



UA**2**GETHER

Production Complex

November 2023

UA2GETHER Production Complex



The production facility of the house-building complex was created to provide house-building plants with structures, products and materials for the annual program of **1.2 million m² of total housing space per year**.

The complex will produce only those materials and structures that are not currently available on the market (existing facilities will not be able to meet demand in the context of the construction boom).

Annual Production Plan

The annual program of the production complex:

1. Production of **Si-X THERM** ecological insulation – 300 000 m³/year
2. Production of **wall blocks made of porous non-autoclaved concrete** (foam concrete) – 150,000 m³/year
3. Production of **reinforcing rebar**, in particular for **filigree floor slabs** (triangular frames and wide meshes) – 16,000 tons per year
4. Production of **exterior wall panels** – 850,000 m²/year
5. Production of **pitched roof panels** – 250,000 m²/year

Annual Production Plan



Optionally, two more production facilities will be located in the workshop block. These production facilities will not be part of the **UA2GETHER** production complex and will have different owners, but the products of these enterprises will be used by **UA2GETHER** in the production and construction complexes. These are:

1. Production of formaldehyde-free non-combustible **Si-X BOARD** (replacement of OSB) – 30,000 m³/year.
About 250,000 m²/year will be used for the production of pitched roof panels.
2. Production of environmentally friendly **Si-X BINDER** binding agent – 15,000 tons per year.
All of this volume will be consumed by the production of **Si-X THERM** insulation and **Si-X BOARD**.

Production Complex

Fundamental principles of the production complex

The main principles of the **UA2GETHER** production complex are based on the modern worldview embedding:

- Principles of sustainable development
- Principles of the circular economy (closed-loop economy)
- Environmental awareness

Production Complex

These production organization principles are implemented through the following essential practices:

- **Maximum automation** of all production processes
- **Modern equipment.** Preference is given to the most advanced technologies and machinery from leading European manufacturers
- **Energy saving** at all production stages
- **Absence of solid and liquid waste** in all production facilities (including process waste) without exception
- **No emissions into the atmosphere.**
If not possible, the maximum reduction of harmful substances.

Closed-loop Economy

In particular, the practical implementation of the **closed-loop economy principles** work as follows:

1. **Si-X THERM** insulation production:

- The core of the **Si-X THERM** production line is based on the newest equipment from **ELTOMATION B.V.** (the Netherlands), which meets European energy-saving requirements.
- The **production is energy efficient** and has a **negative carbon footprint**. Thus, the replacement of 300,000 m³/year (design capacity) of mineral wool boards with **Si-X THERM** will **reduce the carbon footprint** by **250,000 tons of eCO₂/year**.

Closed-loop Economy

(Continued)

- The production of **Si-X THERM** insulation requires a drying temperature of only 200 °C. The **heat carrier is produced by a state-of-the-art heat generator** that runs on wood waste. This way, bark, lumpy waste, branches, tops, etc. are fully utilized. The heat generator uses pyrolysis combustion of wood and has practically **harmless combustion emissions**. The ash generated in the heat generator will be used as a filler for foam concrete.
- Wet hot air after drying of **Si-X THERM** will be utilized for heat treatment of foam concrete blocks and/or local heating of workplaces of other production facilities.

Closed-loop Economy

(Continued)

- Solid waste (trimmings), production after grinding and autoclave treatment will be **returned to the technological cycle** as raw materials
- There are **no process wastes in the production.** Water from regular washing of containers and mixers will be collected for further use in the production of foam blocks or **Si-X BINDER.**

Closed-loop Economy

2. Production of wall blocks:

- The **production of blocks is energy-efficient** due to the refusal of autoclave processes and the use of cavitation technologies
- The blocks are heat-treated using humid hot air from the **Si-X THERM** production facility
- Solid wastes (cuttings, edges, rejects, etc.) are crushed and used to make a dry mixture – “warm” glue for foam blocks
- There are **no process effluents** in the production. Water from regular washing of containers and mixers will be collected for further use in production

Closed-loop Economy

3. Rebar products manufacturing:

- All of the **reinforcement bar machines will be state-of-the-art**, manufactured by the German company **mbk Maschinenbau GmbH**.
All equipment meets European energy-saving requirements
- The production is nearly waste-free thanks to the use of reinforcing steel in coils
- There are **no emissions into the atmosphere or process effluents**

Closed-loop Economy

4. External wall panels and pitched roof panels production:
 - The use of **LGSF** (light gauge steel framing) is **waste-free**. The profiles are supplied by the manufacturer cut to size
 - The waste of **Si-X THERM** insulation is returned to the insulation production site, where it **will be recycled** together with the waste of insulation production
 - Scraps of fiber cement boards and gypsum boards will be used as much as possible in production to close narrow surfaces (ends, window slopes, etc.)
 - There are **no emissions into the atmosphere** or **process wastewater** in the production process

Closed-loop Economy

5. **Si-X BOARD** panels production

- The boards are made from bast crop waste (hemp and flax), which **eliminates deforestation**
- The core of the **Si-X BOARD** production line is the newest equipment from **DIEFFENBACHER GMBH** (Germany), which meets European energy-saving requirements
- The technology does not use phenol-formaldehyde and melamine-formaldehyde resins, which are commonly used in the production of board materials. This results in **no emissions of phenol and formaldehyde** into the atmosphere

Closed-loop Economy

5. **Si-X BOARD** panels production (continued):

- Solid waste (trimmings) from production after grinding and autoclave treatment will be returned to the technological cycle as raw materials
- There are **no emissions into the atmosphere or process wastewater**

Closed-loop Economy

6. **Si-X BINDER** ecological binder production

- The **technology is energy-saving**. Components are heated without the use of external heat sources – smart technology uses the heat of exothermic chemical reactions
- The **production does not generate solid waste, air emissions, or process effluents**
- Process water from equipment washing is returned to the technological flow
- The production also **utilizes process water** from all other production facilities for **Si-X BINDER**-based materials

Sustainable Development

The production complex implements the principles of sustainable development in the following way:

1. All production lines have been **designed to be “green”** as much as possible. There is not a single technology in the production complex that uses traditional energy-consuming industrial processes, such as:
 - Burning
 - Grinding
 - Autoclaving
 - High-temperature drying, etc.

Due to low-temperature (200°C) drying and full utilization of heat for other production processes, the **carbon footprint of the production complex as a whole was further reduced.**

Sustainable Development

- 2.** The **Si-X THERM** insulation **production has a negative carbon footprint.**
The replacement of traditional mineral wool with **Si-X THERM** insulation in the consumption volumes of the house-building complex leads to a **reduction in emissions by 250,000 tons of eCO₂.**
- 3.** **All products** of the manufacturing complex, without exception, are **100% recyclable.**

Contacts



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