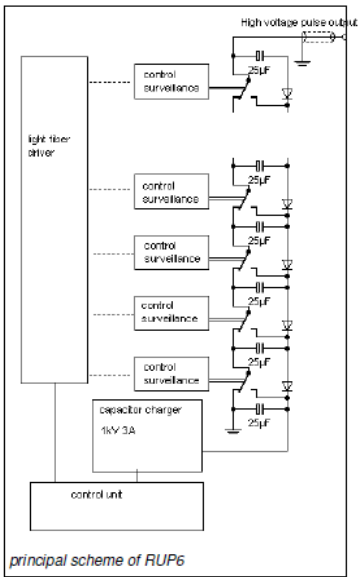
RUP6-6d

Rossendorfer Universal Pulse Generator

The RUP6 is a new universal solid state pulse generator which may be constructed for voltages up to 30 kV. Prominent features are high pulse current, very high efficency, scaleability of the voltage and an ultra fast switching off in case of arcs. The RUP6 consists of numbers of 1 kV pulse modules which are charged in parallel and are switched in series during pulse. Power supply and modulator are integrated wirhin this principle. An advantage compared to tubes is the much easier scaleability for higher or lower voltages. Absilute synchronous switching of all modules will only lead ro decreased output voltage but not to total destruction. The realisation was done entirely with standard electronic components, therefore fascilating economic manufactoring.



principal scheme of RUP6

Current and Voltage

output impedance about 9 Ohm, corresponding to 1.5 Ohm per module.
internal pulse capacity about 4.2 µF, corresponding to 25 µF per module.
peak current 50 A.
Overcurrent for more than 2 µs will activate short circuit switch off. The inherent short circuit current limit is about 120 A. An Arc (sudden short circuit within a pulse) will initiate switch off within 500 ns
average current 420 mA max.
max. output pulse voltage 6 kV
max. output power 2.5 kW
Special options:
Low voltage mode: In this mode, all pulse modules except the highest one are disabled. In this mode, maximum output pulse voltage is 1 kV and average current is 2.5A. In low voltage mode, there are no restrictions concerning duty cycle. Low voltage mode is adjusted by a switch on the front panel.
Additional DC bias, 0...-200V adjustable, 1A max.

Wave Form and Frequency

square wave with variable pulse width and variable frequency, rise time about 100-200 ns
fall time 3 µs maximum, eventually faster depending on load.
pulse width 0.5 µs - 100 µs, using external control or computer control also longer. Principally the internal pulse capacitor should not discharge more than 10 % of the maximum rated voltage.
Duty cycle can be chosen nearly arbitrarily, it has only to be noted that maximum possible output power will linearly decrease to zero when the duty cycle is approaching 100%, as the internal power supply is off during pulse and starts again after end of pulse with a 50-100µs delay.
maximum frequency 5 kHz.
control of voltage, pulse width and frequency by potentiometers on the front or alternatively by computer control via RS 232 interface. Pulse control may also be done by external TTL signal at the control input at the front.

Mechanical, included items

rack, 600 * 550 * 860 mm
grid supply 3 * 208 V, 60 Hz.
Monitor outputs for voltage (1:600) and current (100mV/A)
Internal controller, addressable by RS232, with the following functionalities:
programmable pulse generator
control of output voltage
wave form control (peak current, peak voltage)
generator state (OK/error)
Arc counter, pulse counter
RS232 light fibre cable, software for PC
documentation
An oscilloscope is strongly recommended to check for correct operation, but not included.
Setup and training are not included; installation of the device has to be performed by customer

Safety

external interlock
a fast short circuit detection protects the pulse modules from damage by short circuit or arcing in the load.
short circuit currents are inherently limited to 100 A.
The pulse generator in compatible to regulations about electromagnetic compatibility (EMV).

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