plants to relieve the Steel mills from operating ARP which are chemical plants with different set of operating concepts then Steel making process. This will give Steel Mills more resources to capitalize on their core business.

- Operate and maintain the ARP plants to produce quality regenerated acid, which can be used for obtaining better finish in Cold Roll strips/Coil or Sheets.

- Produce suitable quality Iron oxide as per requirement of various applications and market requirement so that the revenue from selling Iron oxide would benefit the users.
We like to thanks BSL, Bokaro for giving INDROX an opportunity to be part of BSL in making high Quality Cold Rolled Steel and keeping the Environment Green there by reducing carbon footprint

THANKS to all for your time & patience hearing