PRESS RELEASE: ERAMET Norway Sauda Invests €19m in Clarke Energy's Innovative Furnace Gas Recovery Solution

- *Following a successful pilot phase in 2021/22, Eramet have chosen to invest €19m in upscaling an energy recovery unit delivered by Clarke Energy.*
- *The project will increase Eramet's plant energy efficiency by more than 30% after scheduled commissioning in 2024.*

Sauda, Norway, Monday July 17, 2023: Clarke Energy today announces its agreement with Eramet, the French mining and metallurgical group, for the implementation of an innovative sub-merged arch furnace gas recovery project in Norway. The partnership will enable Eramet Norway Sauda to significantly increase its energy efficiency and reduce its environmental footprint.

Clarke Energy is a global expert in the engineering, installation, design and maintenance of decentralised power generation solutions with combined heat and power technology. As a turnkey solutions provider, the company offers a complete package to industrial companies wishing to produce their own energy and reduce their carbon footprint.

Improving energy efficiency

Located in Sauda, in south-west Norway, Eramet's ferro-manganese plant is currently required to flare its waste furnace gas. After the installation of Clarke Energy's solution, the furnace gas will be recovered and utilised to produce electrical and thermal energy.

Following a pilot phase, validated by Eramet in 2019 and executed in 2021/22, Eramet's Norwegian site took the decision to invest **€19 million** in an energy recovery unit proposed by Clarke Energy. This unit, equipped with the latest INNIO Jenbacher gas engine technology, will use the lean gases recovered to increase the plant's energy efficiency by more than 30%. Clarke Energy is providing a complete package, including raw gas treatment, electricity generation, connection to the medium-voltage grid and the heat recovery process. The specific composition of the recovered gas, whose energy comes from the CO gas it contains, demonstrates Clarke Energy's expertise in conditioning and recovering special gases.

Didier Lartigue, Managing Director of Clarke Energy France and Francophone Africa
"We are proud to be actors of this fantastic project online with the sustainable strategy of Clarke Energy. A new contribution of our company to the energetic transition and the net-zero worldwide initiative"

Kåre Bjarte Bjelland, Director of Strategy and Communications at Eramet Norway
"As an industrial producer in the age of the 'green shift' we firmly believe that making the best use of of energy is essential to maintain our forefront competitive position in the industry..."

A power generation solution

The project has the support of the Norwegian authorities and is part of Eramet Norway's NewERA program, which aims to develop and deploy environmentally friendly technologies, by recovering gases emitted by furnaces and reducing electricity consumption.

The project also includes the installation of a complete heat recovery process to supply thermal energy to the local district heating system of the municipality of Sauda (population 5,000), and to

Contact presse — Agence Presstance – 03 44 54 43 44
Carine MARTIN - cmartin@presstanvce.com - 06 16 82 66 16

improve the overall efficiency of the plant by improving raw material quality. In addition, engine exhaust gases is planned to be fed into a carbon capture facility, helping to reduce greenhouse gas emissions and produce zero-carbon alloys.

Commissioning is scheduled for **July 2024**, followed by an optimization phase to improve plant performance. Clarke Energy is supporting Eramet throughout the process, providing in-depth training to Eramet's operating teams and conducting key maintenance operations.

This collaboration between Eramet and Clarke Energy demonstrates once again their shared commitment to sustainable development and technological innovation, contributing to a cleaner, more efficient energy future.

Technical Specifications

Low LHV gas

The gas recovered and recycled is composed of CO and H_2 (carbon monoxyde and hydrogen), converted into CO_2 and H_2O (carbon dioxyde and water), and has a **low Lower Heating Value** of (quantity of heat released by the combustion of a fuel unit) of 2,3 kWh/Nm³ average.
Detailed gas composition :

- CO : 50 % vol
- CO_2 : 35 vol%
- H_2 : 7 vol%

Raw gas will be conditioned with coolers, dryers and compressors to decrease dew point and increase pressure at engine inlet.
4 gas treatment lines will be installed in parallel to process the total gas flow of **18 900 Nm3/h.**
Each treatment line is independent to step up or down gas

INNIO JENBACHER engines

6 x JMS 620-F54 type engines will be used **in addition to the pilot** (JMS 620-F55).
INNIO specify 2 different electrical output in the technical specification:

- Electrical output guaranteed: **1507kW** el. @ 10 bar BMEP
- Electrical output best effort: 1696kW él. @ 11,22 bar BMEP

Both are guaranteed fo 500 mg/Nm³ (5 % O_2), NO emissions but are expected to be lower according to pilot operation feedback If required, and additional SCR catalyst decrease NOx emissions down to 300mg/ Nm³ will be installed.

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About Clarke Energy https://www.clarke-energy.com/fr/france/

Clarke Energy, a KOHLER Company, is a leader in the engineering, design, installation, and long-term maintenance of distributed energy solutions. Clarke Energy can delivery complex installations and microgrids incorporating gas engine CHP units, battery energy storage systems, biogas upgrading systems and solar photovoltaic units. Clarke Energy can supply solutions including a range of low carbon or decarbonized fuels including biogas, renewable natural gas (RNG) and hydrogen.
Clarke Energy operates in 28 countries. Clarke Energy employs over 1,300 staff and has over 7.4 GW of power generation, 1.4GW of which is from biogas, a renewable fuel.
The French subsidiary, created in 2001, is managed by Didier Lartigue.

ABOUT ERAMET

https://protect-eu.mimecast.com/s/ye_VCOEKMIp4gvESE8qjR?domain=eramet.com

Eramet transforms the Earth's mineral resources to provide sustainable and responsible solutions to the growth of the industry and to the challenges of the energy transition. Its employees are committed to this through their civic and contributory approach in all the countries where the mining and metallurgical group is present. Manganese, nickel, mineral sands, lithium, and cobalt:

Eramet recovers and develops metals that are essential to the construction of a more sustainable world. As a privileged partner of its industrial clients, the Group contributes to making robust and resistant infrastructures and constructions, more efficient means of mobility, safer health tools and more efficient telecommunications devices. Fully committed to the era of metals,

Eramet's ambition is to become a reference for the responsible transformation of the Earth's mineral resources for living well together.

About INNIO www.innio.com/fr/produits/jenbacher

Jenbacher gas engines, ranging in power from 200 kW to 10 MW, run on natural gas as well as a variety of other gases. They generate power, heat and cooling for a wide range of commercial, industrial and municipal applications, including the generation and cogeneration of renewable industrial energy (heat and power) from waste, as well as power generation on oil fields.
INNIO is headquartered in Jenbach (Austria) and employs over 3,500 people.

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