



**ARTGROWING**  
by ISII NITZAN GMBH



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# AVE+ *Compact* VERTICAL FARMING



## PRODUCT BROCHURE

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Design



Engineering



Realisation



# Content

This brochure presents an overview of the vertical farming system AVF+ Compact. It provides general information, advantages, the unique attributes of the system, how the system works and specifications. The final chapters show the history of Artgrowing and our extended vertical farming portfolio.

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We provide vertical farming technologies for different purposes, check our portfolio here.



## Introduction - What is AVF+ Compact?

**AVF+ Compact is a revolutionary vertical farming system suited for the entire process of growing a wide variety of leafy greens, herbs and micro greens - from seeding to harvesting. All with minimal labor and the highest quality results.**

The AVF+ Compact is perfect for vertical farmers who want to start with vertical farming or want to upgrade to their first larger scale vertical farm. The ideal circumstances for strong, healthy growth and high yields are created within the climate cell. Around the cell are two stations - seeding and harvesting. These stations are constructed in such a way that they require only minimal labor, whether you choose for manual or automatic operation.

Operation of a farm is made easy with the AVF+ Farm Management Software, it lets you control the entire growing process of up to two hectares of growth surface.

Insight into growth and health of crops is important and that's why the management software is connected to the AVF+ Crop Cloud - a cloud database where all data from the farm is collected and stored. With the Crop Happiness Monitor add-on this data is analyzed and results are shown in the interface.

AVF+ Compact has been designed with a modular setup to enable simple expansion of growth surface. Growth surface starts at 240 m2 and can expand to any desired project size.

### Medium Size Vertical Farm For Growing a Wide Variety of Leafy Greens, Herbs and Micro Greens



#### Integrated Solution

Supplied with everything needed for vertical farming and larger scale crop production. Controlled from one application.



#### Low Labor Expenses

An AVF+ Compact only needs a small amount of personnel for operating a farm. This keeps labor expenses low.



#### Flexibly Scalable

Whether you'd like to start with a smaller manual farm and expand, or go big on growing surface and automation, AVF+ Compact scales to your needs.



#### Complete Climate

AVF+ Compact uses a climate cell to enable you to create the ideal climate for crops to grow strong, healthy and fast.



# AVF+ General Advantages



High growing efficiency & flexibility



Growing from seeding to harvesting



Consistent Climate



Low labor cost



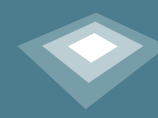
Year round production



95% less water needed



No Pesticides



Scalable to 20.000 m2 growth area



Higher yields



ROI < 5 years



## Climate Cell - The Best a Plant Can Get!

Inside the Compact's climate cell is where the real growing magic happens. Under bright Led lights, specialized for growing, a sea of crops are growing with hydroponics. Climate variables, light, water and nutrients – the essential ingredients for perfect growth - can be adjusted and controlled to hit the perfect growing circumstances for any crop. The cell itself is closed off to the outside world to ensure that the climate stays the way it's intended and to keep out parasites, viruses, pests and bacteria that can threaten the health of the growing crops. AVF Compact has the highest level in Bio Security achievable.

Healthy, strong and fast growing crops require an environment in which everything they need is just right. Creating that ideal environment requires a balance of climate, light and nutrients. With AVF+ Compact you've now got the power to give a plant the best it can get!



### Complete, Controllable Climate

Inside the climate cell Temperature, Relative humidity, Air flow and CO2 are all controllable to create the perfect climate conditions for healthy and fast growing crops.



### LED Light Done Right

Light recipes (spectrum, intensity and time on/off) are managed for each individual layer, making it possible to have up to 10 different light recipes at one time.



### Precision Water & Nutrient Management

A water management unit carefully prepares the nutrient solution by mixing in the right ingredients and adding fresh water. Every layer is served the exact amount needed for the growing crops. Of all used water, 99% is recycled.



# Vertical Growing - Grow More Than Ever Before



Optimization of floor space is the name of the game in vertical farming and with AVF+ Compact we've upped the game to 10 layers inside every climate cell to get as much growing surface out of every square meter. Each growing layer has the ability to operate and move crops independently by using two internal lifts and pushers, making it possible to grow up to 10 different crop varieties within one cell\* with minimal human intervention.

The entry level Compact has a climate cell with already 240 m<sup>2</sup> of growing surface, it doesn't stop there though! We've engineered every cell so it can be upgraded to a maximum of 922 m<sup>2</sup>. On top of that the Compact is modular and each farm has the capacity to add multiple climate cells within the same farm setup, giving you full flexibility in how much you can grow.



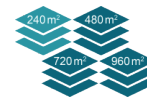
## 10 Stacked Layers For Growth

Optimize floor space and grow crops on 10 independently operating layers with each three rows of benches.



## Grow What You Want

Whether you'd like to grow just one crop variety or more, you are free to decide. Every climate cell can grow up to 10 different crop varieties\*.



## For Those Who Want More

AVF+ Compact comes standard with 240 m<sup>2</sup> of growing surface (2,583 sq. ft) and is also available with 480 m<sup>2</sup>, 720 m<sup>2</sup> and 960 m<sup>2</sup> \*\* for large production volumes.



For even bigger farms there's the possibility to add more full size climate cells within the same farm setup.



## What Can You Grow?

The possibilities for crop research are almost endless, there are many crops that will thrive in a vertical farm. We've listed the below crops as good starting points and there are even more possibilities. For more crops please contact Artgrowing.

### Leafy Greens



### Microgreens



### Herbs



### Lettuce

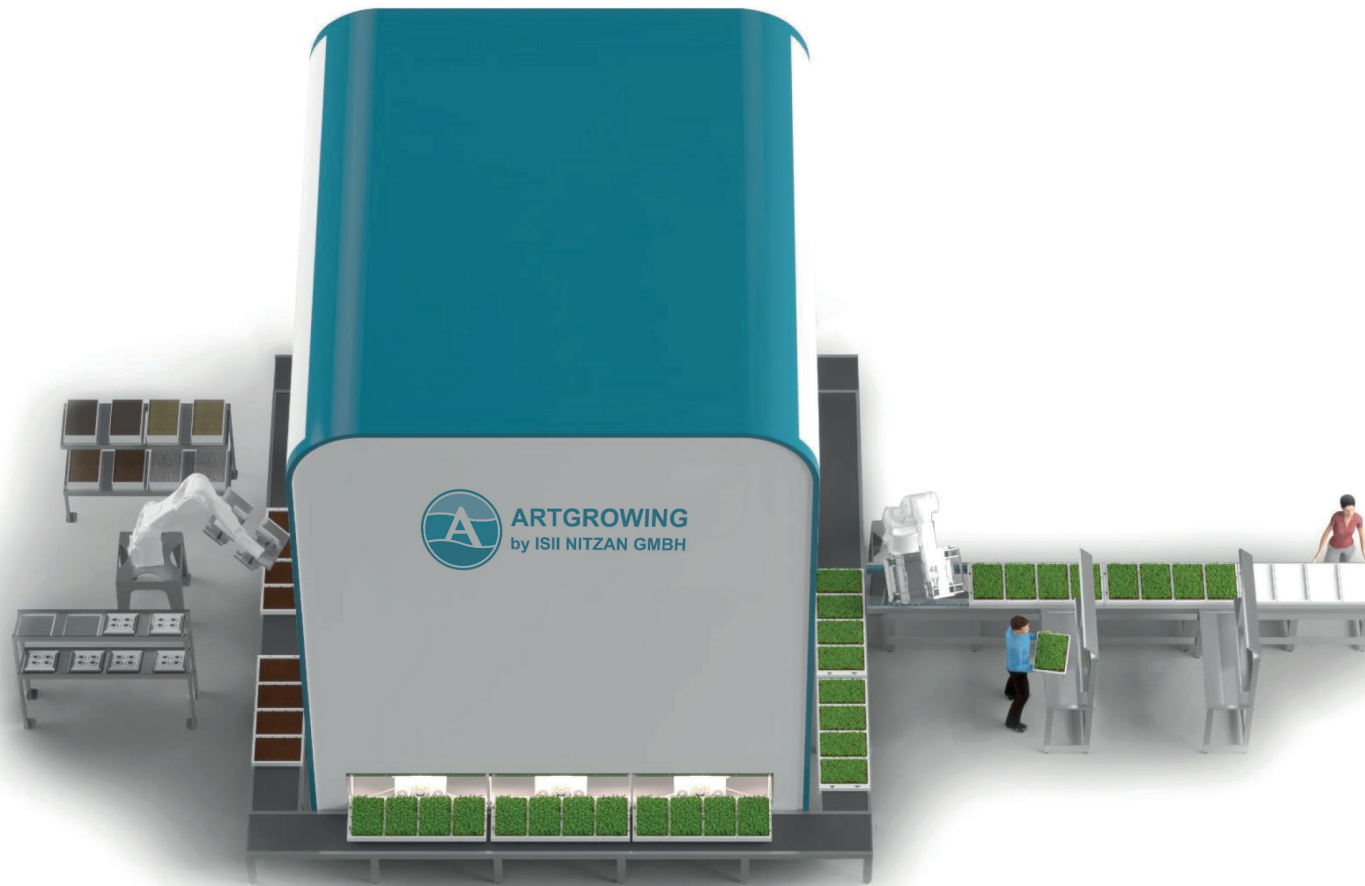


### Berries





# The Farming Process - How Does It Work?



## Seeding

Seeds are planted in growing trays by hand or machine.



## Transport

Trays are moved on conveyer tracks and with internal lifts at the front and back side.



## Growing

Everything a crop needs for healthy, fast and strong growth, is inside the climate cell.



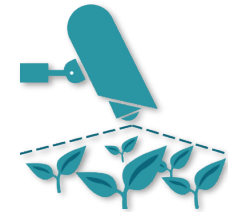
## Harvesting

Matured crops are harvested at the final station, by hand or machine



## Farm Management

The AVF+ management software controls all processes in the farm with one easy-to-use interface.



## Crop Happiness Monitor

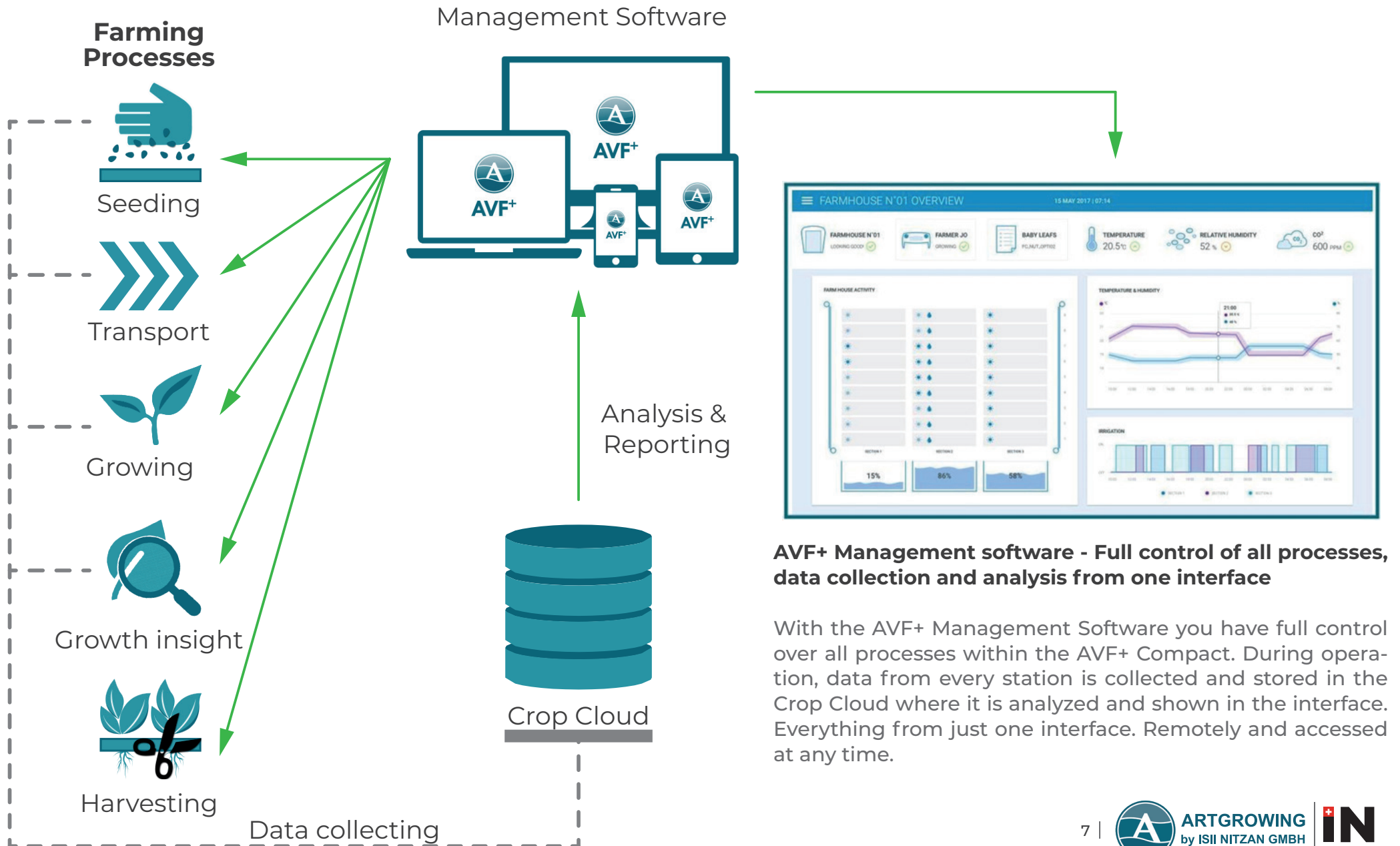
Health and overall growing is monitored with vision technology and reported in the management interface.



## Data Collection

During the farming process, data about crops, climate, processing and transport is continuously collected and stored in the AVF+ Crop cloud.

# The Farming Process - How Does It Work?



**AVF+ Management software - Full control of all processes, data collection and analysis from one interface**

With the AVF+ Management Software you have full control over all processes within the AVF+ Compact. During operation, data from every station is collected and stored in the Crop Cloud where it is analyzed and shown in the interface. Everything from just one interface. Remotely and accessed at any time.



## Crop Happiness Monitor - Insight into optimal growth



Healthy, well growing crops are happy crops and happy crops make happy farmers. To make sure you know that crops are growing the right way, we've developed the Crop Happiness Monitor.

Traditionally health of crops is observed by the farmer's eye. For a vertical farmer this is difficult because being up close and personal with the crops might damage them or threaten their health. Nonetheless it is important to know if everything is growing according to plan. To accomplish this the Farm Management Software combines advanced analysis software and algorithms with Vision technology to analyze and report on the current happiness of the crops. With the information provided, the farm operator is able to adjust farm settings and achieve optimal health and growth.



### The Farmers Eye 2.0

Vision technology combined with cameras spread throughout the climate cell, give direct insight into everything that's going on inside the farm, at all times.



### Optimal, healthy growth curve

Within the AVF+ interface, graphs show the optimal growth curve for crops and compares it to current crops growing inside the farm. Giving peace of mind because you know everything is going according to plan.



### Learn and grow even better

Happiness analysis continuously learns and redefines optimal growth based on thousands of data points that are collected during the growing process. Enabling you to grow even better in the future.

# Choose The Right Solution For You

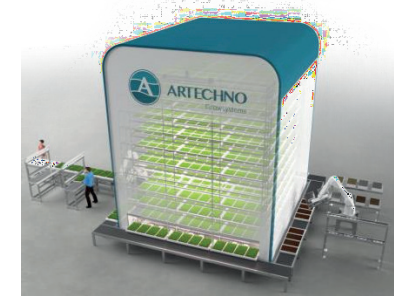
# AVF+ Compact



**Manual**



**Semi-automatic**

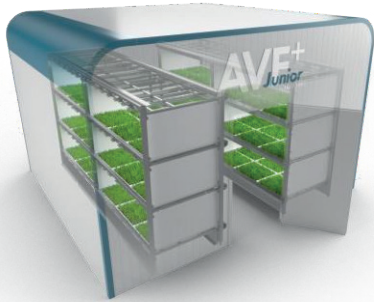


**Full automation**

<b>Growth Surface</b>	240 m <sup>2</sup>	240 m <sup>2</sup>	240 m <sup>2</sup>
<b>Expandable growth surface</b>	Up to 960 m <sup>2</sup> /cell	Up to 960 m <sup>2</sup> /cell	Up to 960 m <sup>2</sup> /cell
<b>Farm size expansion</b>	Multiple climate cells	Multiple climate cells	Multiple climate cells
<b>Complete and adjustable climate</b>	✓	✓	✓
<b>Adjustable LED light recipes</b>	✓	✓	✓
<b>Precise nutrient management</b>	✓	✓	✓
<b>365 days of production a year</b>	✓	✓	✓
<b>Seeding</b>	Manual	Manual, machine assisted	Automatic
<b>Transport (outside climate cell)</b>	Manual	Manual, with conveyers	Automatic
<b>Transport (inside climate cell)</b>	Automatic	Automatic	Automatic
<b>Harvesting</b>	Manual	Manual, machine assisted	Automatic
<b>Labor cost reduction</b>			
<b>AVF+ Farm Management software</b>	✓	✓	✓
<b>Growth-data collection</b>	✓	✓	✓
<b>Happiness Analysis</b>			✓
<b>Off-site service</b>	✓	✓	✓
<b>Artgrowing safety monitoring</b>	✓	✓	✓



## Our Vertical Farming Portfolio



### Purpose

Crop research and innovation.

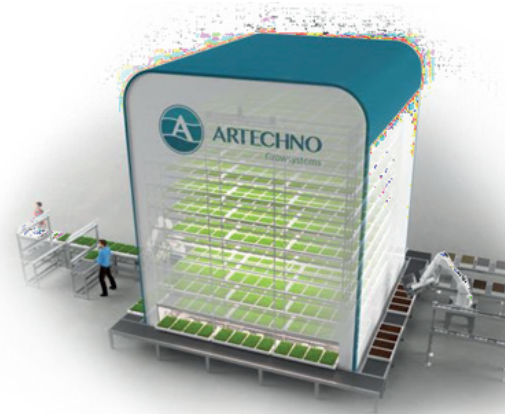
### Growing Characteristics

Controllable consistent climate, 12 independent growing positions, adjustable LED light recipes, precise water & nutrient management.

### Growing Surface

15 m<sup>2</sup>, 30 m<sup>2</sup> or 60 m<sup>2</sup>.

**AVE+**  
Junior



### Purpose

Small to medium scale vertical crop production.

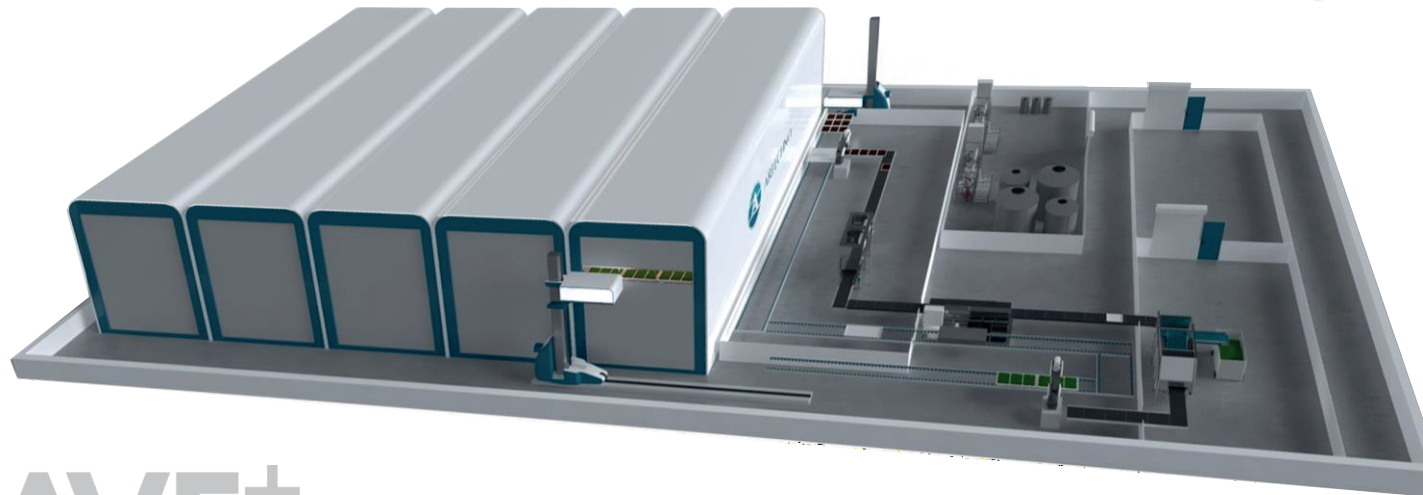
### Growing Characteristics

10 growing layers, Controllable climate, adjustable LED light recipes, precise nutrient & water management.

### Growing Surface

240 m<sup>2</sup>, 480 m<sup>2</sup>, 720 m<sup>2</sup>, 960 m<sup>2</sup> up to 4,600 m<sup>2</sup>.

**AVE+**  
Compact



**AVE+**  
Scale

### Purpose

Large scale, high volume (automated) vertical crop production.

### Growing Characteristics

Multiple controllable climates, adjustable LED light recipes, precise nutrient & water management.

### Growing Surface

Starting at 4,600 m<sup>2</sup> and larger.



## Next Steps

### Give us a call

To find the right solution for your specific needs we would love to work together with you and come to the ideal system, give us a call and we'll answer any question you have or discuss the possibilities for a quotation.

### Visit our website

Interested in more about Artgrowing and our products? Visit [www.isii-nitzan.swiss](http://www.isii-nitzan.swiss) to find more information about vertical farming, Deep Float Hydroponics, harvesting, water systems and more.

### Schedule an appointment for a demo

Would you like to see our systems in action, contact us and we'll schedule an appointment for a visit and a tour of our home facility.

### Reserve a spot in our vertical farming facility

Are you interested in testing for vertical farming but not yet ready to invest in a system? We provide a limited amount of growing positions inside our research facility for hire. Contact Artgrowing to learn more.

## Contact us:



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