



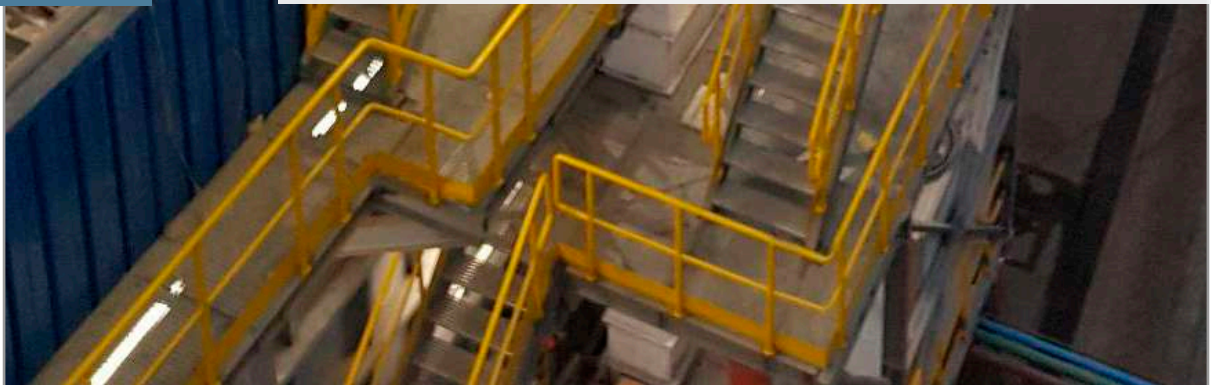
WAE LZ OXIDE PLANTS

sarralleTM

Environment & Energy

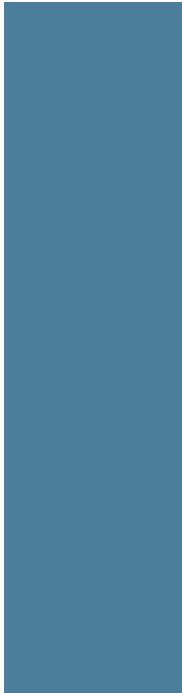
The future as BUSINESS OPPORTUNITIES for
"Waste Ferrous Hazardous Material"

metalrecycling@sarralle.com





WAEZL OXIDE RECOVERY ACTIVITY fits into the Eco Industry sector, because it involves recycling activity of EAF DUST generated in Steel Melting Plants.



Governments growing concerns about waste disposal on their lands are increasing pressure on the existing heavy industry to better manage the waste of their processes and avoid the use of landfills.

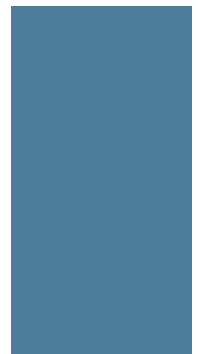
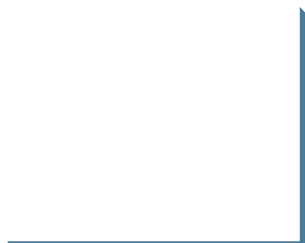
Regulations are becoming more and more demanding over the coming years.

The response to these regulations can signify increased COST for a company or can create a BUSINESS OPPORTUNITY.

Scrap EAFD
GENERATION HAZARDOUS MATERIAL



Zinc Source





BUSINESS OPPORTUNITY

SCRAP use in Steel Melting Shop:

The use of SCRAP itself makes STEEL MANUFACTURING more PROFITABLE.

SCRAP is a source of ZINC, which translates into the option of EAFD RECYCLING in a WAE LZ OXIDE (WOx) PLANT, instead of considering to Landfill.

The possibility of making a profit from EAFD drives the motivation for a more efficient collection system (Fume Exhaust System) and obtain cleaner emissions in the Steel Melting Shop.

WOx Plant means HAZARDOUS MATERIAL TREATMENT:

COST SAVINGS & PROACTIVELY ADDRESSING FUTURE ENVIRONMENTAL RESTRICTIONS.

The cost of not recycling is variable and depends on Federal and Local Regulations, Government Environmental Concerns, and other factors.

Landfill cost for EAFD can be around 50-100 \$/Tn.

Created Sellable Products:

Waelz Zinc Oxide:

Waelz Zinc Oxide (WOx) sales Price is mainly linked to the Zinc Value in the market (London Metal Exchange). This value fluctuates around **1.600-2.400 \$/ZnTn**.

Depending on productivity, a ton of EAFD yields around 30% weight WOx.

Inert Slag:

It is used as an iron aggregate and as fill material in the construction industry, rockwool, gardening,...

Sales prices can have big variation. Reasonable price can be consider between **1-5 \$/Tn**.

WOx Plant Operating cost:

This value also depends on electricity, Natural Gas, Water, Reducing Agents and Lime cost in the market, but a current estimated value is around: **160-180 \$ per EAFD Tn**.

The only created WASTE: Stack Emissions

The plant has a single emission source constituted by the Waelz Kiln Stack.

Additionally, prior to the Stack there is an Additive System where dioxins, furans, and traces of hazardous materials are removed.

Zinc Smelters
Zinc Compounds
Manufacturers

Cement/Roadfill

WAE LZ OXIDE PLANT Raw Material: EAFD





ACTIVITY DESCRIPTION

WOx Process:

Best available technique for EAFD recycling, according to European IPPC Bureau and EPA (USA).

Main Equipment:

- Rotary Kiln => through combination of reducing / oxidizing atmosphere => Zinc and Iron are separated.
- Vaporized Zinc is cooled in a Settling Chamber, and it is further collected in a high efficiency bag house installed next to them.

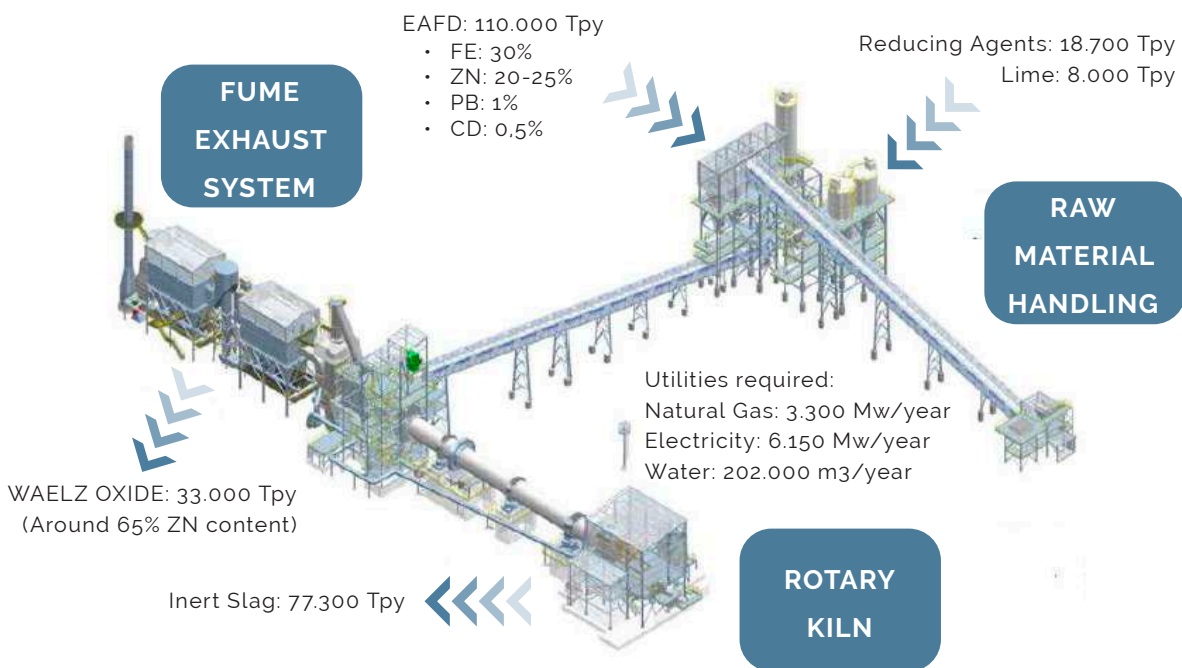
Single Emission point: Fume Stack

With a prior System to remove dioxins, furans and hazardous materials from the off gases.

SARRALLE's CONTRIBUTION TO THE MARKET

EPC Construction of 110.000 Tn/year

with Ø4 x 55 m Rotary Kiln for Pyrometallurgical and Hydrometallurgical processes



The Pyrometallurgical process is enough for WOx production, but the Hydrometallurgical process improves the zinc concentration of the Final Product, improving investment return.

RECENT REFERENCES

1. BEFESA SILVERMET ISKENDERUN (TURKEY): 2019
2. BEFESA ZINC ENVIRONMENTAL PROTECTION TECHNOLOGY (JIANGSU) Co., Ltd.: 2021
3. BEFESA ZINC ENVIRONMENTAL PROTECTION TECHNOLOGY (HENAN) Co., Ltd.: Commissioning and Ramp-Up Stage

OTHER WORKS:

BEFESA ZINC ASER: (Several since 2014)



SARRALLE AZPEITIA - HEADQUARTERS

B* Landeta, C/Orendaundi, N° 7
20730 Azpeitia (Gipuzkoa) - Spain
T +34 943 157088
sarralle@sarralle.com

SARRALLE ITALY

Via Galileo Galilei 12/C
33100 Udine - Italy
T +39 0432 1484 337
sarralleitalia@sarralle.com

SARRALLE USA

Montlimar Place Office Building
1110 Montlimar Drive Suites #555
Mobile, Alabama 36609 - USA
T +1 251 465 7045
sarralleusa@sarralle.com

SARRALLE CHINA

No. 280 Fumin Road
Changzhou City, Jiangsu Province - China
T +86 173 5828 2776
sarrallechina@sarralle.com

SARRALLE INDIA

NH-6, P.O.- Mahishrekha, Mouza - Madhabpur, P.S.-
Uluberria, Dist.- Howrah, Pin 711303 - India
T +91 033 2621 0820/31
sarralleindia@sarralle.com

SARRALLE UAE

Unit No. 206, Jumeirah Business Center 5
Plot No. W, Jumeirah Lakes Towers
P.O. Box 117433 - Dubai - UAE
T +971 529 801 728
sarralledubai@sarralle.com

SARRALLE ALGERIA

Siège Groupe Sider CHAIBA UV12
B. N°4 Sidi Amar Annaba 23000 - Algérie
T +213 (0) 38574522 / +213 (0) 38574523 /+213 (0) 38574532
info@smieengineering.com

SARRALLE MEXICO

Av. Milimex Nro. 311 Parque Industrial
Milimex , Apodaca, 66637 Nuevo León - Mexico
T +52 (81)10900640, +52(81)10900554
ventasmx@sarralle.com



ARE YOU INTERESTED
IN LEARNING MORE
ABOUT THE PROPOSED
OPPORTUNITY?

LET US MEET TOGETHER
AND HAVE A MORE
DETAILED PRESENTATION

Social Media

SARRALLE WEB
FACEBOOK
INSTAGRAM
LINKEDIN

Contact

metalrecycling@sarralle.com