



NOVARBO

VERTICAL FARMING

Turn-key Plant Factory Solutions



GREENHOUSE TECHNOLOGY



CREATING GREENER GROWTH

PART OF **BIOLAN** GROUP

EXPECTED ADVANTAGES

ANNUAL PRODUCTION EFFICIENCY

- High and consistent yield year-round
- 500-1300 plants/m²/y

PREMIUM PRODUCE

- Up to 30% higher price due to added value
- Superior quality, lower footprint

SEEDLING CYCLE

- Intensify your capacity on site
- 4500-40 000 plants/m²/y (Ø60 - Ø15 mm pot)

AUTOMATION

- Plants move automatically
- Low labor cost
- Remote access

HEAT REUSE™ & CIRCULAR ECONOMY

- Energy-efficient climate control
- Utilization of surplus energy
- Heating investments may be avoided

LOCATION & RESOURCES

- Grow anywhere
- Overcome resource scarcity
- Utilize existing buildings

> **10%**

FASTER ANNUAL
GROWTH CYCLE ⁽¹⁾

> **90%**

LESS WATER
CONSUMPTION ⁽³⁾

5 YEARS

RETURN OF
INVESTMENT ⁽²⁾

75%

LESS WASTED
CO₂ ⁽⁴⁾

⁽¹⁾ Production stability via optimized environment

⁽²⁾ Based on the average of Novarbo's test results

⁽³⁾ Closed ventilation and reutilization of evapotranspiration

⁽⁴⁾ Maintaining high concentration efficiently



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VERTICAL FARMING

Reducing carbon footprint by turning vertical farming from energy eater into energy producer

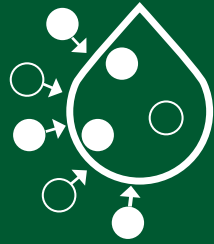
A facility equipped with our climate control and Heat Reuse™ systems is an energy-efficient way to cultivate high quality plants indoors. Surplus heat energy is stored for reutilization which can be used for beneficial purposes. Food waste and transportation are decreased by taking production close to the consumer, thus reducing carbon footprint. The vast amount of water transpired by the crop is captured from the air and returned to the irrigation system. With Novarbo Growisor software the grower will be able to optimize plant growth factors of the fully automated facility. Growisor enables long-term production planning and wireless tracking of the system.



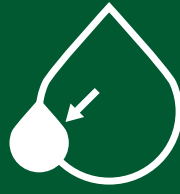
COMPONENTS OF SUCCESS



Significant annual energy savings since heat is recovered and reused



Droplet curtain solution cools and binds extra heat and humidity



Transpired water is captured and reutilized



Automation and Growisor software



Customized substrates and nutrients

UNIQUE PLANT FACT

Always tailored for a specific environment

Novarbo Vertical Farming Concept is capable to solve the challenges of various operations. By starting from customers situation and details of the environment we optimize the indoor cultivation system for the specific purpose. Energy flows can be directed to balance the production site without wasting valuable resources. Lighting is always planned according to the crop standards whilst selecting the latest and most efficient LEDs on the market.

Whether you are establishing a new operation or expanding an existing production you will thrive with our solution. We provide complete systems by turn-key principle that include design and installation of the equipment and practical training. Novarbo has over a decade-long experience in greenhouse engineering and our technologies have several patents granted.



ORY CONCEPT



PLANT FACTORY BRILLIANCE



Fully
automated
production

GROWISOR SOFTWARE

Automation – Heat Reuse™ – Climate Management – Performance

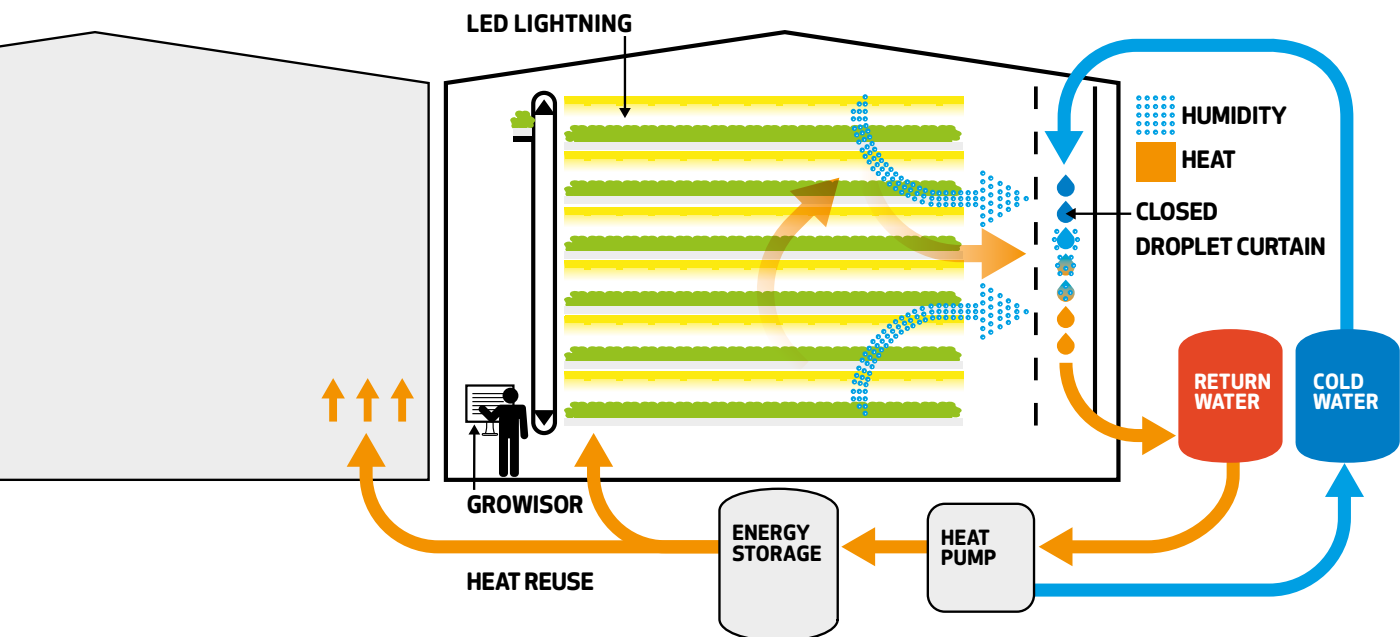
Novarbo Vertical Farming system is based on full automation and overall efficiency. The brilliance of the concept lies in smart climate technology and adaptability to diverse surroundings. Monitoring and control over operations at every phase of cultivation cycle is at fingertips of the grower wirelessly. Production of high quality plants with added value is achievable in various locations and with almost any type of crop.

Please do not hesitate to contact us already in the planning phase of your project. Together we can verify the feasibility and optimize the surroundings of your Plant Factory.

sales@novarbo.fi



VERTICAL FARMING CONCEPT

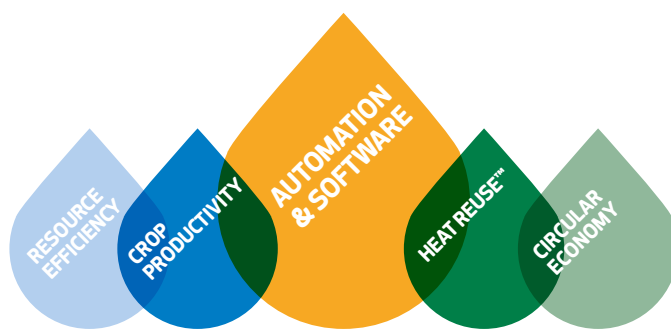




STRONG ROOTS & KNOWLEDGE

Novarbo Oy has over a decade-long expertise in agriculture and controlled-environment horticultural industry. We are part of the Finnish Biolan Group, a pioneer of circular economy for half a century.

We provide a wide range of professional substrates and fertilizers that are suited for both traditional and organic cultivation. In addition to vertical farming, we offer greenhouse Heat Reuse™ solutions that enhance environmental sustainability, improve climate control and increase annual crop yields. Whether you are operating in open-field, greenhouse or closed space, our multidisciplinary team can help you achieve a more productive and profitable cultivation business.



 GREENHOUSE TECHNOLOGY

 SUBSTRATES

 FERTILISERS

NOVARBO

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