Digital & Innovation
NET ZERO CO2

Plasterboard production in Fredrikstad, Norway

Klaus Birk
Director for Public Affairs, Saint-Gobain Denmark
The Gyproc plant in Fredrikstad, Norway, is currently being rebuilt to accommodate 100% electrified production of plasterboards.

LNG gas is currently used for the calcination of gypsum and the drying of plasterboards. These processes are being replaced by all new electric air heating systems, which will phase out 116 GWh of LNG and reduce CO₂ emissions by more than 23 000 tons.
In addition, energy consumption is reduced by 30% per unit, while production capacity is increased by 40%.

After the transition production will be completely CO₂-free.

However, other parts of the process, such as logistics and the use of cardboard, will continue to produce emissions.

In sum, it is expected that the climate footprint of the plasterboard from the electrified plant will be 70 percent better than today.
The electrification is based on an investment of around **EUR 25 million**. Of this, *Enova* (a state enterprise owned by the Norwegian Ministry of Climate and Environment) is assisting with a grant of approximately **EUR 7 million**.

Technology has been developed between the local team in Gyproc, Fredrikstad and Saint-Gobain central teams.

The aim is for the Fredrikstad plant to be fully electrified by the end of 2022 / beginning of 2023.

In April 2022, the project was awarded prestigious Norwegian sustainability prize - **Fornybarprisen**.
The Lithium-Gypsum Project
An example for sustainable and forward-looking alternative gypsum source

Jörg Demmich
Senior Consultant General Partners at Knauf
The Lithium-Gypsum Project

Due to the focal objective of the EU - climate neutrality until 2050 - phasing out of coal fired power plants leads to a massive decline of FGD gypsum being generated by desulphurisation of flue gases. As, besides natural gypsum, FGD gypsum is also an important gypsum raw material source it is necessary to realize or increase new alternative gypsum sources.

One idea is to use gypsum as a by-product from chemical-technical processes, such as Lithium (Li) manufacturing.

State of the art (main process steps, simplified):

- Spudomene-Concentrate
- Other Li-containing minerals
- Li-concentrate from battery recycling
- Pre-Treatment, Calcination > 1000 °C
- Cooling, Grinding, Mixing, Leaching, Separation
- Li$_2$CO$_3$ or LiOH
- Additives X, Y, Z ...
- Spudomene Li Al [Si$_2$O$_6$]
- Non-usable residues
The Lithium-Gypsum Project

In the middle of 2021, the ITEL Institute for Technologies and Economics of Lithium (Deutsches Lithium-Institut) was founded in Halle. Declared objective of ITEL is to establish a CO$_2$ neutral Lithium Circular Economy by a techno-economic research. Focal elements are to recover all Li-combined by-products and to enable green hydrogen technology. With this approach ITEL takes into account the increasing electromobility.

One of the three founding members is Knauf. What is the reason for Knauf’s engagement?
In 2020 a patent for an innovative Li-process by producing gypsum as by-product was filed and is basis for ITEL’s research work:
The Lithium-Gypsum Project

Against the background of tremendously increasing electromobility associated with an exponential grow of Lithium demand this project could lead to one of the needed new alternative gypsum raw material sources in the EU.
Thank you for listening!
The plant of the future

A Sustainable Plasterboard Plant as a pillar of local ecosystem

Iryna Yermakova
CSR & HSE South West Europe Manager at Etex
Sustainable Plasterboard Plant as a pillar of local ecosystem

- Inspiring ways of manufacturing... by
  - being a part of an ecosystem
  - preserving resources
  - addressing community environmental challenges
  - creating a positive impact on local economy

Local renewable energy:
- Thermal
- Electrical

Circular economy:
- Close loop recycling of gypsum products

Ecodesign
- 0 waste
- job site solution

Customers

Energy Sobriety
- Inteligent equipment
A common language in construction

Nikolai Halle
Strategic Sales Manager Nordic at cobuilder
The big picture starts with a common language
What is Define?

Unstructured knowledge, various documents and formats, manual processes

Data dictionary
- Structured semantics of construction objects
- Standard-based framework
- Common digital language

EN ISO 12006-3

Data Templates
- Specific construction object description, ex. Window
- Properties in machine and human-readable interoperable format

Data Template

A solution for the industry, by the industry
Common digital market-language enables automation