TATA STEEL

#WeAlsoMakeTomorrow

THE INDIAN INSTITUTE OF METALS

IIM

Metallurgy
Materials Engineering

Presents

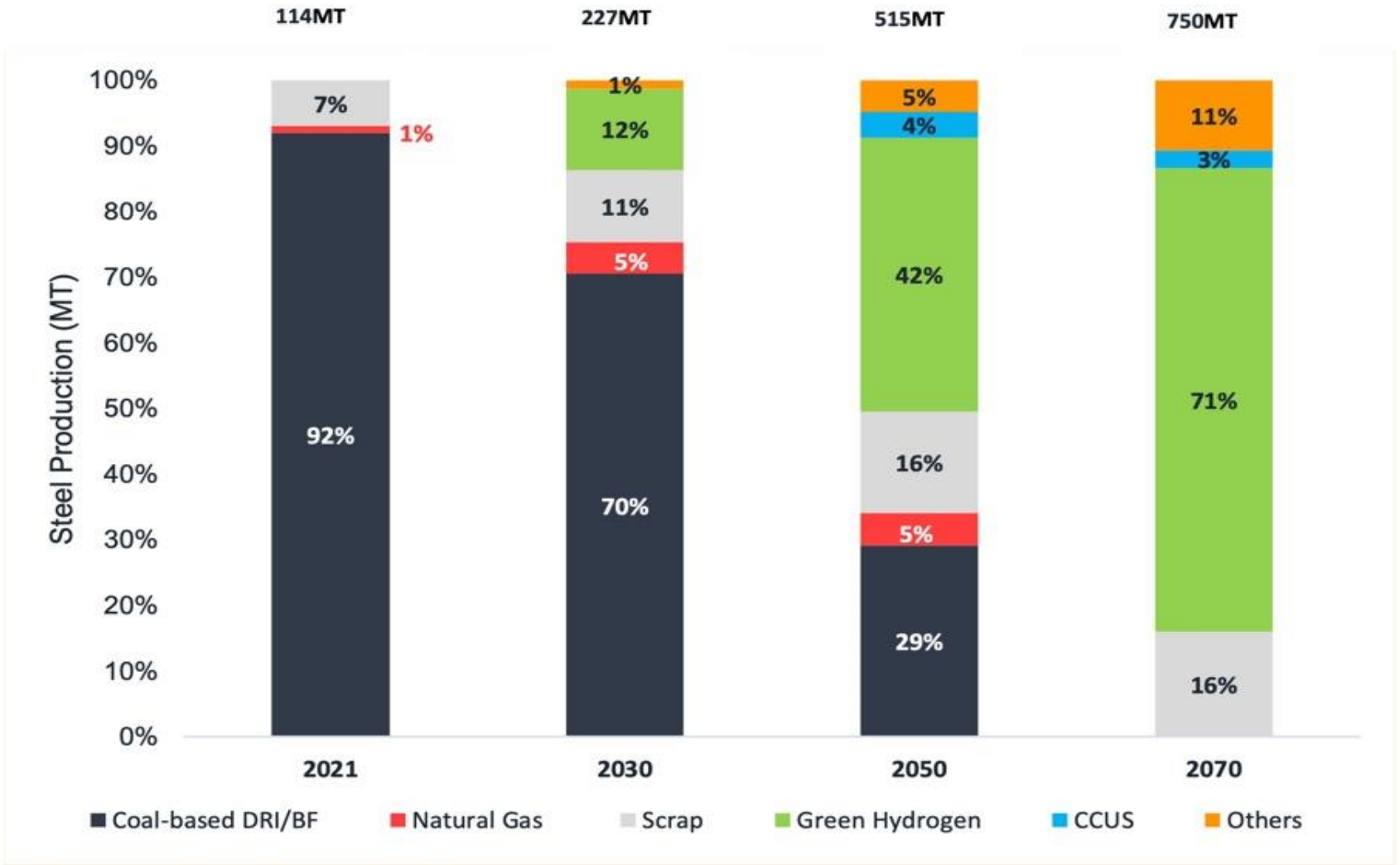
International Conference on

GREEN & SUSTAINABLE IRON MAKING

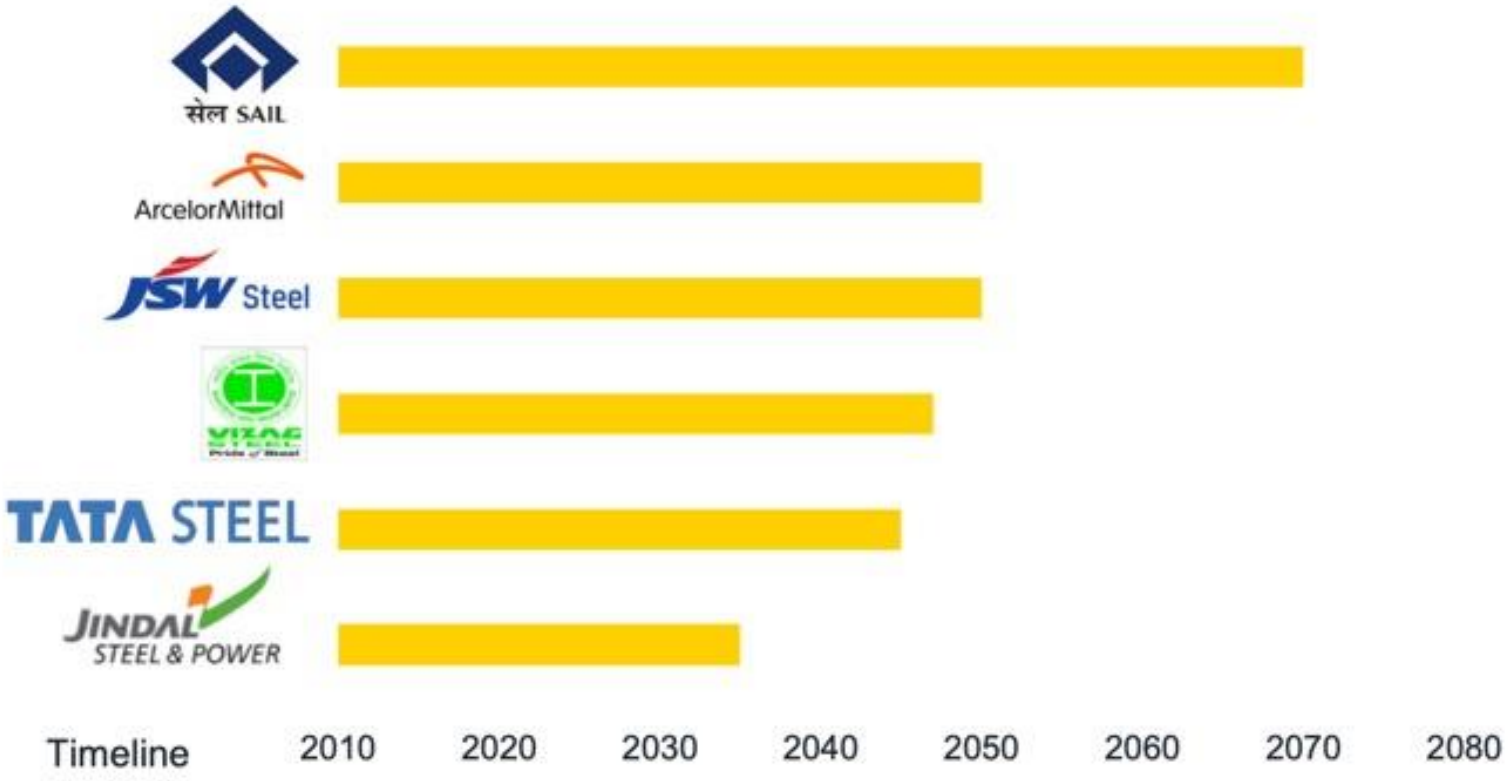
January 17 – 18, 2024

Title of Paper: Green and sustainable steel making

Presented By: Rajesh Kumar



Source: Industry Reports, JMK Research
Note: Coal-Based processes including DRI-EAF, DRI-EIF and BF-BOF route. Others can include Molten Oxide Electrolysis, Electrowinning etc.



Source: Company websites and news articles, JMK Research

History

In 1965 Kalfrisa was founded… in 2024 we are still at your service

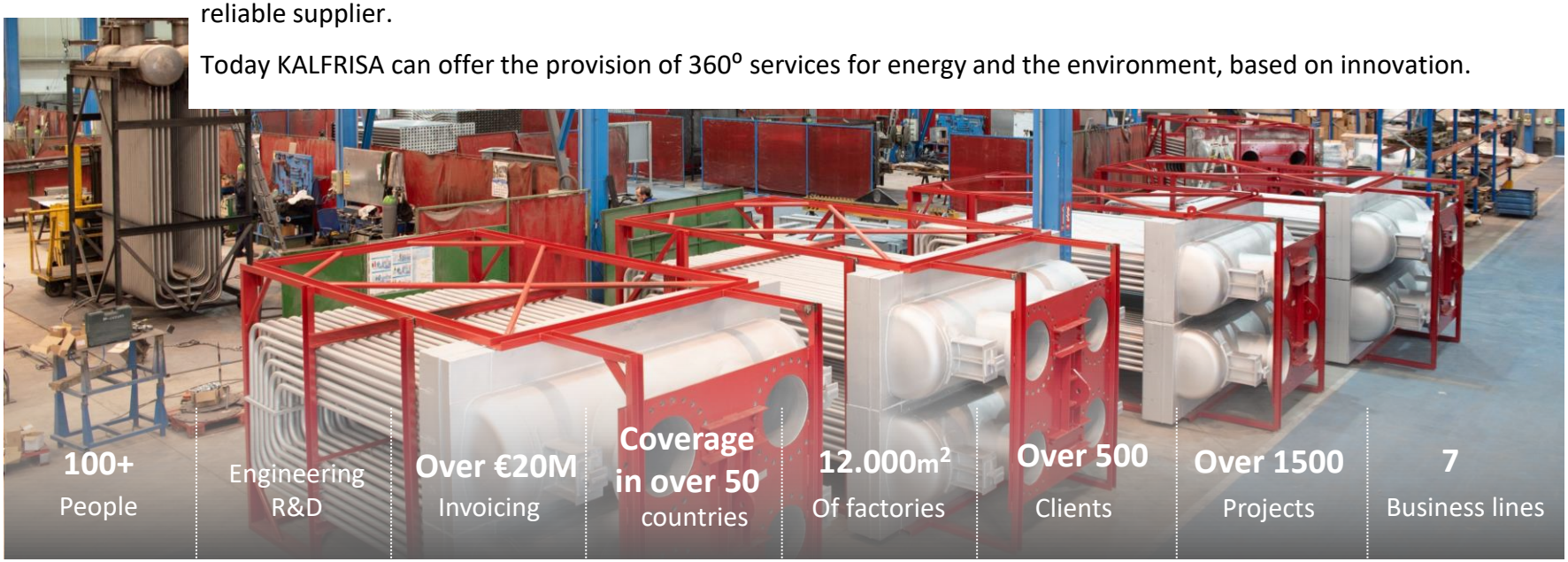
1965	Industrial cooling and heating. Industrial kitchens
1975	Heat recovery and air heaters.
1980	Drying processes
1990	Waste recovery
1995	Funeral sector and animal remains cremation
2005	100% Aragonese tackles international markets
2009	Saunier Duval incineration division purchase.
2010	Kalfrisa Polska
2017	New facilities
2021	Kalfrisa LATAM
2022	Expansion of new factory
2023	Kalfrisa India

In figures

Forged by experience and guided by technology

We are the result of a process of constant evolution seeking specialisation and quality, established to be a reliable supplier.

Today KALFRISA can offer the provision of 360º services for energy and the environment, based on innovation.



Kalfrisa as an Energy Management, our R&D team is working on below subjects –

- On hydrogen combustion with different universities as we all know that that hydrogen will be a key player in the future and we have to be sure analyzing how hydrogen can be effective in the energy and DRI in particular.
- Digital Twin Technology to analyse the life and performance of exchanger by analysing different parameters available at source.

Our policy

4 pillars of our sustainability programme

ENVIRONMENT

CARBON FOOTPRINT

Waste reduction Reduction of energy consumption
Water consumption
Reduction of greenhouse gas emissions

SOCIAL RESPONSIBILITY

HUMAN RESOURCES

Talent attraction
Creation of inclusive employment Integration of young people Training
Work-life balance
Care for the work environment

COMMITMENT TO THE COMMUNITY

Local acceptability
Commitment to shareholders
Support for elimination of inequality in the area
Seal of social responsibility

HEALTH & SAFETY

Target of zero accidents in the workplace Training actions Internal audits

COMMITMENT & TRANSPARENCY

SUPPLY CHAIN

Procurement process and its environmental impact
Maintaining the working conditions of subcontractors

CORPORATE GOVERNANCE

Principles and standards that regulate the corporate governance bodies

ETHICS

BUSINESS ETHICS

Transparency
Responsibility
Data privacy
Respect for human rights

Sectors

Heat Recuperators

With heat recuperators, a significant part of the thermal energy of exhaust gases of any production process are absorbed and transmitted to another fluid, normally the combustion air of the same process, thereby achieving savings of up to 60% in fuel consumption and a drastic reduction of atmospheric greenhouse gas emissions.

Steel industry. Reheating furnaces, forges and treatment furnaces.
Glass industry. Melting furnaces, whether using earth, chopped glass or mixed materials. Enamel industry. In frit fusion furnaces.

Our manufacturing in this field encompasses:

- Radiation recuperators:
  - With pipes.
  - Double lining.
- Convection recuperators, with pipes.
- Combination of these two types.

Heat recuperators - Examples

Heat recuperators – How they work

In short, they are installed in the flue gas duct of the furnace and preheat the combustion air required in the furnace burners.

They are tubular exchangers made of carbon or stainless steel and can work with parallel or countercurrent currents.

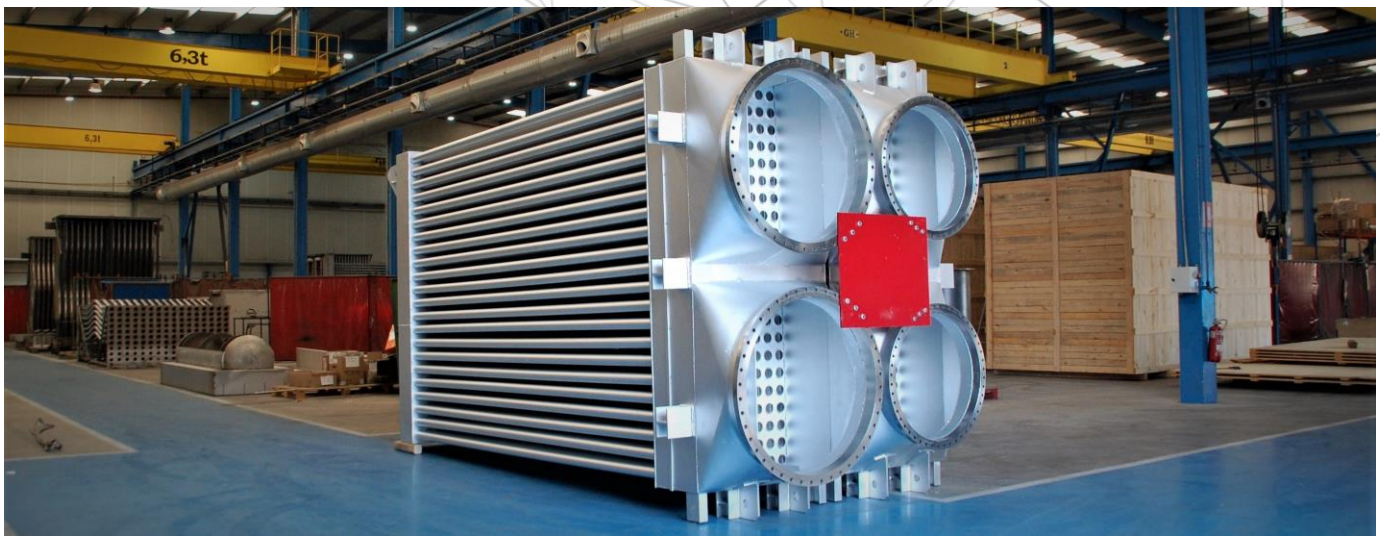
They work with combustion gases of any fuel, with or without Sulphur.

They can preheat any other gas in addition to air, such as the fuel itself if necessary.

Installing several units in parallel, they can be used in furnaces of any capacity and we have references up to 450t/h.

Heat recuperators – What they bring

- Up to 60% fuel savings – ROI in a few months
- Direct impact in greenhouse gas emissions
- Improved flame quality – Better radiation / heating capacity
- Low or no maintenance – Long lifetimes

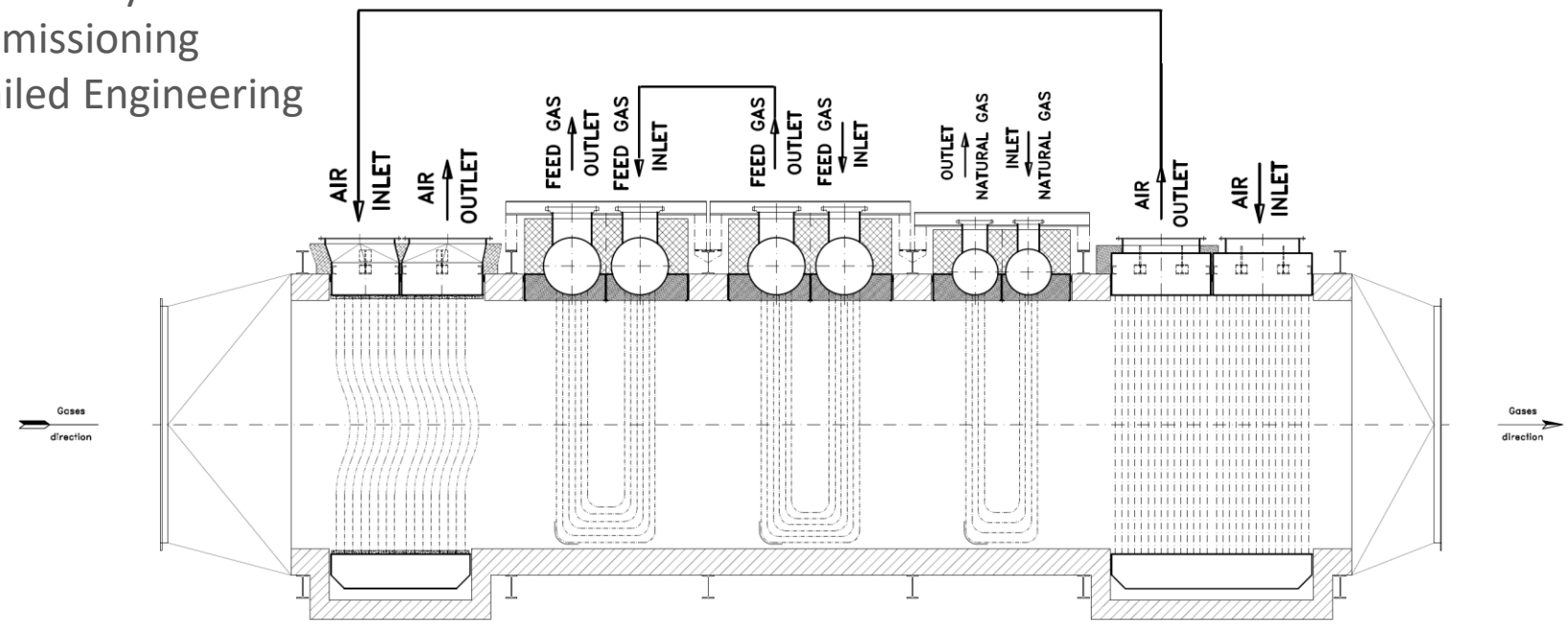


Heat recuperators – Aplications

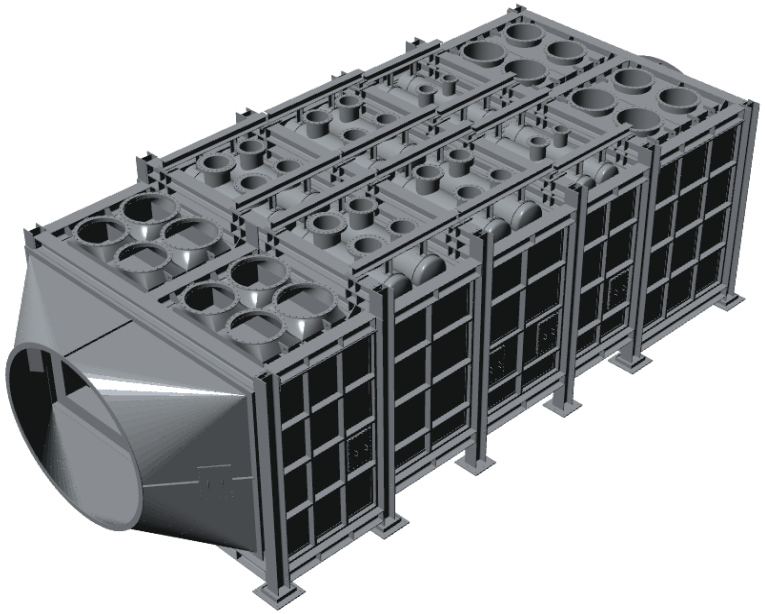
- Rehearing furnaces – Long and Flat product
- Heat treatment furnaces
- DRI modules with MIDREX Technology
- Galvanizing lines

Heat Recuperators – DRI plants for MIDREX technology

- Spares – Original / Redesigned
- New complete Heat Recovery Systems – Increased Capacity
- Consultancy works
- Commissioning
- Detailed Engineering



Heat Recuperators – DRI plants for MIDREX technology



Sectors

Treatment of industrial emissions

The purification of gases and the environment is one of the most important activity areas of Kalfrisa. Our commitment to the environment has led us to develop equipment for the destruction and treatment of volatile organic compounds (VOCs) which are generated in different industrial processes.

- Chemical and/or pharmaceutical industry
- Automotive industry
- Flexographic industry, rotogravure and ink printing processes
- Coverings of metallic surfaces
- Plastic manufacturing industries
- Emission of odours
- Any application where organic solvents are used in the process

Pol. Ind. Malpica, calle D, no.
65
50016, Zaragoza - Spain
tel. 976 470940
info@kalfrisa.com
www.kalfrisa.com

KALFRISA
ENERGY & ENVIRONMENT