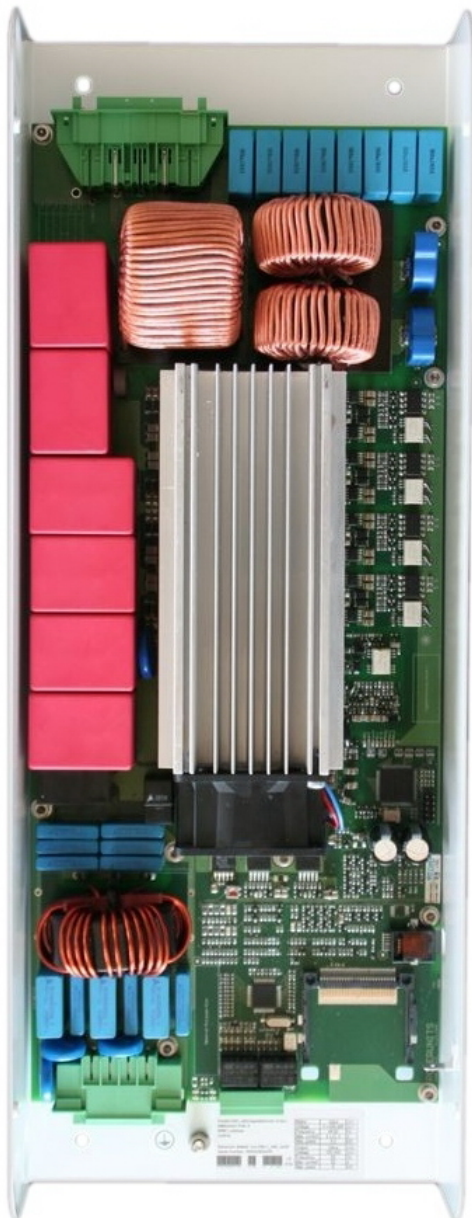


# Electronic Power Supplies

*The better alternative!*



**PowerUnits** specialises in the development of highly efficient electronic power supply units. Tailor-made industry solutions help our partners to achieve sustainable competitive advantage.

## Our development goals for your competitive advantage are

- maximum energy efficiency
- maximum life expectancy
- maximum cost efficiency
- maximum CO<sub>2</sub> savings
- maximum environmental compatibility

## Core-competencies

Our strength is in the development of power electronics for industrial and commercial applications. Electronic ballast units for UV-applications build the main focus of our developmental activities. PowerUnits applications are characterised by the highest possible efficiency in energy, reliability and user-friendly orientation.

## Legitimation

Our knowledge is based on the long-standing experience of our team in the development of power electronics and a solid purpose-oriented business strategy.

We are located in Millennium Park, a technology cluster in the heart of Vorarlberg, the accredited Austrian business district.

## Vision for the future

We would like to sharpen the position of your competitive advantage pro-actively, thereby influencing our own future and leave you with a lasting impression. Our aim is leadership within the technological sector of electronic control gears for UV-applications as well as to provide our industrial and commercial customers with the most efficient power electronics solutions.



EfficientSwitch™

## Technology

EfficientSwitch™ is the result of our effective and consistent research.

EfficientSwitch™ meets both the highest demand in quality and energy efficiency.

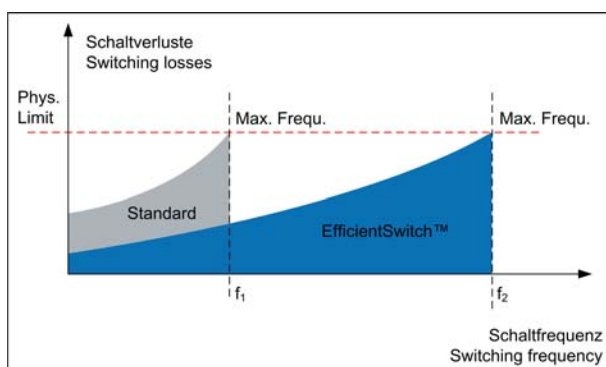
EfficientSwitch™ enables the economical production of first-class, compact electronic control gears.

EfficientSwitch™ endorses the realisation of high-performance power supply units.

## Functional principle

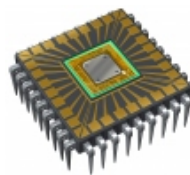
EfficientSwitch™ enables the nearly lossless current commutation within half-bridge circuits.

The perfect combination of semiconductor components changes the previously known limits of switching frequencies within half-bridge circuits despite performing of non-resonant drive up to 48kHz. This enables the usage of a single power section which controls the low frequency AC-square-wave operation between 50Hz and 500Hz.



EfficientSwitch™ enables industrial customers to integrate the values added of this technology and to place convincingly competitive advantage at their customers.

## EfficientSwitch™ logic



PowerUnits solutions.

In order to an effective integration of the core technology a CPLD-solution has been realised for the first time. This enhance the precision of results, ensures the reliability of the technology and supports the industrialisation of

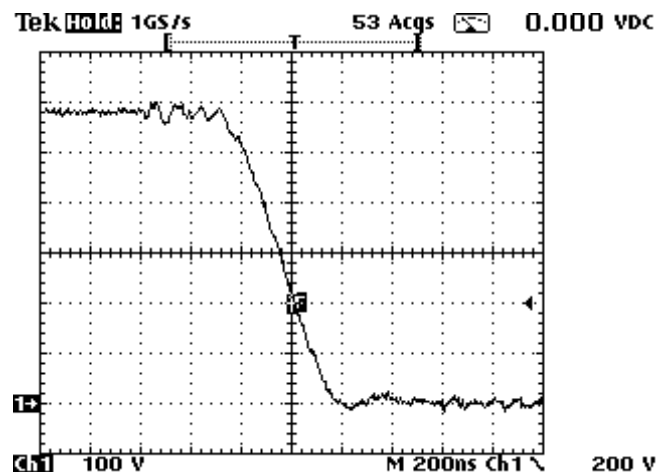
## Characteristics in outline

EfficientSwitch™ effects significant reductions of electric losses within half-bridge circuits. This leads to following positive implications:

- *higher switching-frequencies* through minimised switching losses
- thereby *unique control performance*
- thereby *more compact construction of inductive components*
- *reduced filtering efforts* due to lower EMC
- *lightly and more compact construction* due to lower losses and small EMC filters
- *extended life time* due to reduced impact on electronic components

## Switching operation in outline

EfficientSwitch™ effects a component protective, reliable as well as nearly lossless switching operation.



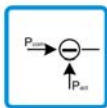
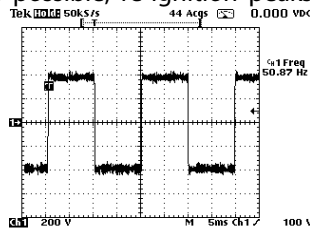
# Advantages

which are presentable...



## Low-frequency AC square-wave operation

The low-frequency AC-square-wave operation ensures uniform irradiation with virtually no modulation in the flow of electricity. EfficientSwitch™ allows for the precise adjustment of the lamp current frequency between 50Hz and 500Hz. The stimulation of acoustic resonances is inhibited as well as possible, re-ignition peaks are avoided and the optimal plasma arc stability is ensured. The combination of these properties enables the optimal operation of nearly every type of lamp and lamp power.



## True power control

An integrated microcontroller allows for true lamp power control. This enables the equalisation of voltage variations of different lamp types and ensures exactly reproducible product quality.



## Cyclic operation

EfficientSwitch™ allows for a true, continuous power control of between 5% and 100% of the radiator power. The transient time is less than 3ms. This guarantees an extremely efficient cyclic operation and low standby consumption.



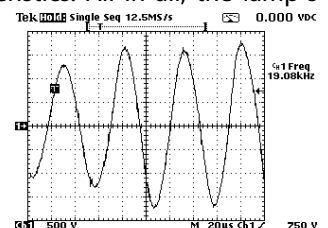
## Flexible lamp voltage

The unique concept enables for the first time lamp voltages over 1500V based on a low frequency AC square-wave operation. This offers a serious possibility to displace transformers out of the control cabinets.



## High frequency ignition

The integrated high frequency ignition box supplies powerful, lamp-protecting impulse packets with up to 4000V sine amplitude. The freely programmable start sequence enables an optimal, quick and smooth lamp start for every type of lamp. The lamp cable length has no negative influence on the ignition characteristics. All in all, the lamp's service life increases and even so-called "lazy igniter" lamps can be optimally ignited.



## Microcontroller and field bus implementation

A microcontroller ensures the optimal parameterisation of all relevant unit properties and lamp properties. The microcontroller assumes all switching operations, control operations and adjusting operations, and guarantees exact data evaluations. The integrated and intelligent lamp management ensure a smooth lamp start as well as a fast lamp control ( $P_{act}=P_{dem}$ ).



The implementation to common field busses is serially prepared and optionally realisable through the "Anybus" system.

Available are:

- Profibus
- EtherNet/IP
- Profinet-IO
- DeviceNet
- Modbus-TCP
- Modbus-RTU
- CC-Link
- CANopen



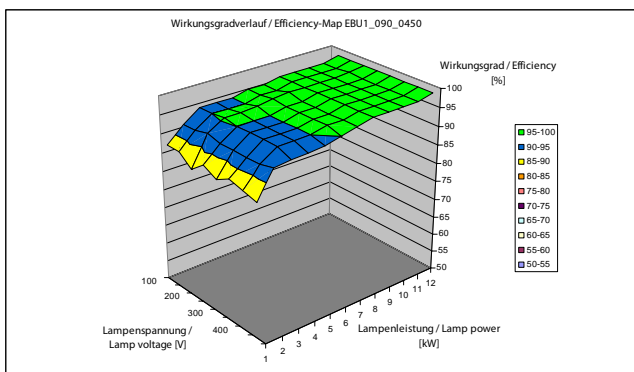
# Advantages

that you can measure...



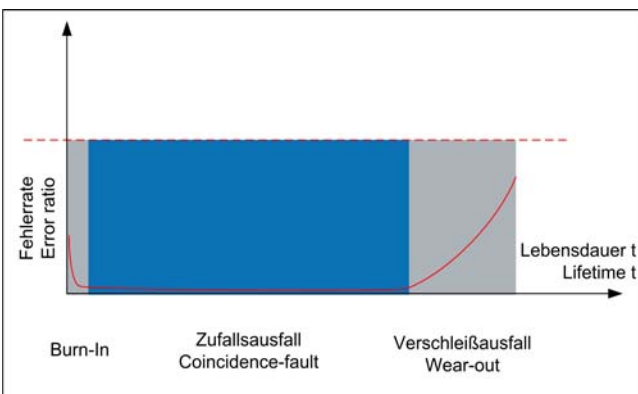
## Electrical efficiency

Due to the EfficientSwitch™ technology, the electrical efficiency rate is higher than 97% over a wide range of power. Even at applications with higher voltages the efficiency does not fall below 95%. This very high efficiency does not only leads to savings at cost of operation but enables such compact housing dimensions too.



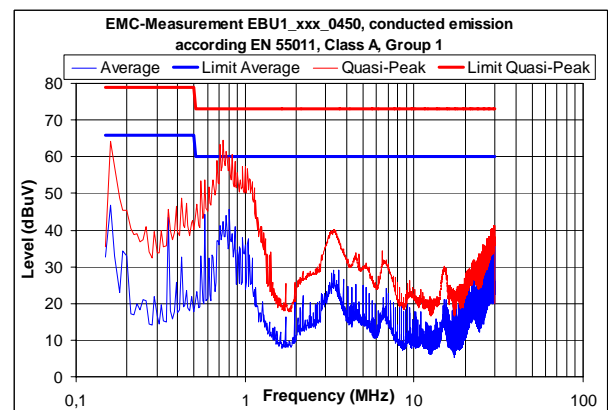
## Quality

All PowerUnits solutions are produced according to the standard of ISO9001:2000. In Order to avoid early malfunctions all devices pass through a 100% functioning test with following burn-in procedure. This ensures highest possible equipment availability at the end customer.



## Electromagnetic compatibility

EfficientSwitch™ supports the significant reduction of electromagnetic influence. Electromagnetic disturbances and high switching losses are prevented before they can develop.



## Warranty

All PowerUnits solutions are factory-provided with 24 month warranty. Only accurately selected components are getting equipped. Every series of device pass through a qualification procedure and gets approved only after positive result.



## Cost advantage

Reductions of cost of operation through the usage of electronic ballast are seen as unquestioned. The "EBU" series conceptionally has been designed in order to an economic production. The bottom line is not only a very high quality but also affordable solution.

# Why PowerUnits Power Supplies?

*Because all arguments speak for.*

## Characteristics

compact and light weight design

balanced load

power factor ( $\cos\phi > 0,95$ )

high efficiency

true power control

stepless and fast power control

square-wave lamp current

ignition box

## Advantage for the user

- low space required / easy implementation
- easy implementation
- no power factor correction required
- few energy consumption
- few waste heat / low cooling effort
- no influence of variation from mains
- interruption-free and constant power / optimum of production output
- few energy consumption / few waste heat
- Better emitter life time due to lower power requested
- tailored emitter power
- possibility of cyclic operation
- no dark-phases / constant radiation
- integrated / easier installation

## Product overview

Power range	5,0kW	6,0kW	7,5kW	9,0kW	12,0kW	18,0kW	24,0kW	32,0kW	36,0kW
Lamp voltage	up to 450V			up to 2000V			up to 3000V		

## Device designation

EBU1-xxx-xxxx

