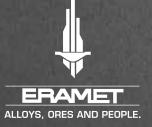
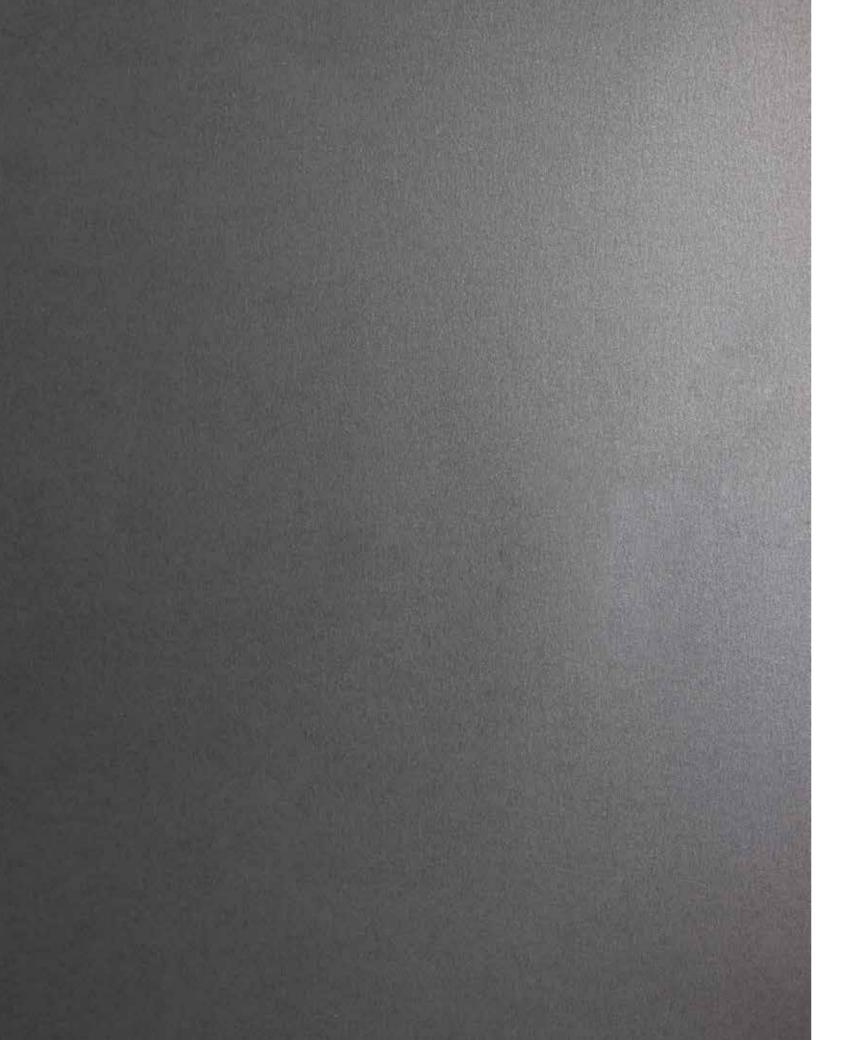
# BEINGERAMET

ANNUAL REPORT **2015** 





#### 04. **BEING ERAMET**

INTERVIEW WITH PATRICK BUFFET, CHAIRMAN & CEO

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**50.** Chapter 5 **GOVERNANCE** 

Message from

#### **Patrick BUFFET**

Chairman & CEO

## "The metal market crisis calls for great discipline. By making our cost reduction measures faster and deeper, ERAMET will be able to cope with this difficult period."

he ERAMET Group is facing a crisis of exceptional length and intensity. Like every global mining and metallurgical group, ERAMET is dealing with the lowest metal prices for more than 15 years. All the Group's metals have been badly hit at the same time. Nickel prices dropped almost 42% from December 2014 to December 2015. Manganese ore prices fell even further, by 49% over the same period.

At these price levels, the vast majority of producers, especially in nickel, are selling at a loss. This situation results from the slowdown in Chinese industrial output and the ongoing slackness of global economic growth.

A shift to significant overproduction in relation to declining Chinese demand has clearly occurred. However, growth trends on the aviation market remain healthy, which has enabled Aubert & Duval to improve its results.

The Group's 2015 results, therefore, were significantly impacted. While sales were stable at €3,109 million, current operating income totalled – €207 million and net income was – €714 million after taking into account €668

million in asset impairments and tax receivables. Debt amounted to €878 million at the end of 2015, with a net debt-to-equity ratio of 36% before impairments (49% after impairments in 2015). The Group's financial liquidity totalled €1.6 billion as of December 31st, 2015. To address this unprecedented crisis, the Group has undertaken robust measures to protect its cash reserves. These measures are particularly reflected in the suspension of major projects and the restriction of capital expenditure to safety and strict maintenance. In 2015, capex was reduced to €267 million, a decrease of 23% compared with 2014 and 55% compared with 2013.

hese measures take the form, in particular, of the 2014-2017 cost reduction and productivity improvement plan, which targets €360 million annual impact on current operating income by the end of 2017 compared with 2013. The Nickel, Alloys and Manganese divisions and the Group's support departments are jointly and fully committed to the process.

As of the end of 2015, half of these gains have been secured. The efforts made on every level will continue on a disciplined basis in 2016 and 2017.

Finally, the Group has begun an asset divestment plan. Any buyers will be selected on the quality of their bid, including the jobs side.

Like every group in its sector of business, ERAMET is going through a difficult period. We must continue to make cash generation the priority in 2016.

RAMET can count on its competitive advantages: world-class mineral reserves in terms of both content and lifespan and strong technological skills across the metal value chain. Finally, its activity is buoyed over the long term by major changes in the world and lifestyles, such as urbanisation, growing mobility, improving living conditions for the middle classes, transport and power generation.

Tomorrow, all of these transformations will drive consumption of raw materials and, as a result, metals, alloys and superalloys.



HIGHLIGHTS

ERAMET ANNUAL REPORT 201







HIGHLIGHTS









HIGHLIGHTS

ERAMET ANNUAL REPORT 2015









INDONESIA

(Jakarta

(SLN)

5 mines:

Kouaoua

• Tiébaghi

Doniambo metallurgical plant

(ferronickel and nickel

 Népoui • Poum

• Thio

matte)

Weda Bay Nickel,

**NEW CALEDONIA** 

Société Le Nickel

Halmahera Island

# GROUP

**NICKEL** 

MANGANESE

#### **BELGIUM**

ERACHEM **COMILOG Tertre** (manganese chemistry

and copper solution recycling)

**SPAIN** 

Usine Metallied Irun (powder metallurgy)

#### **ITALY**

Aubert & Duval **ADES** 

(distribution centre)

## Spain I Taiwan I United Kingdom I United States

Brazil I Germany I India I Italy I Japan I South Korea I

**INTERNATIONAL** 

The Group is a major industrial

performing to high standards

meets demands over the long

term and develops strategic

materials and products with

in line with the 21st century

industrial world.

increasingly high performance

Headquarters in Paris I ERAMET Research

and ERAMET Ingénierie in Trappes I Shared Service Centre in Clermont-Ferrand

**ACTION &** 

**GROWTH** 

player on five continents,

of responsibility. ERAMET

#### 3 ERAMET Norway

- Porsgrunn
- Kvinesdal
- TTI Tyssedal plant

#### UNITED KINGDOM

Warrington (high speed steels)

> ERAMET Alloys UK (sales & marketing office) kel and cobalt salts)

#### **SWEDEN**

3 Erasteel plants: · Långshyttan

Söderfors

 Vikmanshyttan (high speed steels)

#### NORWAY

#### plants:

- Sauda
- (manganese alloys)

#### (titanium dioxide and high-purity cast iron)

(metal powders: cobalt, Erasteel Stubs pre-alloys, tungsten,

> ERAMET Sandouville plant (high-purity nickel, nic-

#### Erasteel : · Champagnole

FRANCE

COMILOG

(manganese alloys)

Eurotungstene plant

Dunkerque

Grenoble

(high speed steels) Commentry (high speed steels)

Brown Europe (drawing)

#### Forges de Monplaisir (toll forging)

Aubert & Duval -

La Pardieu (support services)

Aubert & Duval -TΔF (heat treatments)

Erasteel Chalon-sur-Saône (service centre)

Aubert & Duval Hevrieux (distribution centre)

#### • 6 Aubert & Duval plants:

- Firminy Imphy
- Interforge Les Ancizes
- Pamiers (close die-forged parts, forged parts, long products, tooling)
- UKAD plant (titanium processing)

• Ecotitanium (titanium recycling)

MKAD (titanium part Maboumine (polymetallic deposit) machining)

#### SENEGAL

 TiZir Grande Côte Opérations (ilmenite and zirconium)

EUROPE/AFRICA

#### GABON

logistics site

Setrag:

company

COMILOG: Moanda mine and sintering plant • C2M: Moanda

metallurgical complex Owendo

 COMILOG Far East Transgabonais railway **Development Ltd** concession operating (Shanghai)

> COMILOG Far East **Development Ltd** (Hong Kong)

CHINE

ADMDT Wuxi

(distribution centre)

Erasteel Tianjin

(high speed steels)

COMILOG Guilin

(manganese alloys)

GECC Chongzuo

Private Ltd

SQUAD

die-forging)

(distribution centre)

(forging and closed

(manganese

chemistry)

(nickel deposit) Weda Bay Nickel

ASIA/OCEANIA



#### ERACHEM

USA

#### COMILOG Baltimore (manganese chemistry)

 BMC Butler (ferromolybdenum and ferrovanadium)

#### GCMC Freeport (oil catalyst recycling)

ERAMET Marietta (manganese alloys)

#### ERACHEM COMILOG New

(manganese chemistry)

Erasteel Romeoville (distribution centre)

#### MEXICO

ERACHEM Mexico Tampico (manganese chemistry)

#### **ARGENTINA**

**#** ERAMINE SUDAMERICA (lithium deposit)

12

13

Johnsonville

Erasteel Boonton

(high speed steels)

From stainless steel and energy to aerospace, electric vehicles and construction, the Group serves multiple markets that play a part in our daily lives.

## Thanks to the steels made by Aubert & Duval, helicopter rotor

AVIATION

Transcriptor 1061.1 1 . 1111.1001.100

*- 000000*0.

blades can withstand vibrations

Titanium is used in the space market to make fuel tanks for satellite launchers. Supplied in hemisphere or dome form, it makes sure the tanks are airtight and resistant to the propellant gases they contain.

110 **TONS AND UP** 

That's the weight of titanium in every Airbus A350 (115 tons) and Boeing 787 (114 tons).

• Door frame Closed die-forged titanium part for Airbus A350 door frame. Aubert & Duval proved its metallurgical expertise in making these frames.

#### MARINE

High-manganese (18-22%) steels, used to make liquefied natural gas tanks for example, deliver toughness that stops cracks spreading at low temperatures.

Manganese steels are especially wear-resistant. They can limit distortion and withstand the harsh constraints of rail transport, including the weight of trains and the straightness of tracks.

These steels and superalloys are used to produce an aircraft's vital parts, delivering the essential qualities of strength and safety. In the extreme heat and corrosion of engines, for example, safety is paramount. Landing gears, comprising many high-performance steel, aluminium and titanium parts, are subject to severe mechanical constraints.

**TRANSPORT** 



Engine disk



Landing gear

of the cutting tools used in the automotive, aviation and mechanical industries are made from high speed steels.

#### **AUTOMOTIVE**

Manganese makes highperformance steels stronger for use in vehicle structure parts. These steels also improve wear resistance in critical engine parts.

16

tanium dioxide, a white

pigment for paint.

17

content as this makes stainless steel tougher

and more corrosion-resistant.

**PROSTHESES** 

## **ENERGY**

#### **ELECTRIC CARS**

A material with a great future, nickel is an essential component of the hybrid and electric vehicles that will help to reduce the automotive industry's environmental footprint.

Lithium makes electric vehicle batteries more efficient.

#### ALKALINE AND LITHIUM-ION BATTERIES

Manganese is the main raw material in alkaline batteries. It is also a key component in cathodes, an essential part of lithium-ion batteries.

85%

of the materials in an alkaline battery are recyclable.

#### **MOBILE ENERGY**

Nickel is essential to the manufacture of smartphones, tablets and other mobile electronic devices. It is also present in components like condensers and rechargeable batteries



TOMORROW'S INDUSTRY

to make complex metal parts in a single step. This fast-growing market has a great many applications in industry and for the gene-



of civil aircraft engines

by weight will be made

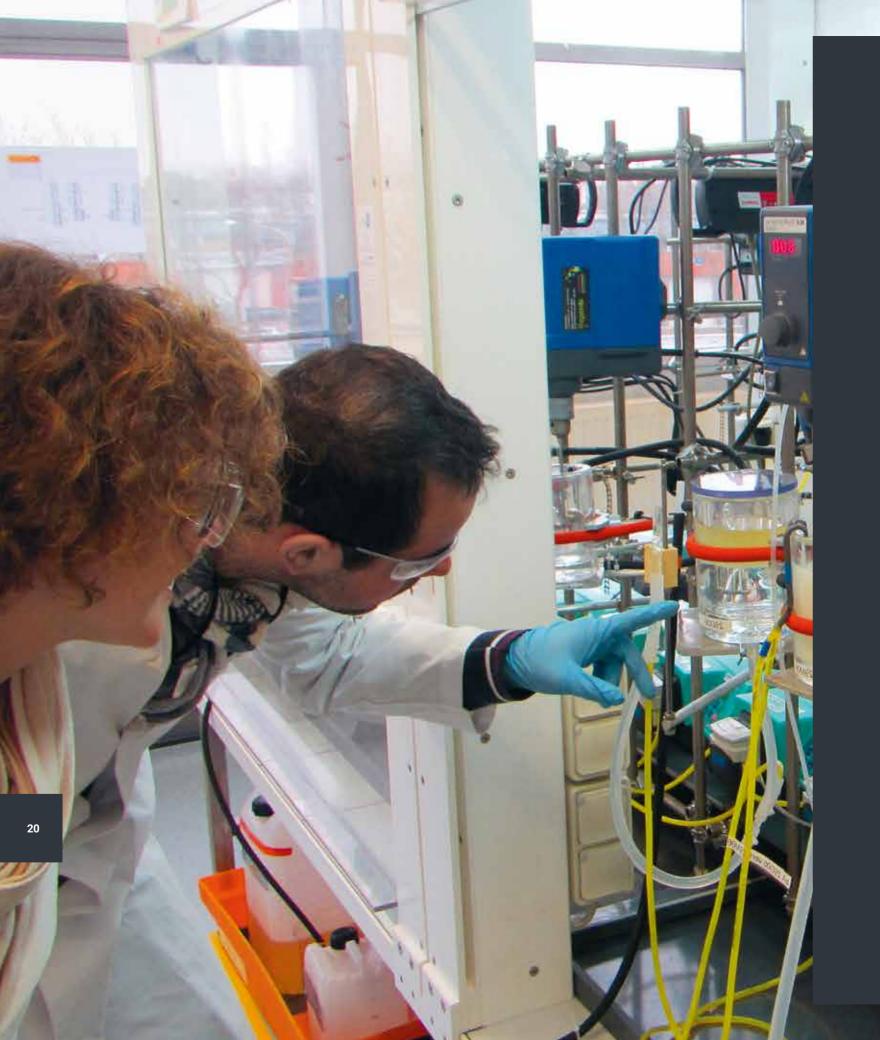
by additive

manufacturing

by 2025.



18



## Chapter 1

# **INNOVATION** & RESEARCH

ERAMET draws on world-class R&D. The Group's Engineering and R&D teams work hand in hand to develop new extraction, beneficiation and transformation processes for raw materials and alloys. Together they help to make new applications and products a reality in order to meet the needs of tomorrow's world.



**220** 

EMPLOYEES
DEDICATED TO R&D



32 M€
INVESTED IN R&D



150
PATENTS
IN THE PORTFOLIO

**~**4

## **RESEARCH & DEVELOPMENT ENGINEERING**

MEETING SCIENTIFIC AND TECHNICAL CHALLENGES

ERAMET's R&D and Engineering contribute to the emergence of new applications and products in connection with the Group's customers. These targeted innovations must meet performance standards in terms of responsiveness, quality and result.



## **R&D AND ENGINEERING: A DUO** AIMING FOR HIGH PERFORMANCE

Like the Group's other activities, R&D comes under a performance improvement process. Performance means quality of service, speed of response and sustainability of processes taking the environment, personal safety and profitability into account. For that purpose, ERAMET Research has launched a transformation programme to improve its R&D project management processes in depth over the long term.



#### **INCREASINGLY OPEN R&D**

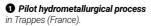
R&D opens onto the outside world in two ways. On one hand, research teams work more and more with external industrial and academic partners to optimise and leverage research efforts.

One example is SOLSA (Sonic On Line and Sampling Analysis), a European programme on geological exploration. Alongside other players, ERAMET Research and the mining Divisions are working to develop a tool that carries out drilling and chemical and mineralogical analyses at high speed. This will lead to significant savings in terms of both time and operating costs.



- Mineralogy / Hydrometallurgies and Pyrometallurgy
- Powder Metallurgy
- Metallurgy / Alloy Grades / **Innovation & Process**
- Manganese Chemistry and Recycling
- Closed Die-Forging





2 Sampling by helicopter (New Caledonia)







1. EXTRACTION

Roron -

Sulphates -

Magnesium

Lithium

- Calcium

**INDUSTRIAL** 

**PROCESS** 

Carbonate C

LITHIUM CARBONATE

6. PURIFICATION

carbonate is added to precipitate the lithium as lithium carbonate.

APPLICATIONS

The final traces of elements other than lithium are retained and sodium

5. CONCENTRATION

n evaporation ponds, the recovered solution is naturally concentrated in

## TWO OUT-**STANDING PROJECTS IN 2015**

From mine to product, ERAMET's R&D is like the Group itself. It covers the entire value chain, as shown by these two projects, developed in 2015.



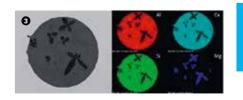
## **MINING LITHIUM AT 4,000 METERS**

ERAMET developed a process for extracting lithium from brine in Centenario-Ratones, northeast Argentina. The aim is to make lithium carbonate for lithium-ion batteries. The project has great potential given the world's growing demand for lithium. To carry it out, teams from ERAMET Research and ERAMET Ingénierie are working closely with several partners to meet the scientific and technological challenges in lithium extraction. They aim to develop a profitable and environmentally-friendly process on a brine field at an altitude of almost 4,000 metres. The teams developed an innovative process that returns brine to the brine field after lithium has been selectively extracted. No fewer than 10 patents have been filed. Agility and responsiveness are the keys to success. Throughout the project, the teams have designed their studies to deliver a profitable process.

#### **DEVELOPING A NEW INCLUSION RATING METHOD FOR HIGH-SPEED** STEELS

Inclusions may form during the steelmaking process, causing cracks and weakening the material. Teams from the Alloys Division, in cooperation with ERAMET Research, developed a new characterisation method on a scanning electron microscope with the Qemscan® system. This automated analysis gives a more thorough and accurate

reading of the metal sample's characteristics. As a result, steel production processes and quality can be optimised.



1 2 Lithium site exploration (Argentina).

3 Non-metallic inclusion detected in a steel sample.



## Chapter 2

# BENEFICIATING

ERAMET mines world-class mineral ore deposits that are renowned for their grades and lifespans. Raw materials including nickel, manganese and ilmenite are beneficiated through our metallurgical know-how with the greatest respect for the environment and human health.



53,000 3.95
TONS
OF NICKEL
PRODUCED
OF MANGANG ORE PRODUCED



OF MANGANESE

ORE PRODUCED

OF ILMENITE PRODUCED



MORE THAN 45,000 TONS

OF ZIRCONIUM MINED

## ERAMET 1. **NICKEL**

COPING WITH AN UNPRECEDENTED SITUATION

In 2015, nickel ore prices continued to fall, reaching an all-time low. Like all mining groups, ERAMET Nickel is facing an extremely difficult situation. Drawing on its strengths, the Division has stepped up its performance improvement efforts.

**WORLD PRODUCER** 

#### A GLOBAL CRISIS

No market has been spared by the slump in raw material prices, especially metals and above all nickel. In 2015, nickel prices dropped 42% on the London Metal Exchange, one of the highest ever falls on the market. At under 4\$ per pound, sale prices are below cost prices for almost three quarters of producers, including SLN.

#### THREE REASONS FOR LOW PRICES

#### STAGNATING DEMAND

The Chinese economy isn't the locomotive it used to be. It is in transition and entering a massive post-urbanisation phase. As a result, industrial demand for stainless steel has slumped.

#### ONGOING OVERSUPPLY

The Indonesian ban on ore exports did not have the expected effect on prices when it came into force in January 2014. This was due to massive inventory reduction on nickel metal in China and the rise in Filipino ore exports. The market remains oversupplied.

#### • MARKET FINANCIALISATION

Nickel prices are set by financial market mechanisms that have become a structural component on the London Metal

Exchange (LME). In addition, reflecting Asia's importance, a second marketplace, the Shanghai Future Exchange (SHFE), began listing the metal in March 2015. Combined trading volumes on the LME and SHFE were around 120 times greater than physical volumes in 2015. ■

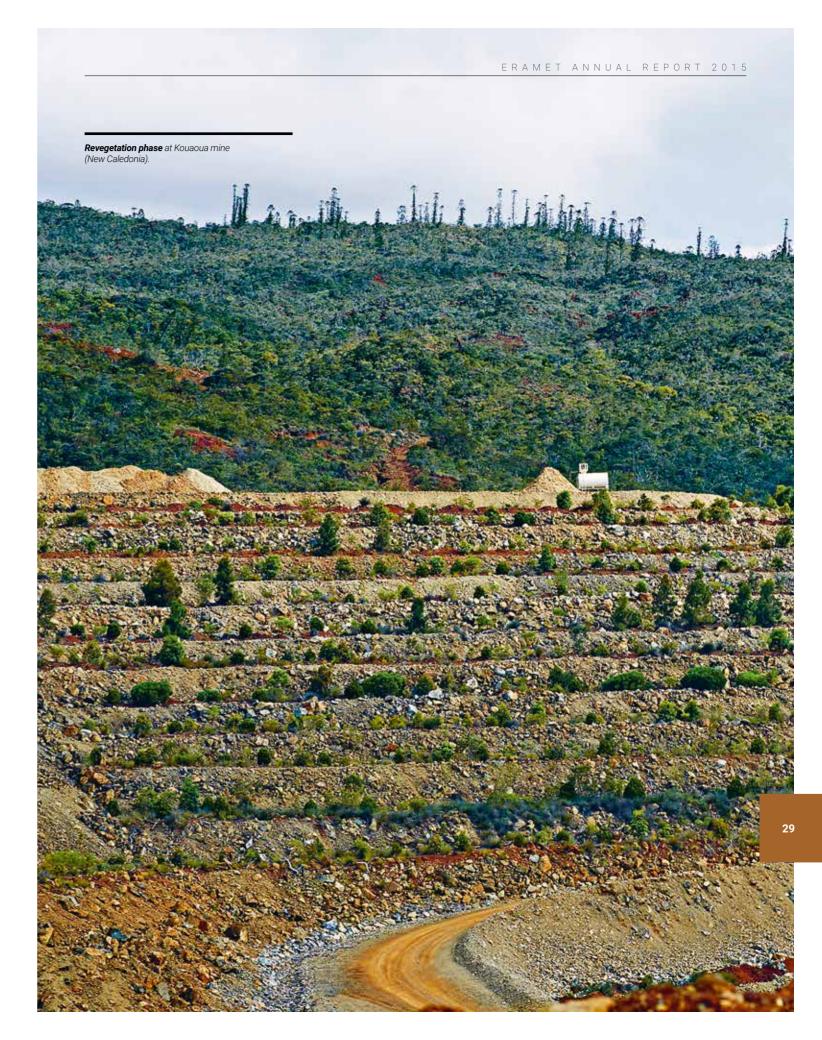


Nickel ore.

WORLD PRODUCER OF NICKEL CHLORIDE



"ERAMET Nickel can count on its renowned technical expertise and the quality of its deposits."





# A MARKET IMPACTED BY CHINA'S LOSS OF MOMENTUM

Nickel demand almost stagnated in 2015 with approximately 40 million tons of stainless steel produced. We are now seeing the first production decreases, which could restore balance on the market. Inventories are extremely high at around 500,000 tons on the LME and SHFE together.

Doniambo plant
 (New Caledonia).

**2** The Jules Garnier II in Kouaoua prior to loading (New Caledonia).

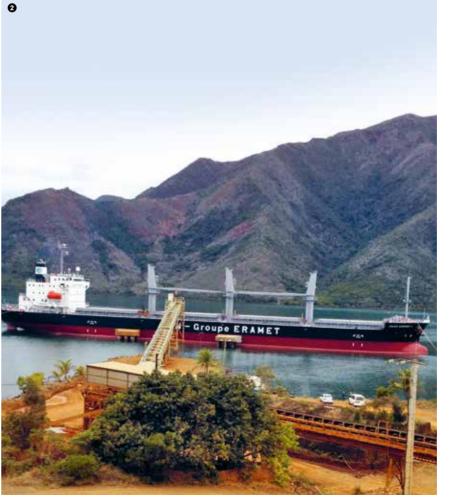


Although it was affected by several hurricanes and unfavourable weather, metallurgical production of nickel in Doniambo totalled 53,000 tons in 2015. To improve its competiveness, SLN is rolling out a new continuous improvement plan to cut its cost price per pound of nickel further by 2018. The plan's implementation is mobilising teams on every level and involves new, more accurate management tools. An additional cost-saving plan is being rolled out in response to the severe deterioration in nickel prices.



## Change of product mix at SLN

Since the late 1970s, part of the ferronickel made by SLN has been converted into nickel matte on the Doniambo site. This is then processed at the Sandouville (France) plant into high-purity nickel metal for the aviation and nuclear markets and into nickel salts. Current market trends and farreaching changes in the subsidiary's economic and technical conditions have significantly changed its business model. Consequently, SLN will focus its production solely on ferronickel, which will lead to the closure of the "Bessemer" matte workshop. SLN will market more ferronickel than at present and will also save the cost of making matte. In parallel, work is in progress to define the best industrial setup for the Sandouville site.



OF ONLY 3 PRODUCERS
OF HIGH-PURITY NICKEL

# **ERAMET**MANGANESE

RESILIENCE IN A MORE COMPETITIVE MARKET

In 2015 the Manganese division's environment was marked by a series of sharp decreases in manganese ore prices. It met the challenges of ore production in Gabon and the ramp-up of the Grande Côte plants in Senegal.

## RESPONDING TO GLOBAL OVERPRODUCTION

The manganese ore market went through a significant shift in 2015. Carbon steel production fell for the first time since 2000. This slump results from the slowdown in the Chinese economy. The significant excess capacity in China's steel industry is mainly due to the downturn in the construction sector, the primary outlet for carbon steel. In addition, ERAMET Manganese has to deal with new competition from South Africa as exports by emerging players are buoyed by the rand's sharp depreciation. As a result, the price of a ton of manganese ore was halved in 2015. ■



Manganese alloy prices held out better in 2015 than ore prices. ERAMET Manganese remains the world leader on the refined alloys market with 18% of global production. It makes these alloys in its three Norwegian plants and in the USA, France and China. The Division owes its leadership to its positioning on products for high value-added markets, particularly flat steels for the automotive and shipbuilding sectors.



**€1,430**MILLION
IN SAI ES

## PRODUCTION RECORD AT COMILOG

In Moanda, Gabon, ERAMET Manganese operates a world-class deposit with excellent grades and easy access. Combined with the quality of the Division's industrial assets and its know-how, COMI-LOG is a highly competitive market player. In 2015 is set a new production record with 3.95 million tons of manganese mined and carried to Owendo Port, up 11% from 2014. This achievement comes under the Operating Performance Plan launched in 2013. The production increase was made possible by the performance of Setrag, the company that manages the Transgabonais railway concession, which also improved its traffic regularity in 2015.



## Securing Setrag's performance

Ore transport from Moanda to Owendo terminal is the cornerstone of the Division's mining performance in Gabon. To secure the 648 km of lines, in late 2015 COMILOG kicked off an ambitious infrastructure upgrading project. Goals include doubling transport capacity and securing traffic. Under the project engineering structures will be renovated and all wooden sleepers (cross-ties) will be replaced with concrete parts. The seven-year project, to be completed in 2022, is built in close cooperation with the Gabonese Republic.



**2** Moanda Mine (Gabon).

Moanda Metallurgical Complex
 C2M – (Gabon).

#2
WORLD PRODUCER
OF HIGH GRADE MANGANESE ORE





## RAMP-UP FOR TWO PLANTS

#### C2M GETS UNDER WAY

Work on Moanda Metallurgical Complex (C2M) began in 2007.

C2M was inaugurated on June 12th, 2015 by Ali Bongo Ondimba, President of the Gabonese Republic, and Patrick Buffet, Chairman of the ERAMET Group. The two plants, for silico-manganese and manganese metal, form the first modern metallurgical facility for processing manganese ore in sub-Saharan Africa. More than 430 direct jobs have been created.

#### TIZIR REACHES FULL SPEED

#### Full production rates were achieved at Grande Côte in Senegal at the end of 2015.

TiZir came on stream in 2014 and continued to ramp up during 2015 with almost 633,000 tons of mineral sand concentrate (ilmenite and zircon) produced. Production levels reached full capacity in late 2015. The ilmenite produced by Grande Côte Opérations is shipped to the Tyssedal plant in Norway.

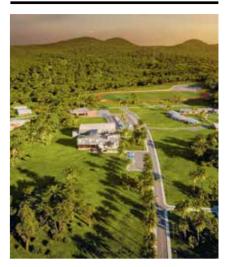
#### Tyssedal plant supplied with ilmenite from Grande Côte

The processing furnace was upgraded and its capacity increased for the occasion. The facility could therefore resume ilmenite processing using a supply from Senegal in December 2015. This activity provides customers with raw materials to make pigments using the chloride process, mainly for paint.

## **IMPROVEMENTS IN SAFETY**

ERAMET Manganese recorded an improvement in its safety indicators. In 2015 Safety Days were organised on industrial sites. These management events were structured around observations on the ground and practical discussions. ■

**WORLD PRODUCER** OF REFINED MANGANESE ALLOYS



#### Moanda Metallurgy & Mining School in the home straight

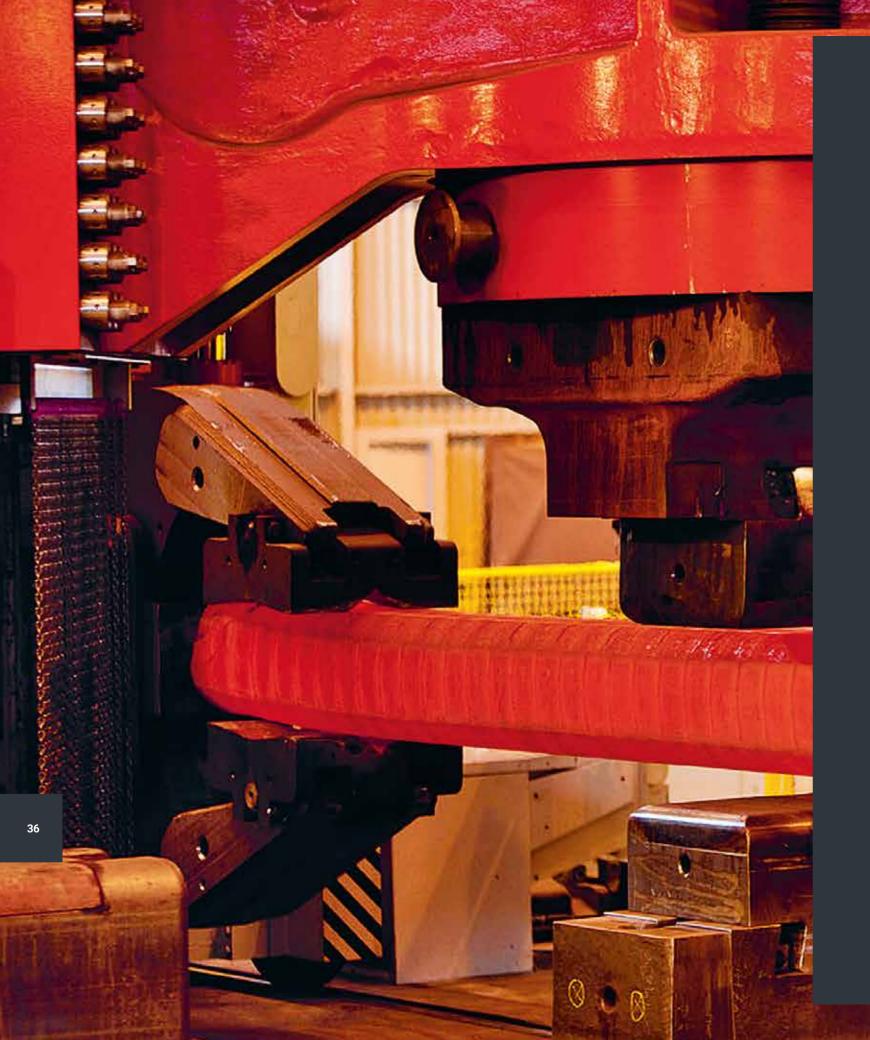
Moanda Metallurgy & Mining School will open for the start of the academic year in 2016. The regional application and training school will offer two tracks: a one-year course for skilled technicians and an 18-month programme for engineers.



Dredging unit in Grande Côte (Senegal).

"ERAMET Manganese is the world #2 producer of manganese alloys."

**WORLD PRODUCER** OF MANGANESE CHEMICAL DERIVATIVES



## Chapter 3

## **DESIGNING** & TRANSFORMING

Their strength and mechanical hold under heat make alloys and superalloys valuable for aviation, energy, medical and tooling. ERAMET has long been established as a front-rank global player in these sectors and is recognised for its excellent know-how.



22

PROCESSING AND PRODUCTION PLANTS



300 GRADES



MORE THAN

30,000

HIGH-POWER CLOSED
DIE-FORGED PARTS

## **ERAMET ALLOYS**

KEEPING UP EFFORTS ON COMPETITIVE-NESS AND SERVICE QUALITY

Two well-managed processed have enabled the Alloys Division enabling the Alloys Division to improve results and confirm its recovery. In 2015, ERAMET Alloys held out well despite contrasting situations on its main markets.

AT THE HEART OF THE MODERN

ERAMET Alloys (Aubert & Duval and

Erasteel) provides alloys and superalloys that are essential to many cutting-edge

sectors, including the aviation, energy,

automotive and medical markets. The

Division also makes high speed steels

that are used to make cutting tools and gas-atomised powders for the prom-

ising 3D printing sector. On all of these

markets ERAMET Alloys, a long-estab-

lished, front-rank global player, is recog-

nised for its excellent know-how.

**WORLD'S NEEDS** 

#### **DEALING WITH MARKET SLUMPS**

With good positions on these high-potential segments, in 2015 ERAMET Allovs had to deal with demand that was slack or even falling on some markets.

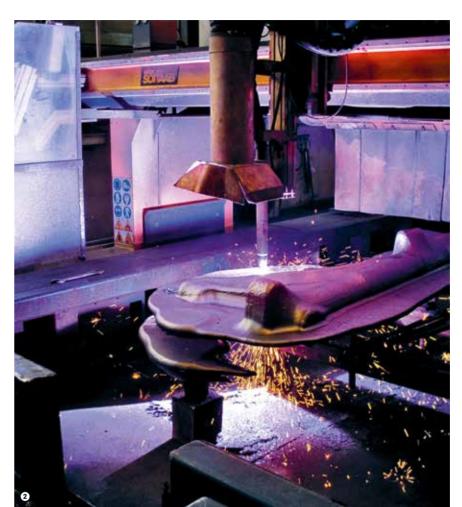
- Energy: the oil sector is affected by the fall in prices. At the end of 2015, oil prices were close to their lowest levels since 2009. This led to the suspension of many exploration projects that use powder metallurgy-based parts made in Sweden, particularly in deep water locations. Production was stable in superalloy parts for gas turbines.
- Tooling: the sector's downturn, combined with substantial overcapacity in China, had a heavy impact on high speed steels, of which Erasteel is one of the leading global producers.

#### **AVIATION: A PROMISING MARKET**

ERAMET Alloys makes almost 60% of its sales in this vibrant sector. It is a stakeholder in all of the main aircraft manufacturers' programmes. The Division supplies them with closed die-forged parts and long products for aircraft structures, as well as high value-added superalloy and titanium parts for engines. While ERAMET Alloys faces pressure on costs and the growth of Asian parts makers, in 2015 it benefited from the buoyant US dollar. Nevertheless, the year was marked by slower than expected momentum on the A350 programme and a slower production rate for the A330, which was not offset by the ramp-up of the new Airbus A320neo. This promising programme should speed up from 2016,







giving the Division excellent prospects. In addition, ERAMET Alloys benefits from Dassault's very good sales of the Rafale fighter plane this year.

WORLDWIDE

1 Möbius Net, designed by B.Grossman and 3D-printed using Erasteel metal powders.

2 Plasma cutting an Interforge aircraft part Issoire (France).

## **Optimised industrial assets**

With tough competition from Chinese production of low-cost high speed steels, Erasteel's site in Commentry, France, has had to adapt to stay competitive. Its hot processing activities have been transferred to Sweden. Steelmaking and cold processing activities, as well as battery and oil catalyst recycling activities from Valdi's site in Palaissur-Vienne, France, have been brought together at Commentry. The aim is to improve competitiveness by using Commentry's industrial assets for melting batteries and high speed steels in turn. €24 million has been invested in this redeployment. This competitiveness drive also concerned rolled wire making, transferred from Les Ancizes, France to Långshyttan, Sweden, where the Division has a modern, high-performance rolling mill.



**"ERAMET Alloys supplies** the alloys and superalloys needed for many cuttingedge sectors including the aviation, energy, automotive and medical markets. The Division also produces high speed steels for making cutting tools and gas-atomised powders for the promising 3D printing sector."

> WORLD IN GAS-ATOMISED METAL POWDERS

**PRODUCTS** 

#### **FOCUS ON PERFORMANCE**

ERAMET Alloys is renowned for its innovation capability and its excellent know-how. The Division has kept up its efforts on:

- a €23 million general expenses reduction programme from 2013 to 2016;
- a continuous improvement process, launched in 2013 to restore competitiveness and improve service quality. In every workshop the process means cost reduction initiatives and a flow optimisation approach to reduce in-process inventory and improve schedule adherence. The result is a significantly better on time, in full delivery rate. These efforts have enabled the Division to improve its current operating income substantially. ■

## TANIUM CHA

## TITANIUM CHANNEL: PIECING THE PUZZLE TOGETHER

The construction site for EcoTitanium, Europe's first aviation-grade titanium recycling plant, opened on April 27th, 2015 in the presence of the French Prime Minister Manuel Valls. The facility will give the European aircraft manufacturing industry an independent supply channel for titanium. The plant will recycle European titanium scrap that was previously sent to the USA or Russia. The plant in Saint-Georges-de-Mons, Auvergne, France is a €48.7 million investment. It is co-funded by ADEME, Crédit Agricole Centre France and UKAD, a joint venture by Aubert & Duval and UKTMP, a Kazakh titanium sponge producer. Production will start up in 2018. ■



#### **Birth of MKAD**

MKAD is a joint venture created in June 2015 by Mecachrome and Aubert & Duval. The company specialises in machining and finishing large aviation-grade titanium parts. MKAD will be housed in a plant to be built in Ariège (France). The goal is to support customers through an integrated supply chain for forged titanium parts.



#### Award and recognition

Space, the structure grouping together major European aerospace firms, gave Aubert & Duval a Space Award 2015 for its industrial and logistical performance improvement project. The award is in recognition of the flow design transformation process carried out in recent years.



Construction of a new building housing Valdi's battery and catalyst recycling activity in Commentry (France).

22
INDUSTRIAL SITES
WORLDWIDE

**#2 WORLD PRODUCER**OF HIGH-POWER CLOSED DIE-FORGED PARTS



## Chapter 4

# SOCIAL & ENVIRONMENTAL RESPONSIBILITY

By avoiding, minimising and offsetting impacts, recycling materials and liaising with stakeholders, ERAMET mines and processes raw materials with a constant concern for health, wellbeing and local ecosystems. Despite a difficult economic context, the Group's determination to do its business in accordance with principles remains intact.



**75**%

OF THE GROUP'S SCOPE CERTIFIED ISO 14001



5

SITES CERTIFIED ISO 50001



-16%

DECREASE IN THE GROUP'S ACCIDENT RATE

# **CSR**A LONG-TERM COMMITMENT

ERAMET is attentive to its employees, stakeholders and local ecosystems. The Group is committed to a continuous social and environmental improvement process. Its economic difficulties have not affected its determination in any way.

ERAMET's social and environmental policy comes under a very long-term outlook. Despite the crisis, the Group has remained true to its commitments and continued to act with the same high standards and determination. Throughout the year it continued to support sites and projects, defend its activities and products while striving to protect human health and local ecosystems, and optimise its risk control policy.



The Group's licence to operate runs through all of its environmental and social systems. To safeguard that licence's long-term future, ERAMET's approach is to anticipate the impact of its activities and keep up constant local concertation to explain, share and optimise its activities, but also to "Avoid, Minimise and Offset". For example, several projects have been carried out in Gabon, including:

- studies prior to the Moulili River downstream restoration work following the concertation seminar organised in 2014;
- impact studies for the launch of mining on the edges of Bangombé mineral plateau in Moanda;
- socio-environmental management of upgrading work on the railway operated by Setrag to carry ore to Owendo terminal. Moreover, under the Valdi project, every environmental and safety study was carried out, enabling the Group to obtain the authorisations needed to move forward on schedule with this important project for the Commentry site's evolution.





## DEFENDING ACTIVITIES AND PRODUCTS

opment of scientific knowledge and applicable regulations concerning its products and facilities in order to answer its stakeholders' questions objectively and accurately. By gathering intelligence, building up knowledge and formalising procedures in this way, ERAMET is showing its sense of responsibility. In 2015, for example, the Group worked on manganese ore grading issues. The Group also finished updating the Safety Data Sheets for the products it markets. These Sheets provide for the transmission and traceability of product informa-

ERAMET constantly monitors the devel-

tion across the value chain and in the languages of every country concerned.

## 3. CONTROLLING RISKS

From risk mapping, environmental audits and factoring CSR into due diligence operations to formalising reference grids and optimising organisation, all of ERAMET's activities go through the risk control filter. Health, Safety & Environmental audits are essential parts of this setup and have been optimised. They are now reported in a simple, highly visual reference grid so that line managers can grasp them instantly and monitor them efficiently.

## Epidemiological study in Moanda



What impact has 50 years of COMILOG's activity had on local populations' health? An epidemiological study, conducted by an independent firm in close cooperation with local authorities and transparently with stakeholders, sought to answer that question. After three years of research, the findings presented in 2015 show that health risks with respect to COMILOG's mining and industrial activities give no cause for concern over neighbouring populations' health.

"Despite the crisis, the Group has remained true to its commitments and continued to act with the same high standards and determination."

- 1 Public meeting in Commentry (France).
- 2 Group internal HSE seminar (November 2015).
- GCO teams present cheques to Diogo and nearby villages in a ceremony as part of their community actions (Senegal).



13,938

**EMPLOYEES** 

END OF 2015

## **HUMAN RESOURCES**

ADAPTING WITHOUT COMPROMISING ON THE ESSENTIAL

The economic situation is leading ERAMET to redeploy in order to optimise its resources. The Group's Human Resources Department is managing this change with a constant concern for transparency and dialogue – and no compromise on employee safety and training.

### WORKFORCE ADJUSTMENTS CONTINUE

The heavy market downturn has led ERAMET to undertake job-saving plans in several subsidiaries. Following the initiatives taken in many of the Group's subsidiaries in France and internationally, the same efforts were made in 2015 in support departments in France, the international sales network and China, leading to over 350 job cuts during the year. Seven job-saving plans were in progress in mainland France during the year. They all led to majority agreements with personnel representation bodies, defining support conditions for job cuts. 90% of the cuts took place through internal moves and voluntary departures. On the Group level, the talent development policy fosters internal mobility in terms of both professions and locations. In addition, the start-up of facilities at Moanda Metallurgical Complex (432 direct jobs created) and the ramp-up of the Grande Côte site in Senegal helped to create jobs in both zones. ■

## **CREATION OF A SHARED** SERVICE CENTRE

The Group's Shared Service Centre opened in 2015 in Clermont-Ferrand. France in line with its goal of optimising processes and pooling selected functions. In this respect it points to a new way of working in ERAMET. This is the case, for example, with the setup of a single Group training organisation that is clearer, more consistent and therefore more efficient. The Centre's setup led to 56 new jobs. ■

## STEPPING UP THE GROUP'S **SECURITY**

In a global context of political, security and economic instability, ERAMET has defined a robust system for monitoring, analysing and protecting its employees, facilities, data and know-how. Planis, managed by the Group's Security Department, centralises all information on business travel. -





"90% of job cuts took place through internal moves and voluntary departures."

- 1 ERAMET Services in Clermont-Ferrand (France).

## **Priority: safety**



ERAMET continued these actions on health and safety.

A Group campaign concerned personal protective equipment with the theme, "Let's wear our PPE, it saves our lives". The Divisions are building on this plan by rolling out their own programmes, such as "Detection, Action" to identify and treat risk situations in real time. In addition, in-depth audits are conducted and managers make regular site tours. In 2015, safety results recorded a slight improvement in terms of both the frequency and severity of accidents.

I look after my PPE.



2 Mine employees in Moanda (Gabon).

around three topics, "preparing, driving and measuring transformations."

**Training** 

in change

management

The goal is to give managers the keys and tools to anticipate, optimise and implement change.

This new training module is designed for managers who have to lead change in their operations. It is structured

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## SOCIAL AND ENVIRONMENTAL

INDICATORS



#### REGISTERED EMPLOYEES BY STATUS AND BY REGION AS OF 31/12/2015

	FRANCE	EUROPE Outside France	AMERICAS	AFRICA	ASIA	PACIFIC	TOTAL
Workers	2 476	886	419	1 691	483	1 451	7 406
Supervisors	1 847	265	94	1 538	230	601	4 575
Managers	836	165	153	542	109	152	1 957
Total registered	5 159	1 316	666	3 771	822	2 204	13 938
% managers	16 %	13 %	23 %	14%	13 %	7 %	14 %

#### REGISTERED EMPLOYEES BY DIVISION AND BY REGION AS OF 31/12/2015

	FRANCE	EUROPE Outside France	AMERICAS	AFRICA	ASIA	PACIFIC	TOTAL
Holding	352	12	47	0	28	0	439
Nickel	354	0	0	0	219	2 204	2 777
Manganese	152	850	586	3 771	539	0	5 898
Alloys	4 301	454	33	0	36	0	4 824
Total	5 159	1 316	666	3 771	822	2 204	13 938
TRAINING <sup>(1)</sup>	FRANCE	EUROPE Outside France	AMERICAS	AFRICA	ASIA	PACIFIC	TOTAL
Training hours	108 648	15 812	23 020	90 733	16 821	62 500	317 535
Hours per employee	21	12	35	24	20	28	23

<sup>(1)</sup> Data from annual HR CSR reporting – data declared by the Group's sites.



TREND	2015 RESULTS	DEFINITION	SUBJECT
<ul> <li>10%</li> <li>Simplification of texts</li> <li>Single operating permit</li> </ul>	173	Number of operating permits obtained at Group sites.	Operating permits
Reporting consolidation and stability	100%	Percentage of sites included in environmental reporting.	Environmental reporting
+ 38% in 4 years	<b>36 sites</b> i.e. 75%	Number of industrial and mining sites that have obtained ISO 14001 certification.	Site certification
Almost 360 ha in 3 years	190 ha	Aggregate remediated hectares over all of our mining sites.	Mining site remediation
+ 10% in 2 years	387	Number of channelled air emission treatment facilities.	Air emissions



SUBJECT	DEFINITION	2015 RESULTS	TREND
Energy consumption	Energy consumption (electricity, gas, heavy fuel oil, coal, etc.).	16.6 TWh	Energy consumption stable for 3 years
Energy process	Number of sites that developed the energy-saving process, based on ISO 50001 standard principles, in 2015.	15 sites	5 sites certified ISO 50001
Carbon footprint	CO <sub>2</sub> volume in tons emitted by all of the Group's sites.	4.438 Mt	Stable overall since 2010



SUBJECT	DEFINITION	2015 FIGURE	TREND OVER 1 YEAR
Frequency rate 1	Number of lost-time accidents per million hours worked.	4.8	- 16%
Severity rate	Number of lost days (in addition to the day of the accident) resulting from lost-time accidents per thousand hours worked.	0.26	- 26%
Frequency rate 2	Number of declared accidents with or without lost time, per million hours worked.	13.6	- 19%

(1) Statistics take agency workers into account.



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# **EXECUTIVE COMMITTEE**

as of 31/12/2015



Patrick BUFFET
Chairman and CEO, ERAMET



**Georges Duval**Delegate CEO ERAMET Alloys



Philippe Vecten

Delegate CEO ERAMET Manganese
and ERAMET Nickel



**Jean-Didier Dujardin**Chief Financial Officer<sup>(1)</sup>



**Thomas Devedjian**Delegate VP<sup>(1)</sup>
As of January 1st, 2016, Delegate CEO in charge of Finance



**Michel Carnec**Executive Vice-President of Human
Resources, Health, Security and Safety



**Catherine Tissot-Colle**Executive Vice-President of Communications and Sustainable Development

## COMPOSITION

# OF THE BOARD OF DIRECTORS

as of 18/02/2016

#### Patrick BUFFET

Chairman & CEO, ERAMET

#### **DIRECTORS**

#### Michel ANTSELEVE

Special Advisor to the President of the Gabonese Republic, Head of the Mining, Fuel, Energy and Hydraulic Resources Department.

#### CEIR, represented by Nathalie DE LA FOURNIÈRE,

Permanent representative of CEIR on the Board of Directors. Chief Financial Officer, Agence d'Urbanisme et d'Aménagement Toulousaine Urbaine

#### Édouard DUVAL

Chairman of the Management Board, Sorame

#### **Georges DUVAL**

Manager, Sorame – Delegate CEO, ERAMET

#### Sorame, represented by Cyrille DUVAL,

Secretary General, ERAMET Alloys

## FSI-Equation<sup>(1)</sup>, represented by Jean-Yves GILET,

Executive VP, Bpifrance

#### Marie-Axelle GAUTIER

Public law cluster manager – Mining law – Director representing employees

#### Philippe GOMES

Member of Parliament for 2<sup>nd</sup> constituency, New Caledonia

#### Caroline GRÉGOIRE SAINTE MARIE

Company director (independent director)

#### Company director Valérie BAUDSON

Global Manager, Métier ETF line and Indiciel d'AMUNDI (independent director)

#### Manoelle LEPOUTRE

Executive Vice-President Sustainable Development and Environment, TOTAL (independent director)

#### Pia OLDERS

Insurance Portfolio Manager – Director Representing Employees

#### **Catherine RONGE**

Chairman, WEAVE AIR (strategy consultancy) (independent director)

#### Claude TENDIL

Chairman, Generali Group France (independent director)

#### Frédéric TONA

Independent Mining Consultant (independent director)

#### Antoine TREUILLE

Chairman, Charter Pacific Corporation (independent director)

#### Alexis ZAJDENWEBER

Director, Energy Investments, Agence de Participations de l'État – Director representing the French State

#### CENSORS

Jean-François REBATEL Daniel SIGNORET

## CENTRAL WORKS COUNCIL DELEGATE

Philippe LAIGNEL

#### HONORARY CHAIRMAN

Yves RAMBAUD

(1) FSI-Equation is a subsidiary of Bpifrance Participations (formerly FSI).

## CONSOLIDATED FINANCIAL STATEMENTS (1)

## THE GROUP'S RESULTS

2015: Group's results heavily impacted by global metals crisis

he year was marked by a far-reaching crisis in the mining and metallurgical sector, with prices at their lowest for 15 years. Nickel and manganese were hit simultaneously. In the context of an exceptional metals crisis in terms of both its duration and scale, the ERAMET Group's sales were stable at €3,109 million for 2015. The Group's current operating income slumped heavily compared with 2014 to − €207 million, due to ERAMET

Nickel's operating losses in particular. Historically low metal prices also led the ERAMET Group to record €668 million in asset impairments and tax receivables impairments. The Group's share of net income totalled – €714 million for 2015.

Capital expenditure decreased 23% to €267 million, with the restriction to capex on safety and strict maintenance renewed for 2016. This is possible following the period of heavy capex on production asset modernisation in the early 2010s. Debt totals − €878 million as of December 31st, 2015. The debt-to-equity ratio (before impairments in 2015) worked out at 36%. After the impairments recorded in 2015, it stands at 49%. ERAMET has substantial financial liquidity of €1.6 billion as of December 31st, 2015. In response to these extraordinary conditions, the ERAMET Group has set up robust measures to protect its cash. ■

(1) Adjusted data from Group reporting, in which joint ventures are accounted for using proportionate consolidation. See consolidated financial statements as of December 31st, 2015, available on the Group's website (www.eramet.com).

**€3,109**MILLION
SALES IN 2015

### **CURRENT OPERATING INCOME** (€ MILLIONS)

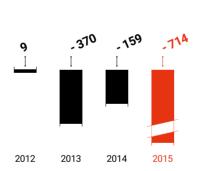
153 .45 15 .201

2012 2013 2014 2015

A sharp fall in current operating income, which was severely hit by the Global metals crisis

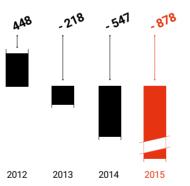
#### NET INCOME, GROUP SHARE

(€ MILLIONS)



The Group's share of net income decreased substantially in 2015 as a result of exceptional impairments

#### NET DEBT



Net debt totalled €878 million as of December 31st, 2015.

## INCOME STATEMENT

he ERAMET Group's sales were stable from 2014 to 2015. ERAMET Manganese held out well despite the heavy fall in prices, thanks to its competitive positioning. Ore production reached an all-time high with 3.93 MT transported in 2015. ERAMET Alloys' sales rose 6% in 2015 thanks to its very good positioning in the steadily growing aircraft manufacturing sector. On the other hand, ERAMET Nickel's sales decreased 12% in 2015 compared with 2014, particularly because of the downturn in LME nickel prices (– 42% from Decem-

ber 2014 to December 2015). The fall in the Group's current operating income is mainly due to ERAMET Nickel's current operating income, which was heavily impacted by LME nickel prices and not offset by ERAMET Alloys and ERAMET Manganese's positive results. Operating income takes into account study costs on major projects, restructuring costs and asset impairments (€474 million in 2015). The Group's share of net income totalled – €714 million compared with – €159 million in 2014, after taking into account the – €198 million share of minority interests in net income for 2015. ■

**SALES** (€ MILLIONS)

3AA<sup>7</sup> 3<sup>162</sup> 3<sup>1AA</sup> 3<sup>106</sup>

Sales were stable compared with 2014 at €3,109 million.

APPRO2

**€180** 

AGGREGATE SAVINGS IN 2014 AND 2015 IN ANNUAL IMPACT TERMS

55

**€ MILLIONS** 2015 2014 SALES 3109 3 144 **EBITDA** 92 363 CURRENT OPERATING INCOME 75 (207)OPERATING INCOME (813) (54) Financial result (90)(68)Share in profit of associates (1) Income tax (8) (49)NET INCOME FOR THE PERIOD (171) (912)· minority interests (198)(12)(714)(159) Group share Basic / diluted earnings per share (in euros) (27.11)(6.06)

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Chapter 5: GOVERNANCE

#### ERAMET ANNUAL REPORT 2015

## NET FINANCIAL DEBT VARIATION

he Group's net financial debt totalled

- €878 million as of December 31st,
2015 compared with €547 million as
of December 31st, 2014. This change results
from the following flows:

- - €7 million in net cash generated by operating activities (€43 million in 2014):
  - €160 million in cash generated from operations compared with €125 million in 2014 due to a sharp fall in results in 2015 compared with 2014;
  - + €153 million in working capital variation due to activity, with a substantial decrease in inventories and receivables in particular;
- €283 million in net cash used in investing activities, of which mainly €267 million with respect to industrial capital expenditure;
- $\in$ 41 million in exchange rate impact. lacktriangle

# 641 581 346 261

CAPITAL EXPENDITURE

2012 2013 2014 20

Industrial capital expenditure was limited to €267 million, a 23% decrease from 2014.

# **E267**MILLION CAPITAL EXPENDITURE IN 2015, DOWN 23% FROM 2014 AND 55% FROM 2013

€MILLIONS	2015	2014
OPERATING ACTIVITIES		
EBITDA	92	363
Cash impact of items below EBITDA	(252)	(238)
Cash generated from operations	(160)	125
Working capital variation	153	(82)
Net cash generated by operating activities	(7)	43
INVESTING ACTIVITIES		•
Industrial capital expenditure	(267)	(346)
Other investing activity flows	(16)	26
Net cash used in investing activities	(283)	(320)
Net cash used in financing activities	_	(25)
Exchange rate impact	(41)	(27)
(Increase) / decrease in net financial debt position	(331)	(329)
Opening (net financial debt) position	(547)	(218)
Closing (net financial debt) position	(878)	(547)

# **BALANCE** SHEET

he Group's total assets, as of December 31st, 2015, amounted to €3,704 million, compared with €4,255 million as of December 31st, 2014. This €551 million decrease mainly results from: on one hand, a €404 decrease in non-current assets, essentially as a result of €474 million

lion in asset impairments in 2015 and a  $\in$ 173 million reduction in simplified working capital due to activity, including  $\in$ 84 million and  $\in$ 94 million decreases in inventories and receivables, respectively; on the other hand, a decrease in shareholders' equity ( $-\in$ 975 million) mainly due to the net loss in 2015, a  $\in$ 331 million increase in net financial debt and a  $\in$ 80 million increase in provisions.

BILLION
IN FINANCIAL LIQUIDITY
AS OF DECEMBER 31<sup>ST</sup> 2015

€MILLIONS	31/12/2015	31/12/2014
Non-current assets	3 003	3 407
Inventories	974	1 058
Trade receivables	293	387
Trade payables	(430)	(435)
Simplified working capital	837	1 010
Other working capital items	(136)	(162)
Total working capital	701	848
TOTAL	3 704	4 255
€ MILLIONS  Shareholders' equity – Group share	31/12/2015	31/12/2014
Shareholders' equity – Group share	1 466	2 322
Shareholders' equity – minority interests	313	432
Shareholders' equity	1 779	2 754
Cash and cash equivalents and other current financial assets	(630)	(938)
Borrowings	1 508	1 485
Net financial debt	878	547
Net financial debt / shareholders' equity (gearing)	49 %	20 %
Provisions and employee-related liabilities	812	732
Net deferred tax	123	130
Derivatives	112	92
TOTAL	3 704	4 255

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SEE YOU
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