

TUNGSRAM™

Innovation is our heritage
EST. 1896

VERTICAL FARM LIGHTING

Tailored to your needs



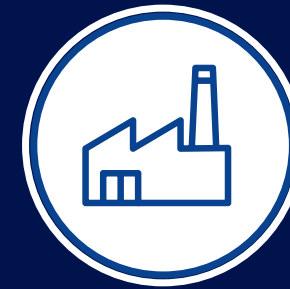
Agritech: a new solution by Tungsram

Tungsram Group has more than a century's worth of knowledge of various lighting techniques. The Agritech division aims to offer world-class quality LED and smart solutions for growers and farmers to use in precision indoor farming. Tungsram Agritech products represent premium European quality with design, development and manufacturing all done in Europe.

Whether you grow fruits, vegetables, or herbs, the Agritech Indoor Vertical Farming series offer you the ideal lighting solution to help you achieve your target profit. Thanks to features like light intensity and spectrum control, and the modularity of the lightbars that let you set just the right illumination for the different phenophases and pre-harvest treatments, this solution can help drive the growth of your crop.



TUNGSRAM OPERATIONS



5 factories
in Hungary

More than
4000 employees



Exports to **100+**
countries globally



Up-to-date technologies and
certified quality assurance



OUR PRODUCT

Indoor Vertical Farming lightbars









Tungsrām's LED lightbar solution was designed for indoor multilayer growing facilities. The highly efficient modular system is customizable to provide the most suitable amount of photosynthetically active photons and light uniformity to ensure the best results.



WHY LED LIGHTING?

- High luminous efficiency
- Numerous spectral light output
- Controllable light intensity
- Energy efficiency
- Long lifetime
- Effective heat management
- Uniform illumination
- Durability



Key benefits

- Up to 3.5 $\mu\text{mol}/\text{J}$ 
- Customizable spectrum 
- Low heat radiation, remote driver 
- Flexible, modular design 
- Waterproof 
- Shockproof 
- Super lightweight 
- Easy to mount 

Get what you need Fix-spectrum lightbar (TUAS VFS)

This module offers the most cost-effective solution with proven light configurations.

- Predefined fixed spectrum – adjustable to customer needs
- Available in dimmable version
- Passive cooling
- Remote driver – better climate control
- Flexible modular design – customizable length
- L80/B50 54k hours (@Ta 25°C)
- Power factor >0.9
- Ingress protection IP65
- Impact resistant design with aluminum shield
- Extremely lightweight, easy to mount

- Fixed spectrum, tailored to your crops 
- Most cost-effective solution 

4-channel lightbar (TUAS VFP)

This module provides control over the mix of wavelengths and light intensity resulting in dynamic lighting solutions for advanced indoor farming.

- Variable mix of wavelengths within the 400–750 nm range
- Adjustable light intensity
- Remotely operated control system with the PowerGrow software
- Real-time management of growth “recipe”
- Pre-defined programs
- Timed dimming
- Individual and group control
- 0–100% dimmability of each channel to ensure versatile spectral variants and a wide range of PPF density



- Spectrum control — 
- Wireless connection — 

6- to 8-channel research module (TUAS VFR)

Beyond all the benefits of the fix-spectrum and 4-channel lightbars, the research module allows users to experiment with the broadest range of spectral variations to finetune the light settings in R&D centers for optimal use in plant farms.

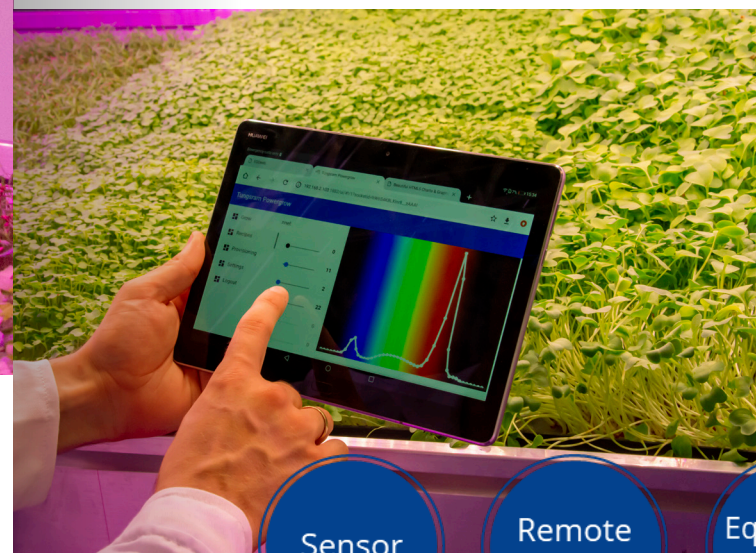
- Variable mix of wavelengths within the 375–750 nm range
- Flexibility in adjusting spectral composition
- Remote driver box - better heat control
- Connect with Powergrow Software for data collection and analysis

Most versatile spectrums —  Data collection and analysis — 

Full control over growth

- Remotely operated, innovative control systems for both industrial scale and research-based cultivation
- Real-time management of settings, pre-defined programs, timed dimming, grouped controls, and an easy-to-use map view of the growing areas
- 0-100% dimmability of each channel ensures numerous spectral variants and a wide range of PPF

Powergrow software



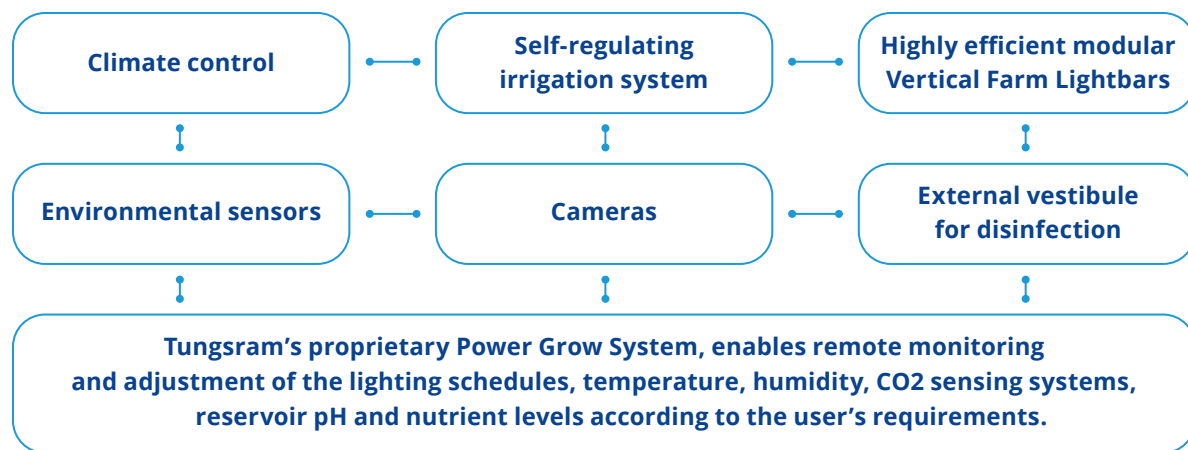
Tungsum Agritech's IT solution monitors and remotely controls the environment and the daily operation of indoor farms. The development includes remote management solutions on Android, iOS and Windows platforms to monitor and verify the operation of the control equipment through a web interface.



NEW PRODUCT – CONTAINER FARM

Grow anything. Anywhere.

Tungsrām's Container Farm is a fully assembled indoor growing facility offering a turn-key solution for R&D centers, growers and any organisations wishing to start experimenting or growing their own plants. This scalable growing platform can be based on a hydroponic or aeroponic system according to the user's specification and comes with



The fully automated system sends an alarm to users via e-mail when any of the parameters are out of range and supports data collection for offline analysis.

WHY TUNGSRAM?

Tungsrām is going beyond providing lamps that suit growers' individual needs. Our unique LED technology enables growers to set specific wavelengths for their plants, which can help them optimize and improve their growing techniques.

1. Our lightbars are **extremely lightweight** and **super easy to mount**.
2. The **driver is not integrated** in the module.
3. One can also **customize the length** of the lightbars. This modularity allows indoor vertical farmers to maximize production efficiency and space utilisation.
4. You can order a **complete indoor farming ecosystem** in a standard-sized container to grow anything anywhere.

Choose Tungram LED lighting and vertical farming solutions

Flexible LED systems,
tailored to your needs



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