
greencity
solutions
we grow fresh air
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Climate actions pose enormous challenges for future cities

Healthy: Reduce health consequences through air pollution and heat islands

13.6% increased risk of premature death

Source: Di et al. (2017), Air Pollution and Mortality in the Medicare Population

Climate neutral: Reduce emissions of the city as the main CO2 emitter

Guangzhou and HongKong rank #2 and #4 globally

Source: http://citycarbonfootprints.info/

Efficient: realize cost savings of smart city technology

Over 4 trill. untapped savings annually for enterprises, governments, citizens by 2022

Source: White Paper ABI Research 2018

greencity solutions

Municipality: reach political targets

Initiatives with
- ✓ high short-term impact,
- ✓ low operation expenditure
- ✓ high acceptance

Corporates: reach sustain-ability targets

Economical initiatives that
- ✓ reach environmental targets
- ✓ portray as responsible employer

Real Estate: cover building requirements

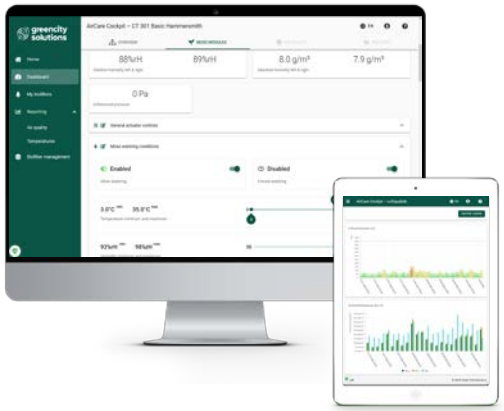
Find initiatives that
- ✓ distinguish its environmental performance from competitors
- ✓ improves acceptance of projects

Say hello to Green City Solutions

The company with the world's first biotech filter that improves air quality

Natural air refreshment

Tracking environmental conditions and effects



Improvement of the cityscape

Regenerative, Smart & Scalable

Waste-free service, adaptive control, versatile use.

Let’s bring nature back to the city.

Our vision is to bring fresh and clean air to cities worldwide and bind CO_2

2015–2020
Proof of Concept phase
Dresden

Establish leading expertise for biotech solutions to combat hyperlocal air pollution with 60+ CityTree projects installed

2021/2022
Scaling the business
Berlin

Extend the product portfolio and business models to become integral part of any smart city infrastructure

2023 and beyond
Create clean air networks

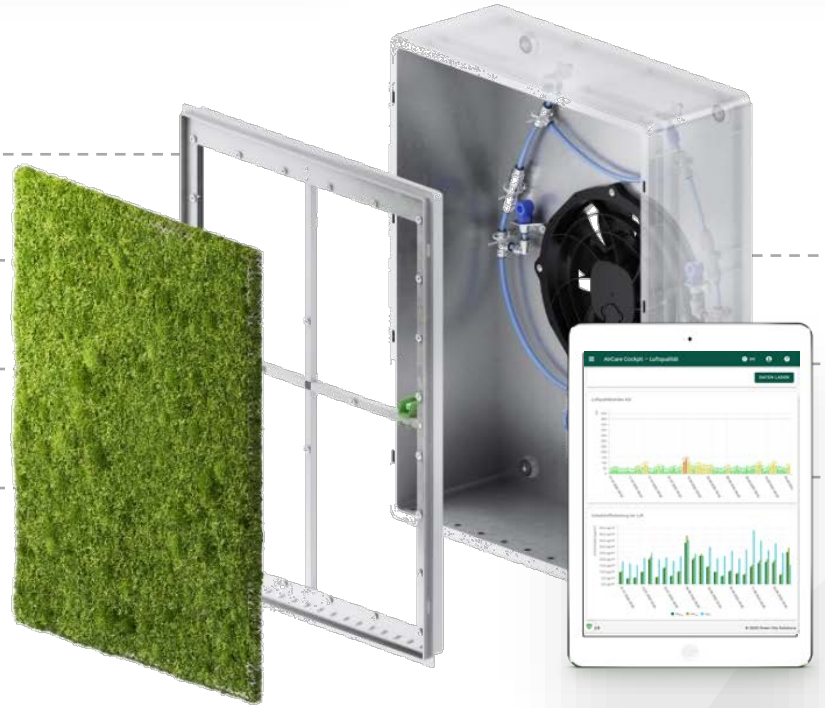
Become the leader for biological air purification to refresh air for +500 million people and compensate up to 56,000 tons of CO_2 until 2030

We combine biology with technology to activate and foster natural effects

Air pollution digesting moss cultures + **IoT-based control and supply system**

Moss is a natural regenerating air pollution filter

- Patent pending MossModule reducing (fine dust by up to*) **82%**
- Viruses (e.g. Corona) by up to** **20%**
- Cooling effect with reduction of up to*** **4°C**
- CO_2 capturing of approx. **** **1kg**



IoT-technology enabling cloud-based connectivity to combine our data points to urban data grids

- **30** different sensors collect
- **784** data records for real-time analysis every hour
- **4GB** of data per data point per year

* Filter performance on laboratory test. All measurements were conducted by ILK (Institute of Air Handling and Refrigeration (ILK)) Dresden, based at Bertolt-Brecht-Allee 20 in 01309 Dresden, Germany. Operating mode with 0.3 m/s, fractional separation efficiency at particle size of 6µm.

** Filter performance on laboratory test with feline corona viruses. All measurements were conducted by University of Leipzig, institute for animal hygiene and veterinary medicine, based at An den Tierkliniken 1 in 04103 Leipzig, Germany. Operating mode with 0,15m/s and viral sampling volume flow of 600l/h

*** Temperature reduction measured at an ambient temperature of 18,4°C up to a distance of 0.5m, operating mode with 0.3 m/s.

**** Measurements conducted by Green City Solutions, Dec. 2020 under following conditions: running fans (0.3 m/s), measured by a portable photosynthesis system Licor-6400 in the laboratory; measurement conditions constant at temperature 21,9 °C, relative humidity 87 % , CO2 concentration 400 ppm, light intensity 2000 µmol m-2s-1, fan speed 10.000 rpm . Each sample was measured for 10 minutes. The results refer to gross photosynthesis for 24 hours of light.

Pioneering in IoT with proprietary algorithm

Dashboard design of AirCare*

*the biofilter data interface by GCS

Adaptive control of moss vitality	**Durable filter performance through groundbreaking bio-algorithm**
Adaptive control of product performance	**Efficient resource use and long-lasting product lifetime**
Adaptive control of air stream technology	**Targeted air refreshing based on people number nearby and pollution level**
Data gathering through sensors & connected technology	**BigData platform for digital business models**
Data Processing in form of dashboard	**Transparency on data for user and additional revenue stream**

We have developed the world's first biotech filter that improves air quality

Value

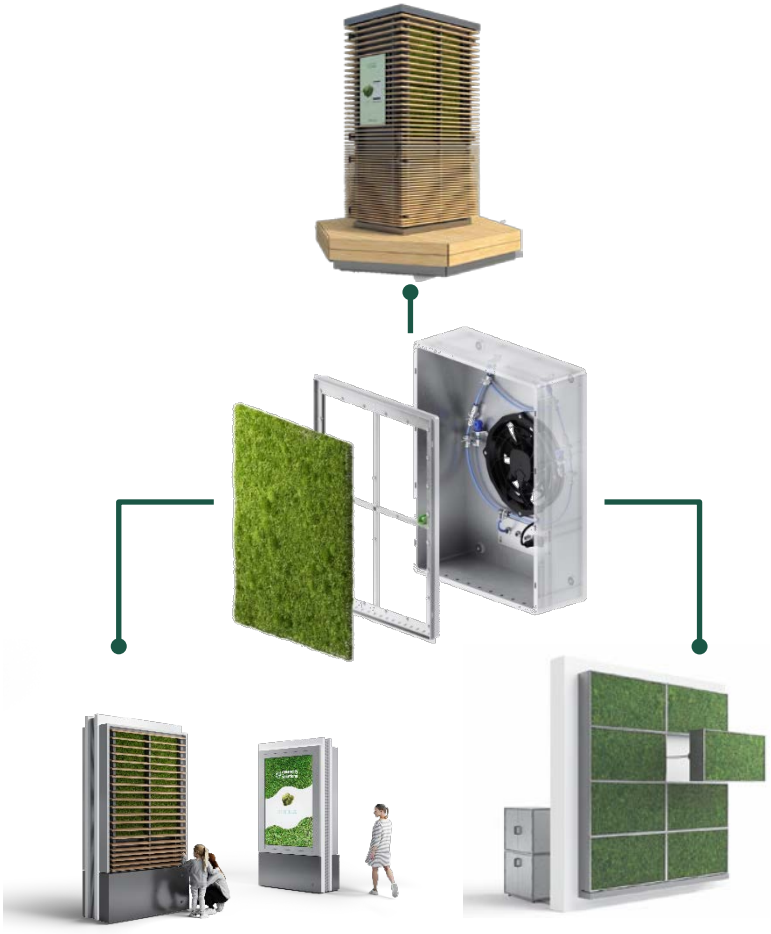
Short-term measurable reach of environmental/ sustainable targets

+ competitive cost/Impact-ratio
+ public funding fit

18,75% DGNB Certificate

Proven increased engagement
+ raised acceptance from citizen/ employee/ residents

Evaluable data basis for **quantifiable impact & justification**



Indicators

+ Realization within **8 weeks** possible

+ every **€ invested** purifies air of a breathing volume of **180 people** during 1 month

+ Proven quantifiable impact on environment

One project creates **50% more engagement** in the local community*

One project creates on average more than **800.000 data points** in one month

* measured at Walter-Benjamin Platz within the EU Horizon 2020 Project

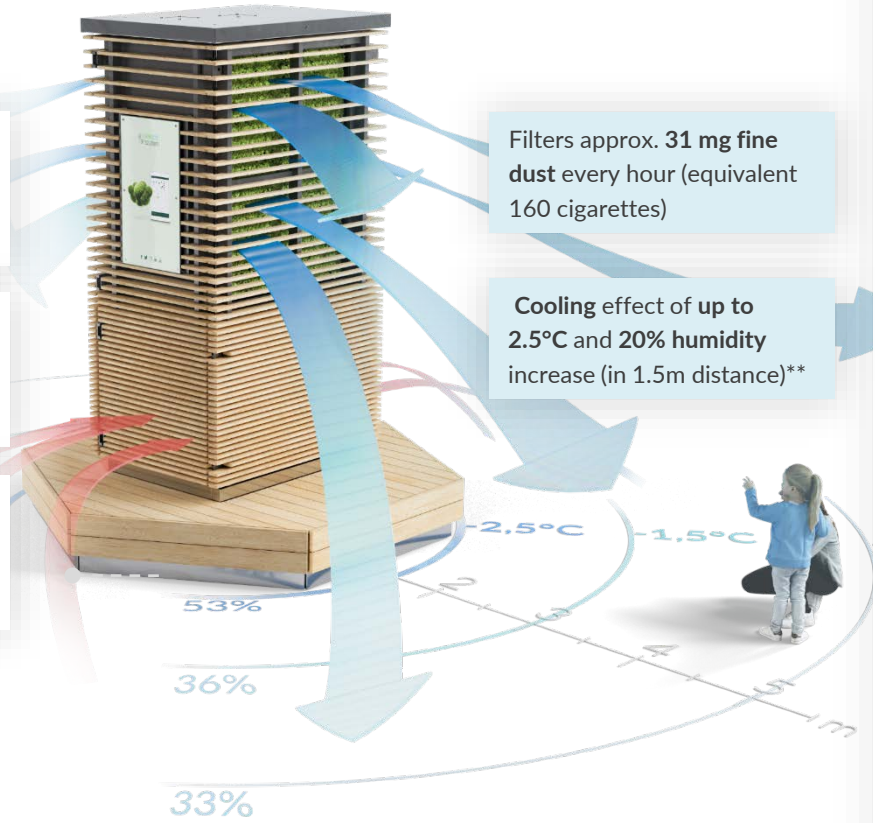
CityTree

8 MossModules inside

DOOH screen as information touchpoint

Certified ecodesign and product quality

Seating area to improve quality of stay



Filters approx. **31 mg fine dust** every hour (equivalent 160 cigarettes)

Cooling effect of **up to 2.5°C** and **20% humidity** increase (in 1.5m distance)**

* filter performance of up to 82% directly on the moss surface enables measurable impact on the immediate vicinity from 1-5 meters between 53% to 33% (see radius)

** cooling performance of up to 4°C directly on the moss surface enables measurable impact on the immediate vicinity from 1-5 meters between 2,5 and 1°C (see radius). Energy consumption of 125 Watts creates cooling power of 5.500 Watts.

CityTree performance report after 2.5 months at Putney Street/ London

Air volume

Filtered **1.3 million cubic meters of air**. This volume is equal to:

519 olympic swimming pools

324 hot air balloons

Fine dust

Filtered **65 grams fine dust** out of the air. This is equal to the emissions of:

5.400 smoked cigarettes

14.400 kilometers car ride (exhaust emissions)

CityBreeze and Infrastructure integration

CityBreeze

in cooperation with Deutsche Telekom AG

Q1 2021

4 MossModules inside

DOOH Screen: supporting business models

Customer benefits

- Advantages for locations in biding process
- Public attraction for PR & Marketing

Focus group DOOH provider

- Digital communication touchpoint (Screen)
- Measurable infotainment, comparison with oth. data

Focus group Real Estate

- Higher property value, higher rents, distiction
- Certification for sustainability

Facade Modules

in cooperation with Alsecco (DAW SE)

Q2 2021

Easy assembly: modular, adaptable, scalable

Proof of sustainability: DGNB certificate

* Working title – naming in progress

CityBreeze product diversification

“GreenStorage”

- **USP:** Sustainability performance enables approval of depots in public locations
- **Potential:**
  - delivery of 28% parcel volume in Munich through micro depots
  - reduction of CO2 emissions by 14-18% without great expense (cost delivery truck vs. less cargo over time) *

“GreenShelter”

- **USP:** Proof of performance enables a competitive advantage over other green shelters in public tenders
- **Potential**: Number of bus shelters in the center of France 1,800, number of potent. options 2%, 37 units in 2021/2022**

Integration **in infrastructure**

Integration **of infrastructure**

“GreenPhonebox”

- **USP:** Multifunctional structure enables operating costs to be covered as well as profits from advertising revenue
- **Potential:** “Versorgungsauftrag” with monthly costs of 50 €/unit, 6,000 potent. telephone booths in Germany, 750 for CityBreeze, first list with 34 units in 2021

“GreenCharging”

- **USP:** Multifunctional structure enables charging station costs to be covered through advertising revenue
- **Potential:** Amortization of acquisition costs takes several years, demand is increasing (currently 33,000, according to estimates 450,000 new charging points by 2030) ****

*https://logistik-heute.de/news/urbane-logistik-potenzial-von-lastenraedern-richtig-einschaetzen-33187.html
**Business potential by Clear Channel France
*** Business potential by Deutsche Telekom
**** https://www.energiezukunft.eu/mobilitaet/bis-2030-braucht-deutschland-mindestens-440000-ladesaeulen/