



ARTECHNO
Growsystems

AVF⁺

VERTICAL FARMING

AVF⁺ Product Description

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Design

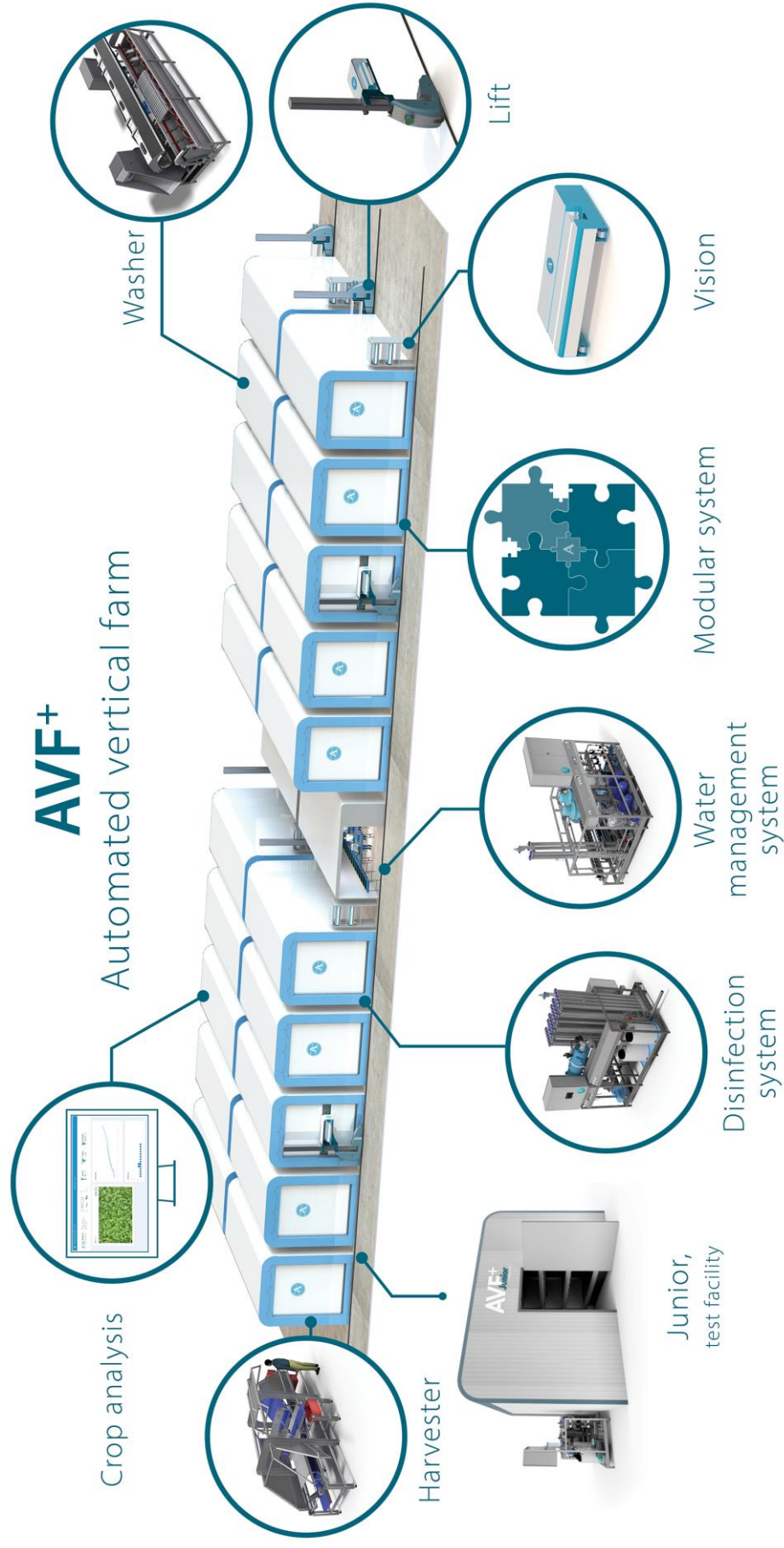


Engineering



Realisation

ARTECHNO



AVF⁺ Automated Vertical Farming

INTRODUCTION

COMPANY PROFILE

Artechno is an engineering company engaged in the development and realization of modern cultivation systems based on hydroponic substrates. Among the products we manufacture are robotics, irrigation systems, sowing solutions, harvesting lines and turn key solutions for vertical farming.

It is our **Mission** to empower our customers in cultivation from start to finish, so they are able to integrate the entire cultivation process within their investment and be profitable.

By empowering our customer and enabling them to bring fresh healthy food to consumers, we hope to solve a part of the “feed the world” problem that the world will face in the future.

We do this by designing, engineering, realizing and supporting projects in horticulture and agriculture. We’ve channelled our 100+ years of combined experience in horticulture into our flagship product; Automated Vertical farming or as we like to call it: **AVF+**. In this product description you’ll find out what AVF+ is all about.

AVF⁺

AVF+ is a fully automatic vertical farming solution for producing a variety of crops from seed to harvest. We’ve automatized all processes to ensure low labor costs and consistent crop production. AVF+ is a modular system which can be customized to the needs of the crop, available space or desired production volume.

AVF+ is divided into 10 modules with different levels of customization:

- **Seeding**
- **Germination**
- **Cultivation**
- **Harvesting**
- **Management Software**
- **Logistics** (load/unload robot)
- **Water & Nutrient Management**
- **Cleaning** (trays & benches)
- **Crop Happiness Analysis**
- **Spacing** (young plants)

AVF+’s key assets are the **Germination Cell** and the **Cultivation Cell**. Inside these cells we’ve achieved a fully controllable, consistent climate (with a maximum delta of +/- 0.5 °C between the top and bottom layer). By growing in vertical layers, AVF+ achieves a minimum +225% ratio of floor space to growing space and at least a 250% increase in yield per m², compared to agriculture. Hydroponics technology and precise water and nutrient management enables users to grow with less water than traditional methods – up to 95%.

All these processes come together into one software solution to manage and analyze the entire production process.

AVF⁺ Automated Vertical Farming
KEY ADVANTAGES



**HIGH GROWING EFFICIENCY AND FLEXIBILITY –
MULTIPLE CROPS IN MULTIPLE CLIMATE ZONES**



GROWING FROM SEEDING TO HARVESTING



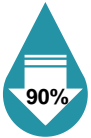
CONSISTENT CLIMATE (Δ 0,5 °C)



LOW LABOR COST (Full automation)



YEAR ROUND PRODUCTION (365 days a year)



**EFFICIENT WATER USAGE – UP TO 90% MORE
EFFICIENT THAN TRADITIONAL AGRICULTURE**



NO PESTICIDES



SCALABLE FROM 30 M² TO 10,000+ M² GROWTH AREA



**AVERAGE YIELDS OF UP TO 405 G/M²/DAY –
INCREASE OF AT LEAST 250% COMPARED TO
TRADITIONAL AGRICULTURE**

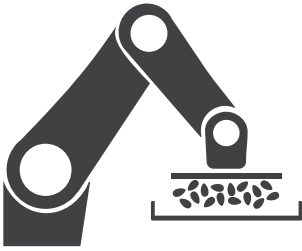


ROI < 5 YEARS*

* Request our business case calculations for precise figures

AVF+ Automated Vertical Farming

PRIMARY PROCESSES



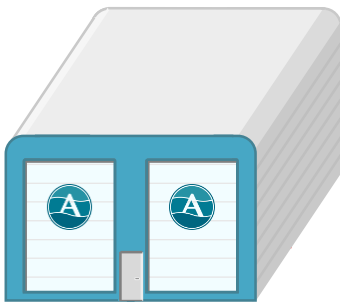
SEEDING

Seeding is done by the **Seeding Robot**. Depending on the wishes of the little seeds, different levels of robotization are possible. Special attention is given to seeding of a large variety of seeds in different seeding densities.



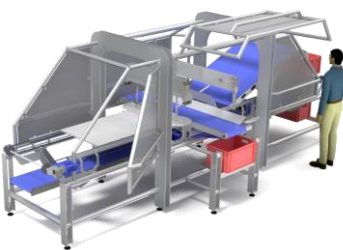
GERMINATION

Little seeds make their first steps to big crops inside the **Germination Cell**. The cell has been specifically designed for the first growth from seed to seedling. Optimal growth conditions are achieved by closing off the cell from outside influences. Common cell setups increase growing space by 1500% compared to horizontal germination. Inside the cell parameters like: humidity, temperature and lead time can be fully adjusted to create a comfortable climate for seeds to become seedlings.



CULTIVATION

The **Cultivation Cell** is where the real magic happens. It is used for the propagation or cultivation of crops. Similar to the Germination Cell the Cultivation Cell is closed off, ensuring a homogenous climate from top to bottom, 365 days a year. A cultivation cell can have up to 900% more growing space compared to the floor space it takes up. Inside the cell, parameters like: light, humidity, temperature, nutrition and lead time are fully adjustable and it's possible to grow.



HARVESTING

When the crops have grown into big, healthy plants they are ready to be harvested. This happens at the **Harvest Line**, where crops are automatically cut at the roots and separated from their growing benches.



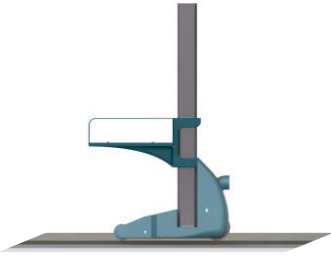
MANAGEMENT SOFTWARE

AVF+ is equipped with complete **Management Software** to check up on and manage all processes. All the different modules come together in the management software.

AVF+ Automated Vertical Farming

SECONDARY PROCESSES

LOGISTICS



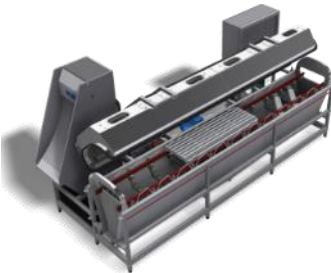
Logistics are taken care of by the **Lift AGV**, tracks and conveyer belts. These systems are autonomous.

WATER & NUTRITION MANAGEMENT



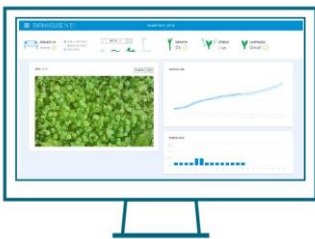
Crops need a healthy solution of water and the right nutrients. This is all taken care of by the **Water management unit**. The Water Management Unit makes sure that water and nutrition gets to where it is needed, at the right time. Clean water is essential so water is always disinfected.

CLEANING



After cultivation the trays/benches have to be washed and disinfected. The cleaning line has been specifically designed to deal with this dirtiness crops leave after they have been cut. The end result is a clean tray, ready to be used again.

HAPPINESS ANALYSIS



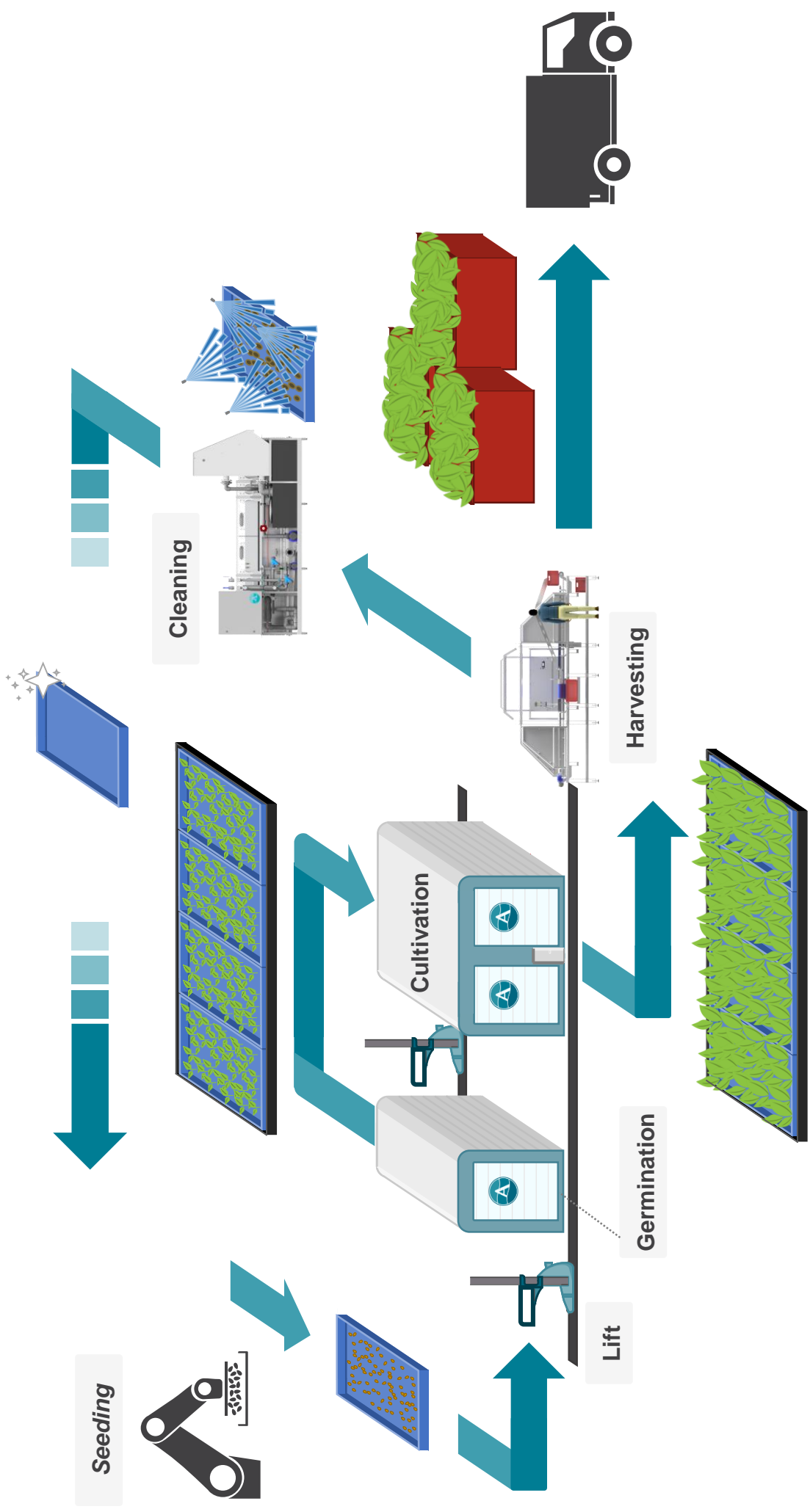
We are most happy when the crops are happy. To make sure we know they are happy we've implemented the **Happiness Analysis software**. Together with a **quality robot** the software can measure plant health and stress levels and translate it to an easy to interpret graph in the user interface.

SPACING (OPTIONAL)

Certain crops develop larger personal spaces when they grow. To accommodate their growing personal space, a spacing line is optional with AVF+.

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