



# GROW GREEN lamps

Light for profitable growth





# High quality light for horticulture

Plant life thrives in sunlight. It is essential for photosynthesis and allows plants to grow, bloom and bear fruit, both in nature and in greenhouses.

## Manage the climate to your will

Greenhouses allow growers to manage the climate largely to their will. By adjusting temperature, humidity and CO<sub>2</sub> concentration - the key factors for healthy growth - to the plants' needs. They can develop faster and better; they yield more and are less susceptible to disease. As a result, even tropical and sub-tropical plants can be grown in relatively cool regions.

## Light is the limiting factor

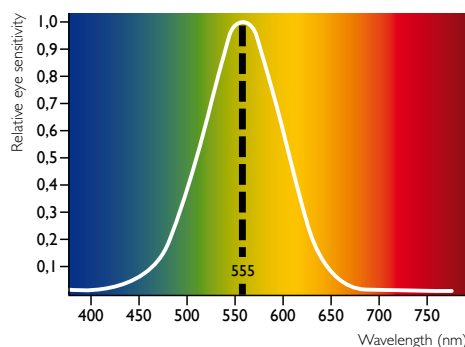
At higher latitudes over 40 degrees north or south, the light during winter is a limiting factor. Short days and low intensity light mean that the level of photosynthesis is usually too low to maintain production and quality at the desired level. This problem can be resolved with artificial light which enables growers to produce crops profitably all year round. That is why more and more growers are investing in high quality supplemental light systems.

## GROW GREEN lamps

To meet this increasing demand, the specialist German lamp manufacturer Advanced UV Light (AUVL) has developed ideal lamps for horticulture. GROW GREEN lamps emit light in the right spectrum, they are highly efficient and their low sensitivity to interference and long service life set them apart from other alternatives. And the result is a better harvest.

## Light sensitivity of humans and plants

Light is, for the human eye, the visible part of the electromagnetic spectrum covering roughly the 450 to 700 nanometer frequency range (spectrum). The human eye is most sensitive to light in the green/yellow range with a wavelength of around 550 nanometers, with much lower sensitivity to red and blue. The intensity of light in the range visible to the human eye is expressed in Lux or foot-candles.



The human eye is most sensitive to green light.



# Light frequencies and their effect on plants

## Infrared light

- stimulates upward plant growth
- slows branching
- larger, thinner leaf
- promotes flowering and setting of fruit

## Red light

- stimulates photosynthesis
- slows upward plant growth
- stimulates branching
- gives a smaller leaf surface with a thicker leaf

## Blue light

- stimulates photosynthesis
- promotes translocation of assimilates
- stimulates the formation of chloroplasts and chlorophyll
- opens the stomata
- compact plant structure
- small, thick leaf

## UV light

- promotes strength
- intensifies flower colour
- less chlorophyll

Source: Wageningen University and Research.

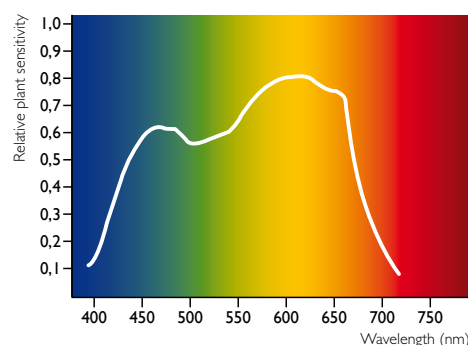
## Efficiency

The striking factor shown by the McCree curve is that plants use red light more efficiently for photosynthesis than other light colours. This means that grow lamps that emit relatively high quantities of red light will achieve higher levels of photosynthesis than lamps of the same intensity that emit less red light. GROW GREEN lamps have been developed with this in mind; they efficiently convert the electricity used into growth light in the most useful spectrum.

## PAR light

Research by McCree (1972) among others has shown that plants use a broader light spectrum for photosynthesis, from 400 to 750 nm. They are relatively less sensitive to green light but more sensitive to blue and especially red light than humans. The spectrum that aids photosynthesis is known as PAR light (Photosynthesis Active Radiation).

The intensity of this growth light is expressed in the number of light particles or photon that reach a surface per time unit ( $\mu\text{mol/s/m}^2$ ).



The McCree curve shows the sensitivity of plants to light colours.



# GROW GREEN lamps – a clear choice



**NH 1000 W,  
400 V, DE**



**NH 750 W,  
400 V, DE**



**NH 750 W,  
400 V, SE**



**NH 600 W,  
400 V Electronic**

<b>Output</b>	1000 W	750 W	750 W	600 W
<b>Current</b>	4.8 A	3.6 A	4.2 A	regulated by HF-ballast
<b>Voltage</b>	230V	210V	190V	-
<b>Ignition voltage</b>	3.2 kV	3.2 kV	4 kV	4 kV
<b>PAR light</b>	2.100 $\mu\text{mol/s}$	1.500 $\mu\text{mol/s}$	1.360 $\mu\text{mol/s}$	1.150 $\mu\text{mol/s}$
<b>Expected service life</b>	10.000 hrs	10.000 hrs	12.000 hrs	12.000 hrs
<b>Art. No.</b>	16000311	16000380	16000372	16000310





AUVL supplies different types of grow lamp, three of which are high-pressure sodium lamps. The undisputed flagship lamp is the GROW GREEN NH 1000 Watt, 400 Volt high-pressure sodium lamp. GROW GREEN lamps deliver high quantities of PAR light and have a long average service life. Combined with a high-quality ballast and fittings, maximum yield is guaranteed and reduced crop cycle time can be achieved.



**NH 600 W,  
400 V**

600 W  
3.8 A  
190V  
4 kV  
1.150  $\mu\text{mol/s}$   
12.000 hrs  
16000252



**NH 600 W,  
230 V**

600 W  
6.3 A  
115V  
4 kV  
1.100  $\mu\text{mol/s}$   
12.000 hrs  
16000254



**MH 600 W,  
230 V**

600 W  
5.7 A  
120V  
4 kV  
710  $\mu\text{mol/s}$   
8.000 hrs  
16000255



**NH 400 W,  
230 V**

400 W  
4.6 A  
100V  
2.3 kV  
675  $\mu\text{mol/s}$   
12.000 hrs  
16000256



**NH 250 W,  
230 V**

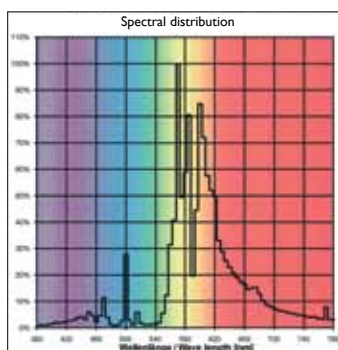
250 W  
3.0 A  
100V  
2.3 kV  
410  $\mu\text{mol/s}$   
12.000 hrs  
16000291

# Product overview



## AUWL NH 1000 W, 400 V high-pressure sodium lamp

- Ideal for cultivation with the highest light demand
- High proportions of red and blue light guarantee efficient photosynthesis
- Highest output of PAR light (2.100  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



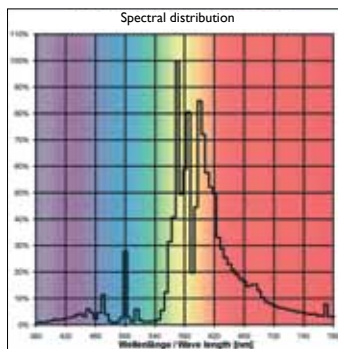
### Specification:

Output	1000 W
Current	4.8 A
Voltage	230 V
Ignition voltage	3.2 kV
PAR light	2.100 $\mu\text{mol/s}$
Expected service life	10.000 hours
Art. No.	16000311



### AUVL NH 750 W, 400 V high-pressure sodium lamp

- Ideal for cultivation with high light demand
- High proportions of red and blue light guarantee efficient photosynthesis
- Highest output of PAR light (1.500  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



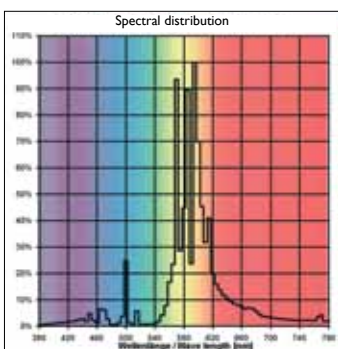
#### Specification:

Output	750 W
Current	3.6 A
Voltage	210 V
Ignition voltage	3.2 kV
PAR light	1.500 $\mu\text{mol/s}$
Expected service life	10.000 hours
Art. No.	16000380



### AUVL NH 750 W, 400 V E40 high-pressure sodium lamp

- Ideal for cultivation with high light demand
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High proportions of red and blue light guarantee efficient photosynthesis
- High output of PAR light (1.360  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



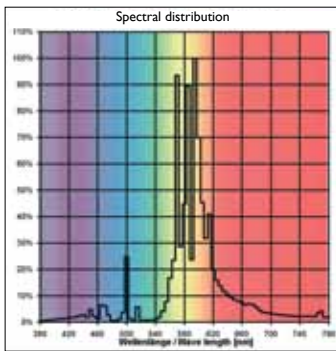
#### Specification:

Output	750 W
Current	4.2 A
Voltage	190 V
Ignition voltage	4 kV
PAR light	1.360 $\mu\text{mol/s}$
Expected service life	12.000 hours
Art. No.	16000372



### AUVL NH 600 W, 400 V Electronic

- Ideal for cultivation with high light demand
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High proportions of red and blue light guarantee efficient photosynthesis
- High output of PAR light (1.150  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



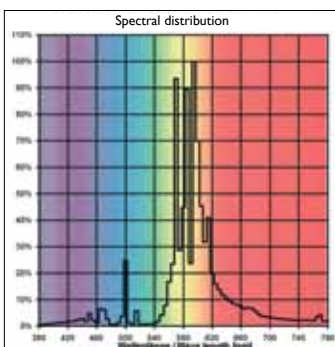
#### Specification:

Output	600 W
Current	regulated by HF-ballast
Voltage	-
Ignition voltage	4 kV
PAR light	1.150 $\mu\text{mol/s}$
Expected service life	12.000 hours
Art. No.	16000310



### AUVL NH 600 W, 400 V high-pressure sodium lamp

- Ideal for cultivation with high light demand
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High proportions of red and blue light guarantee efficient photosynthesis
- High output of PAR light (1.150  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



#### Specification:

Output	600 W
Current	3.8 A
Voltage	190 V
Ignition voltage	4 kV
PAR light	1.150 $\mu\text{mol/s}$
Expected service life	12.000 hours
Art. No.	16000252

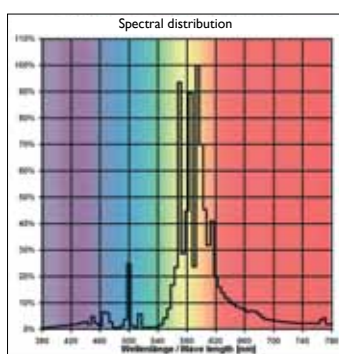




### AUVL NH 600 W, 230 V high-pressure sodium lamp

This grow lamp is ideal for less heavy-duty installations operation on the 230V mains network. The lower voltage and lower current will result, in comparison to the 400V lamp, into a lesser effective output.

- Ideal for cultivation with good light demand
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High proportions of red and blue light guarantee efficient photosynthesis
- High output of PAR light (1.100  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



#### Specification:

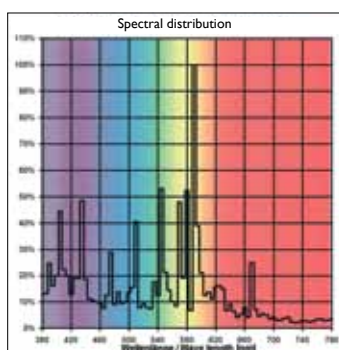
Output	600 W
Current	6.3 A
Voltage	115 V
Ignition voltage	4 kV
PAR light	1.100 $\mu\text{mol/s}$
Expected service life	12.000 hours
Art. No.	16000254



### AUVL MH 600 W, 230 V

The HM 600 W, 230V metal halide lamp has been specially developed for cultivation with a relatively high requirement for blue and UV light. These lamps stimulate leaf growth in compact plant development that follows a period of upward growth and promote strength.

- High proportions of blue and UV light make the lamp ideal for compact plant structure and strength
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High output of PAR light (710  $\mu\text{mol/s}$ ) promotes photosynthesis
- Long service life of approx. 8.000 hours



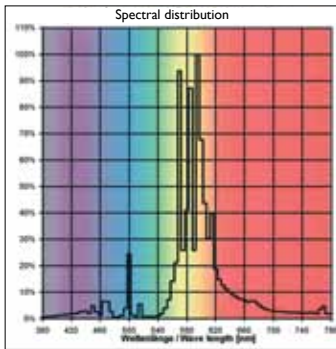
#### Specification:

Output	600 W
Current	5.7 A
Voltage	120 V
Ignition voltage	4 kV
PAR light	710 $\mu\text{mol/s}$
Expected service life	8.000 hours
Art. No.	16000255



### AUVL NH 400 W, 230 V

- Ideal for cultivation with good light demand
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High proportions of red and blue light guarantee efficient photosynthesis
- High output of PAR light (675  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



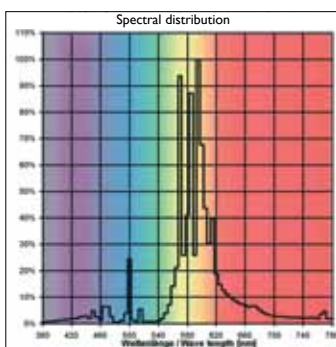
#### Specification:

Output	400 W
Current	4.6 A
Voltage	100 V
Ignition voltage	2.3 kV
PAR light	675 $\mu\text{mol/s}$
Expected service life	12.000 hours
Art. No.	16000256



### AUVL NH 250 W, 230 V

- Ideal for cultivation with good light demand
- Slimline E40 fitting for faster installation and replacement (E39 version available)
- High proportions of red and blue light guarantee efficient photosynthesis
- High output of PAR light (410  $\mu\text{mol/s}$ ) promotes photosynthesis
- Lots of red light for more photosynthesis and good plant development
- Blue light for a robust, compact plant structure



#### Specification: NH 250 NEW

Output	250 W
Current	3.0 A
Voltage	100 V
Ignition voltage	2.3 kV
PAR light	410 $\mu\text{mol/s}$
Expected service life	12.000 hours
Art. No.	16000291



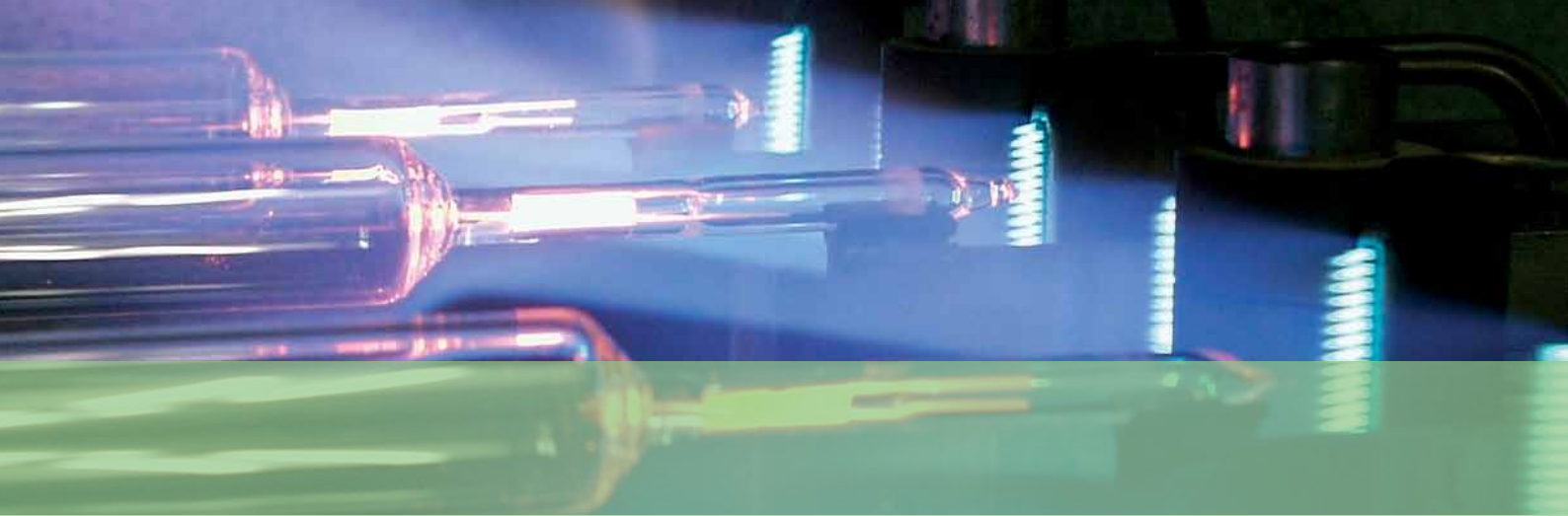
# Guaranteed development, compatibility and performance

## **RESEARCH and DEVELOPMENT are of the utmost importance at AUVL.**

AUVL is passionate about continually improving its products, increasing the lamps' output and extending their service life. AUVL's engineers invest a great deal of time every day in developing high-performance light sources of tomorrow. They are driven by the conviction that there is considerably more that can be achieved in lamp technology than what is considered state of the art at the present time. They focus particularly on the lamps' various areas of use and their optimum spectra. Customer-specific requirements and the most up-to-the-minute research findings are implemented in the product in a timely manner: this leads to optimised growth lamps!

## **AUVL sets standards and is always compatible.**

AUVL lamps have been tested with all common electronic and magnetic ballast, meaning that they are guaranteed to be compatible with your system! Provided that they are installed professionally, AUVL lamps can be operated in all leading fixtures. Excellent radiation over the service life, not to mention the significant light yield, provide the greenhouse owner or hobby gardener with optimum economic viability and an improved harvest yield across a multitude of areas of use. However, don't just take our word for it: make your own comparisons and you're sure to be won over by the AUVL lamps' high performance.



# The Company

AUVL (Advanced UV Light) has focussed on developing and delivering UV lamp technologies for over 85 years. Versatile applications attributed to the spectrum of a high-end radiation source open up a wide range of operational fields for the company.

Established in 1926 as Dr. Müller quartz lamp factory, the company was taken over by JW Holding in 2006. JW Holding is an international group of companies with more than 35 years of experience in the field of innovative lamp technology.

With the benefits of a lean organization, AUVL takes advantage of being affiliated with the JW Holding group thus profiting from access to the highest competence in the field of science and technology. These benefits also include an international network, first class service quality and state-of-the-art logistic solutions.



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