

N A A V A

breathe



Reconnecting Humanity with Nature

Naava brand story



A teacher who got sick due to poor indoor air quality studied how to bring nature inside.



We'll survive without food for two weeks, without water for four days, but without air, we'll only live for a few minutes.

- Aki Soudunsaari, Founder of Naava

Aki Soudunsaari spent much of his childhood outdoors in the wilderness, surrounded by crystal clear lakes, rivers and forests in Lapland, Finland. In his 20s, he got seriously ill due to poor indoor air quality, working as a schoolteacher. He soon realized that there were many others like him. Things needed to change.

Quitting his job, he decided to study how to bring nature inside with Niko Jarvinen who studied environmental science. After a lot of trial and error, they created a smart and active green wall Naava, combining plants and artificial intelligence.

Naava envision that by 2025, a billion people can choose to breathe Nordic forest air - everyday. Everywhere. We believe that healthy air should be a human right. We will bring nature's most precious gift inside.

Have you ever thought about the real reason you're always tired? Maybe due to 'natural deficiencies'.



In modern times we fled indoors and locked the doors in our lives. It made 'natural deficiency' normal.

- Jørn Viumdal, 'Skoglufteffekten'

Cave workplaces, cave schools, cave houses, we spend **90%** of the day in a cave-like inside. At this time, the human instinct to find light and plants is suppressed, and the body energy is easily depleted to endure abnormal situations. Fatigue, headaches and respiratory problems are inevitable.

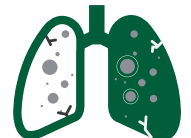
10,000 liters of indoor air we breathe daily is 5 times more dangerous than outdoor air.¹



900 species of indoor harmful chemical substances



4.3 million of annual death by Indoor air pollution²



1,000 times more pollutants reaching the lungs than outdoor air³

¹ Environmental Protection Agency

^{2,3} World Health Organization

The air you breath affects your health and productivity.

Indoor air quality improvement

- reduces absence rate due to sick leave by **35%**.⁴
- increases crisis response by **131%**, strategic solutions by **288%**, information usage by **299%**.⁵

⁴ Risk of Sick Leave Associated with Outdoor Air Supply Rate, Humidification, and Occupant Complaints (2000, Milton DK, Glencross PM, and Walters MD)

⁵ Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers' (2015, Joseph G. Allen)

References



Commercial Spaces

“We applied Naava to the complex cultural space with the theme of rest and healing. I envisioned the space as if it brought nature inside. it became possible with Naava.”

- Dongchoon 175



Offices

“I think we were attracted to Naava for a variety of reasons. First, of course, was to improve the air quality. Naava really added a quality of air that we couldn’t really get in any other way. One of the other attractions for us was our big belief in the healing properties of plants and the attraction of nature and what living in nature actually brings from stress reduction and quality of life.”

- Nina Kaminer, President and Founder of Nike Communications.



Meeting Rooms



Open Offices

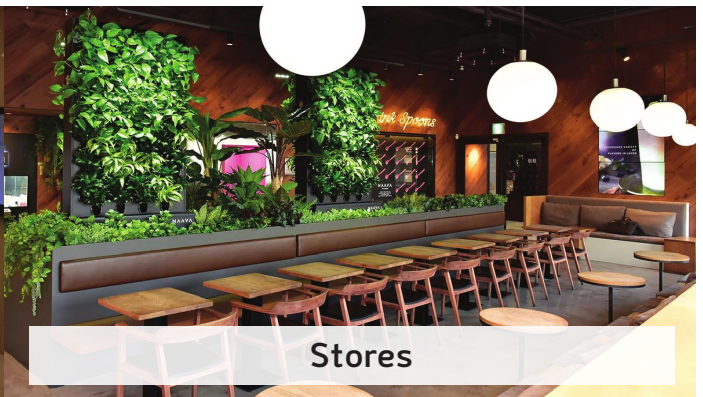
Commercial Spaces

“No-one has complained about fatigue during the working day after the installation of Naava. The cooperation with Naava has been exemplary and I can wholeheartedly reiterate that everything we agreed on takes place on time and Naava has remained in an excellent condition. If Naava was removed from the pharmacy, we would definitely feel the difference. It has done us so much good. It’s definitely not just an ordinary green wall, so it provides novelty value too.”

- Leena Karikoski, a Pharmacy in Vaajakoski



Hospitals



Stores

Educational Facilities

“Of the respondents, **32.7%** felt that the air quality in the library had improved and fewer students reported negative symptoms, such as headache and dry eyes. In addition, the green walls were considered as a boost to the general atmosphere of the library.”

- Tua Hindersson-Soderholm, Head of the Library of Hanken University



Universities



Childcare Facilities

How the Naava Green Wall works

Naava, combination of plants and artificial intelligence, provides an optimal environment for stressed plants so that they can grow healthy.



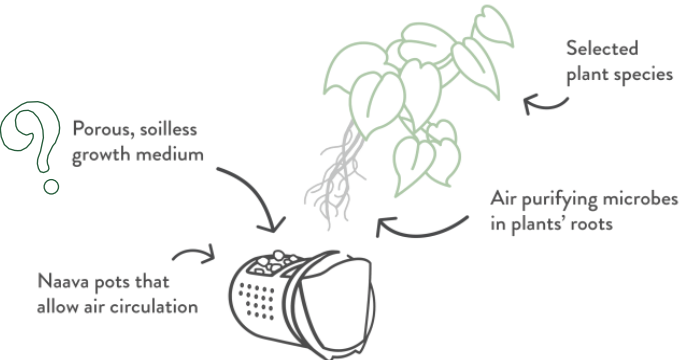
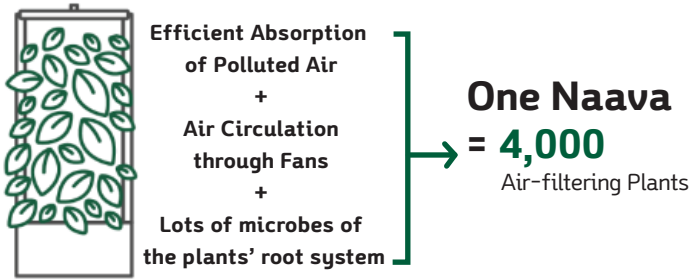
Biofilters maximize the air purification capacity of plants

Biofilters

Based on NASA research, "98% of air purification takes place in plants' roots, not in the leaves."

We have developed a biofilter that accelerate the air purification efficiency of plants.

Biofilters allow contaminated air to meet the root microbes and generate air flow to maximize purification efficiency.

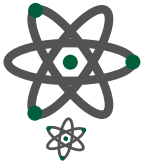


Porous, soilless growth medium

Our very own invention, the porous, soilless growth medium is naturally occurring inorganic substance and a key factor in improving air purification efficiency. It is very unlikely to grow mold or cause allergic reactions, because it is not an organic substance.

Amazing changes that Naava brings inside

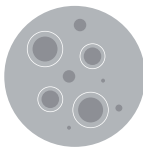
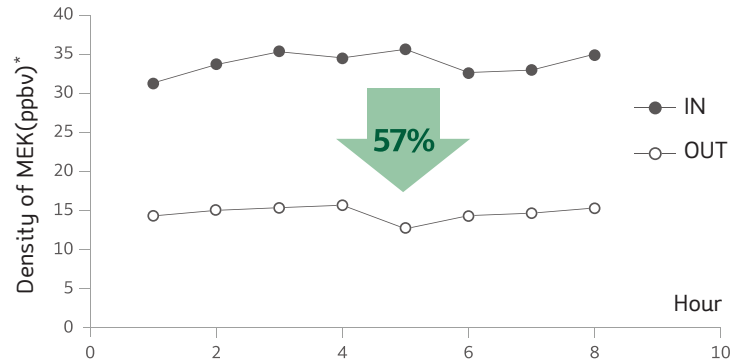
Naturalizing indoor air helps you stay healthy and increase your work productivity.



Reduction of Volatile Organic Compounds (VOCs)

by more than **57%** on average with a single pass continuously¹

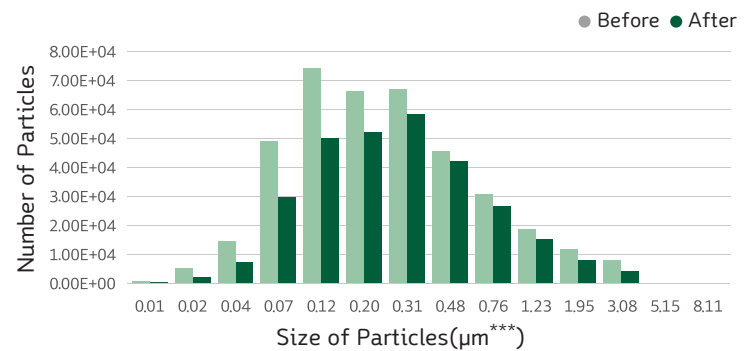
*MEK: Methyl Ethyl Ketone
ppbv: parts per billion by volume



Reduction of Fine Dust

by **25%** on average with a single pass continuously Especially excellent in ultra fine particulate matter** removal efficiency²

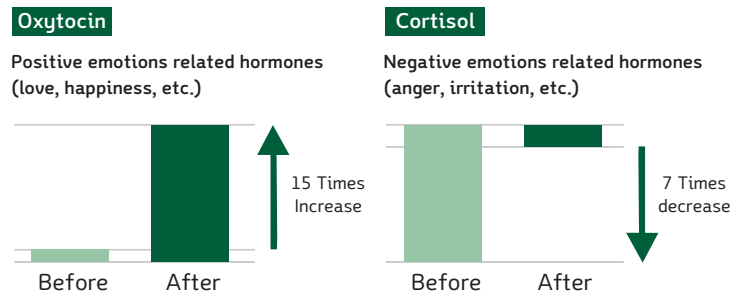
**Ultra fine particulate matter; particulate matter under PM 2.5
***µm; micrometer



Psychological Stability

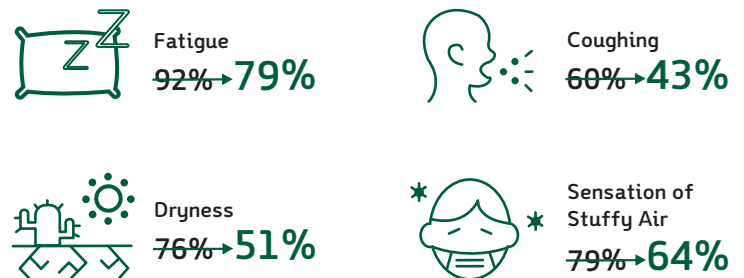
Increase of happiness hormone by **15 times**

Decrease of stress hormone by **7 times**³



Health Improvement

Improvement of fatigue, coughing, dryness, sense of stuffy air⁴



¹Tested and Certified by BRE(Building Research Establishment) with investment of Delos (US Eco-friendly Real Estate Investment Company)

²Testing the single-pass VOC removal efficiency of an active green wall using methyl ethyl ketone (MEK)' (2017)

- Measured amount of VOCs removed every hour for 8 hours after installation of Naava in a 30m² space and continuous VOCs injection to keep VOCs level.

³Smart Greenwall in Filtering Fine Particulates from Air Pollutants' (2016, Kangas Tuomo)

- Measured amount of particulate matter absorbed into Naava and exhausted from Naava after installation of Naava in a 30m² space and car diesel engine smoke injection.

⁴'Do NAAVA Smart Green Walls Affect Our Oxtocin Levels' (Siru Heiskanen & Jarno Mikkonen)

⁴Research by STATISTI, Finland. 3 month after installation of Naava, a survey of 605 workers in 18 different companies and spaces was conducted on changes in the working environment and personal health status with the indoor air experienced by workers.

Professional Naava Service



Smart technology optimizes Naava's performance 24/7

- Sensors measure the surroundings (Temperature, Humidity).
- Connection to the cloud and weather satellites prepare for environment changes.
- Real time information of the green wall's functions
- Automated irrigation and air circulation adjustments



Naava Service ensures that Naava always looks fresh and beautiful



Management of Plants

- Disinfection of leaves and stems
- Pest prevention and follow-up management
- Plants are replaced if needed.
- Withering leaves are taken off and the growth of the plants is controlled.
- Plant management following Naava design guidelines

Management of Water and Naava

- Check system operation and repair equipment
- Water quality management optimized for plants
- Filling of water tanks



100% Guarantee

- Naava and its plants have a full guarantee.

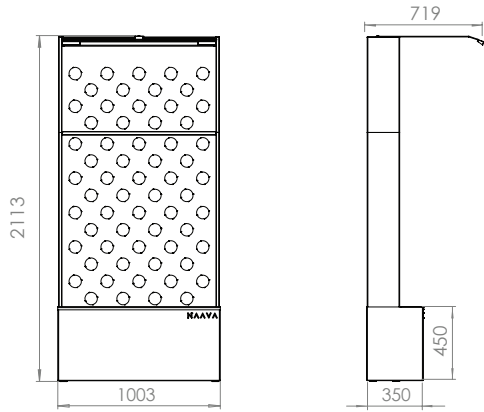
Products

■ Graphite black
RAL-code 9011 □ White
RAL-code 9016

Naava One

- Free-standing model

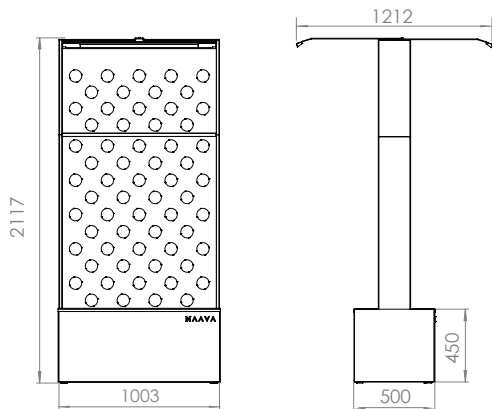
Size 1,003(W)x 2,113(H) x 350(D) mm



Naava Duo

- Double-sided free-standing model and a striking room divider

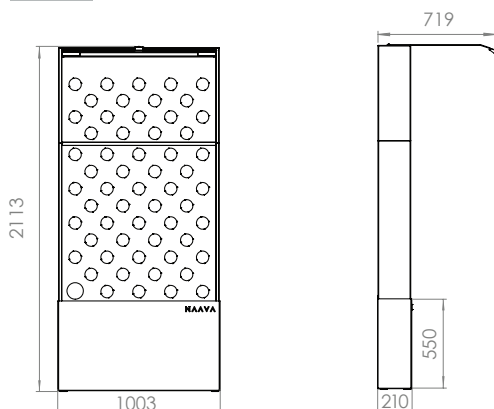
Size 1,003(W)x 2,117(H) x 500(D) mm



Naava Slim

- Wall-attached slim model

Size 1,003(W) x 2,113(H) x 210(D) mm



Design Awards

Modern Design with the combination of Nordic sensibility and high tech

We won various design awards at NeoCon, North America's Largest Design Exposition and Conference for Commercial Interiors. In the case of interior renewal and new open spaces, the Naava team is dedicated to helping with the installation work.



2017 U.S. Interior Design
Final Selection on Green Innovation



2018, 2019 NeoCon
Silver Award



2017 Fennia Prize
Winner

Q&A on Naava

Q. What plants are used in Naava?

We selected plant species harmless to the human body among the air-filtering plants chosen by NASA. Traditional soil is washed off the plants, which are then replanted into a soilless, porous growth medium and special Naava pots and finally adapted to soilless growth medium.



Epipremnum
Aureum



Dracaena
Compacta



Dracaena
Lemon Surprise



Clusia Rosea



Schefflera
Arboricola
Nora



Schefflera
Arboricola
Charlotte



Anthurium
Scherzerianum

Q. What does Naava need from the space it's located in?

- Needs to be plugged into a standard 220V outlet at all times.
 - Power must be supplied 24 hours, because it works 24 hours and optimizes air quality.
- No separate water supply and drainage facility is required.
- The room temperature should be kept above 16 degrees at all times.

Q. Where should I place Naava?

Our experts will help you choose the best solution and the optimal placement for Naava.

Q. How much is Naava power consumption?

Power consumption of Naava One Slim is 15.5kwh, that of Naava One is 17.5kwh, and that of Naava Duo is 22kwh. The consumption is small and is similar to that of a general bulb.

Q. Is service region limited?

Naava is a product that provides professional on-site maintenance services.

The service area needs to be confirmed in advance. If you have any questions, please contact us. (weekdays 9:00-18:00).

Q. Is it possible to produce various product sizes?

Naava is a standardized system and equipment applied to maximize plant purification. Because of this, it is provided only with standard sizes.

The standard size is 1,000(W) x 2,100(H) mm, and when ordered, 800(W) x 2,300(H) mm can be produced. For custom-made products, lead time is long from order to installation, and the unit price and maintenance unit price are different. So consultation is required in advance.

Naava's efficiency is scientifically proven

Naava efficiently removes chemicals and particulate matter from the air.

bre



Green wall's watertank water is safe.

Nablabs



In a Naava space, people


- are happier and less stressed
- make less mistakes
- suffer less from indoor air symptoms (fatigue, headaches, eye irritation, respiratory problems)



STATISTI

NAAVA

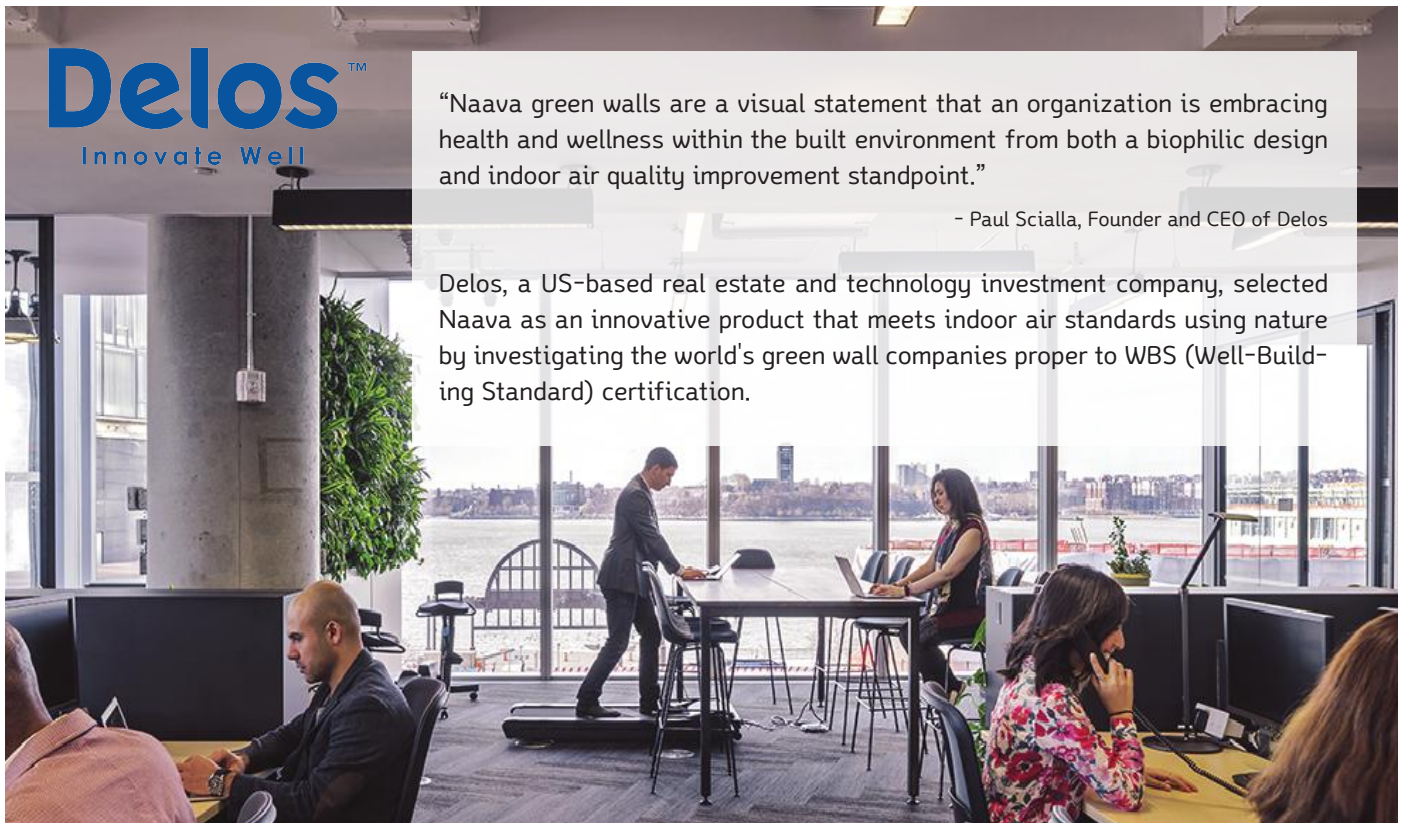
Naava is an innovative product selected and certified by Delos.



“Naava green walls are a visual statement that an organization is embracing health and wellness within the built environment from both a biophilic design and indoor air quality improvement standpoint.”

– Paul Scialla, Founder and CEO of Delos

Delos, a US-based real estate and technology investment company, selected Naava as an innovative product that meets indoor air standards using nature by investigating the world's green wall companies proper to WBS (Well-Building Standard) certification.



NAAVA

breathe


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