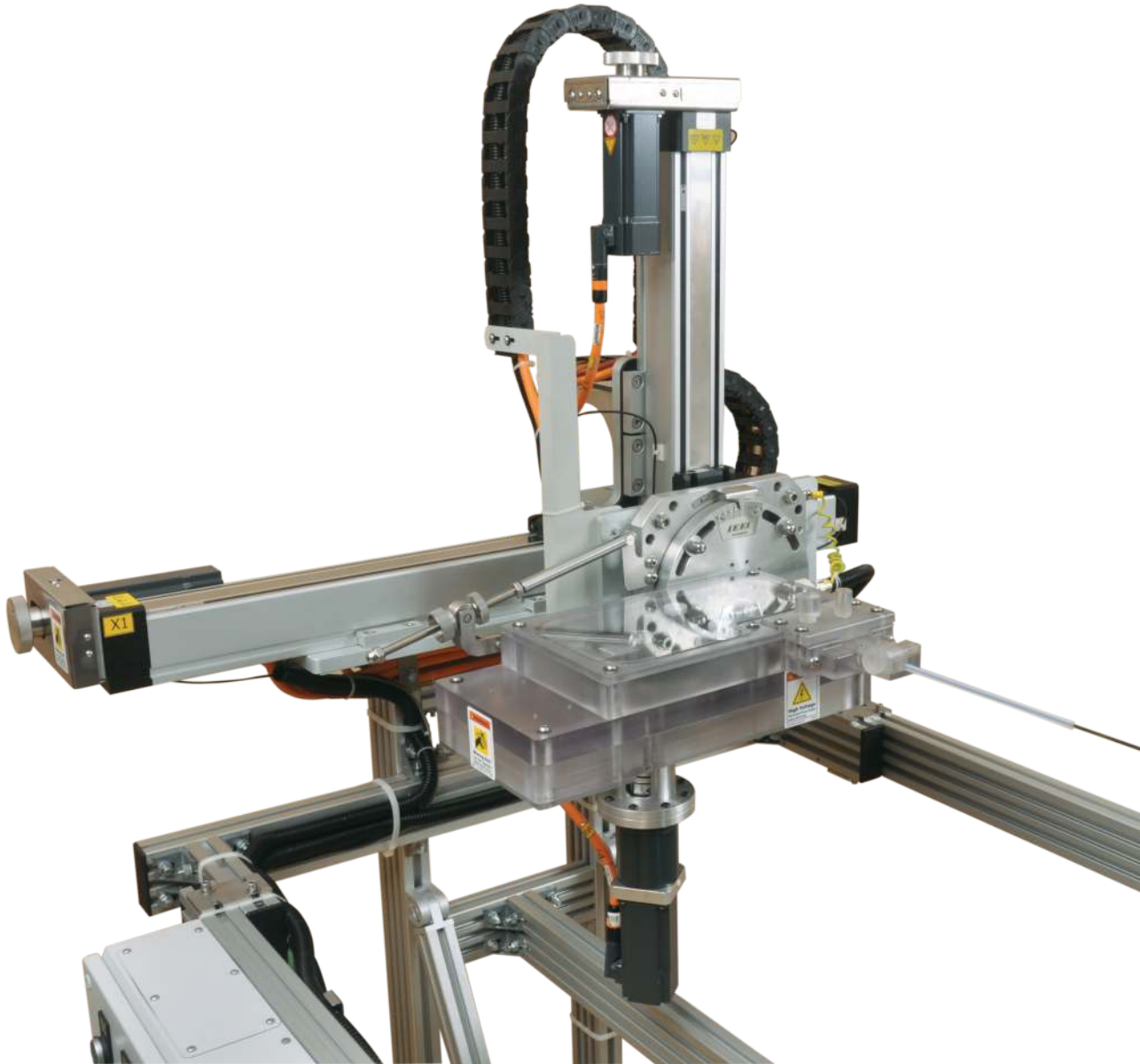


# **BAND PINNING** SYSTEM *for* BOPET & BOPA FILM



**IEEFC**

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YEARS OF EXCELLENCE IN  
CORONA  
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# **BAND PINNING** SYSTEM *for* BOPET & BOPA FILM

Primary function of our Pinning system:

Our precise Moving Band Pinning System enables producing high quality Bi-axially Oriented Polyester (BoPET), film at the fastest possible chill roll speeds, while maintaining the best possible transparency and other physical attributes.

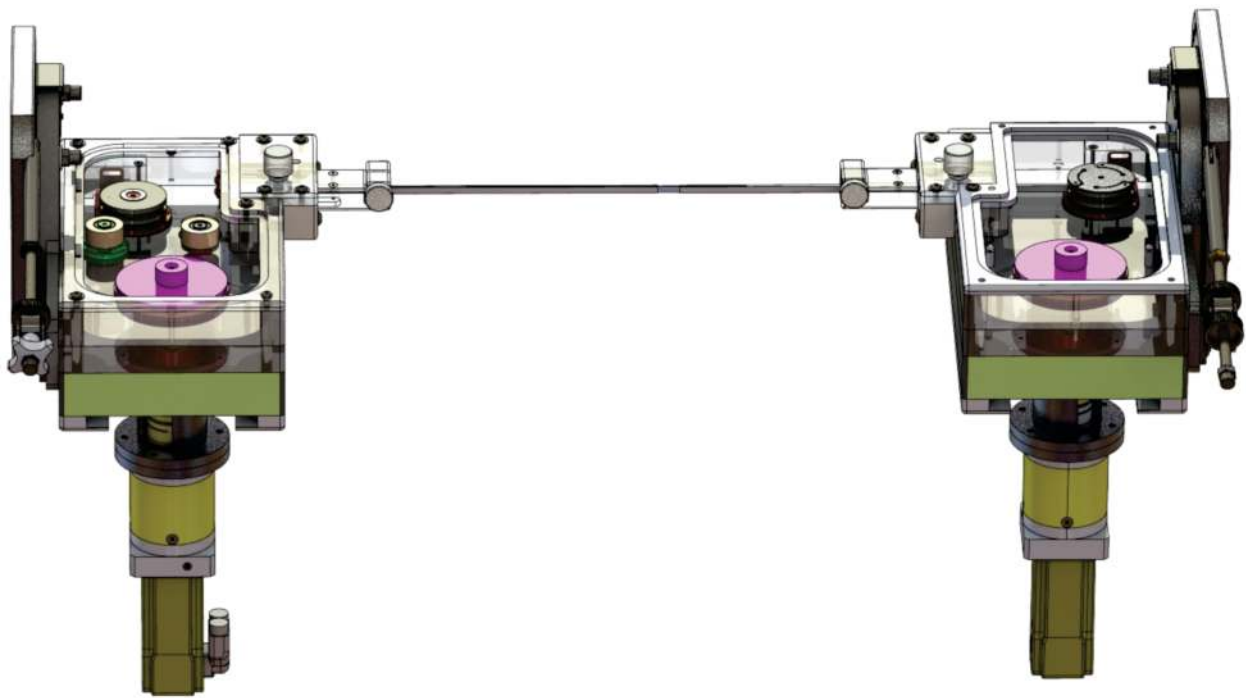
High quality film is a result of a perfectly controlled casting process. One of the most critical features of the casting process is an extremely precise and flexible pinning system. Most commercially acceptable pinning systems utilize the principle of generating an electrostatic effect to pin the melt film on to the chill roll by causing ionization of air, thus minimizing air entrapment between film & chill roll.

The elimination of entrapped air creates extremely close contact between the cast melt and the chill roll resulting in a virtually clear cast film, suitable for subsequent orientation at maximum line speeds.

Major elements of our Moving Band Pinning System:

- 1) Band unwinding unit.
- 2) Band Winding unit.
- 3) Mounting elements, for Unwinder and Winder, with mechanisms for adjustment of Band angle relative to the chill roll.
- 4) Two axis (x and y), gantry, permitting precise positioning of the Unwinder and Winder relative to the melt touch down point.
- 5) Spark Arrestor System.
- 6) A control panel comprising: High Voltage generator, Blade (band), heating generator, Servo controls for Unwinding, rewinding station. Servo controls for the two axis gantry system, and a touch screen panel that enables complete control of the pinning system.
- 7) Remote stations are also provided for user mounting close to the Unwinder and Winder units, facilitating convenient system control by the operator.

## UNWINDING / REWINDING STATIONS:

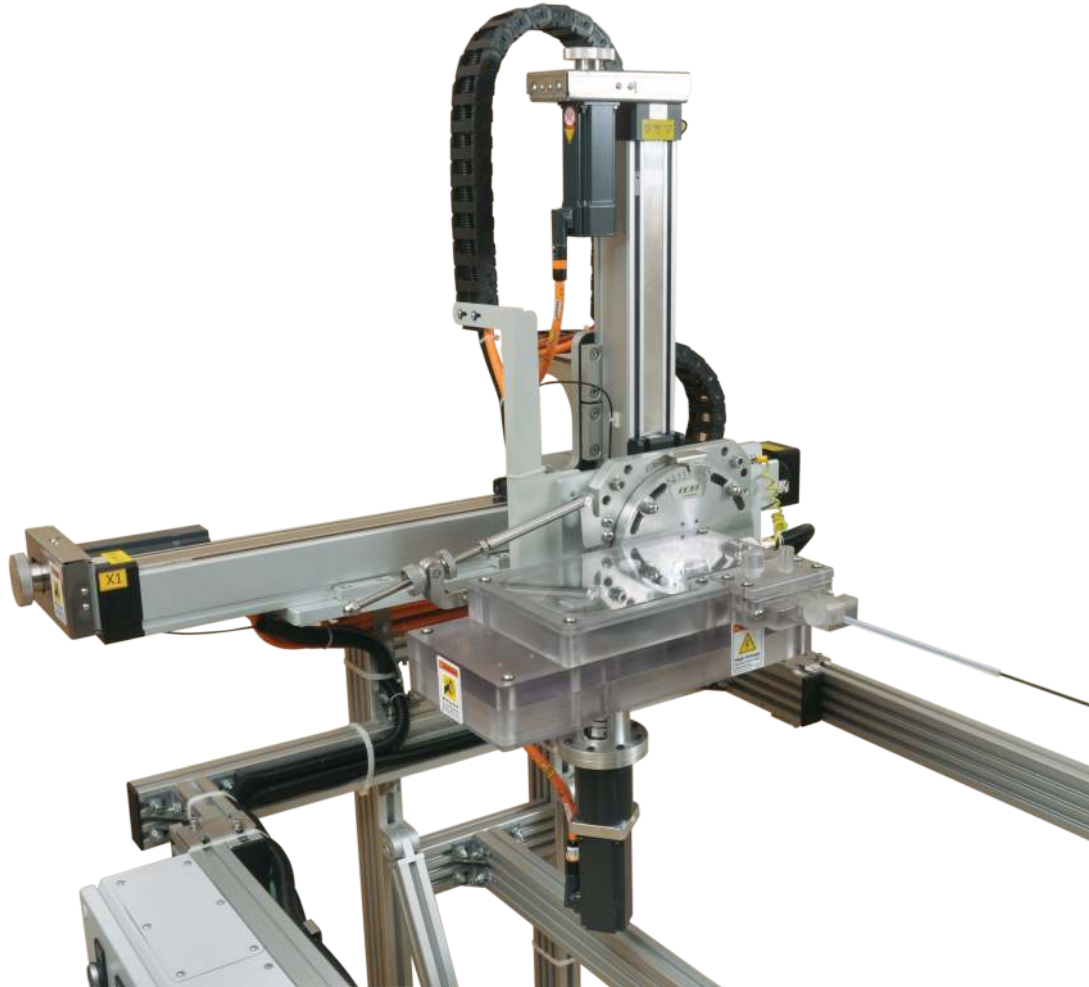


The unwinding & rewinding station housings are made of high voltage resistive material. Each station has a spool for unwinding and rewinding the pinning band. The spools are direct driven using extremely precise servo motors.

A Load cell system provides closed loop feedback to maintain controlled tension between of the band between unwinding & rewinding station. Both stations are equipped with adjustable insulation tubes to protect the casting roll against unwanted discharge at the melt edges.

HV Connectors are provided at both stations to supply the required connect high voltage for electrostatic discharge & band heating. The band heating system prevents condensation of oligomer particles on the pinning blade.

## 2 AXIS GANTRY SYSTEM & BAND ANGLE ADJUSTMENT :



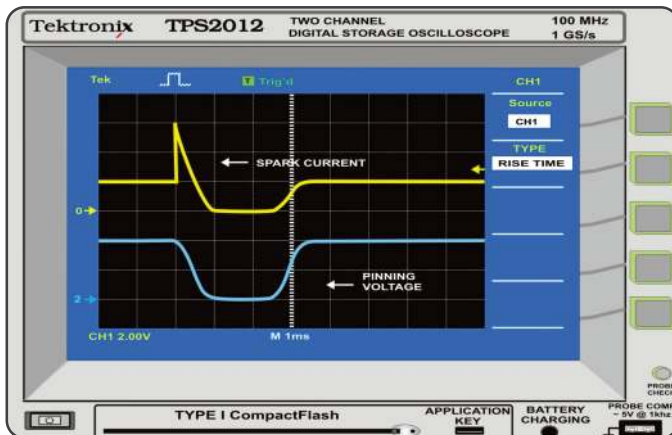
Precise positioning of the band is facilitated by three, individually controllable movements. Horizontal & Vertical movement is carried out servo driven linear slides with a precision of  $\pm 0.1$  mm. Limit switches and encoders are provided to control operation of the linear slides and brakes control operating positions as well as provide "failsafe" locking, in the event of power failure.

Manual movement during maintenance or power failure, is easily done with hand wheels, provide on all units. Drive brakes can be manually unlocked when manual movement is required.

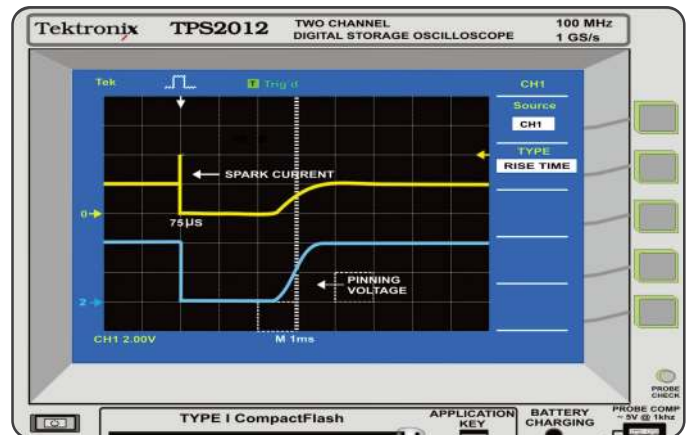
Rotation of the band is possible manually on the Unwinder as well as the Winder individually. This is essential for adjustment of the pinning band angle relative to the melt stream. An attached scale allows monitoring of the angle at each unit.

# SPARK ARRESTER SYSTEM (Recommended Option)

## WITHOUT SPARK TRIP

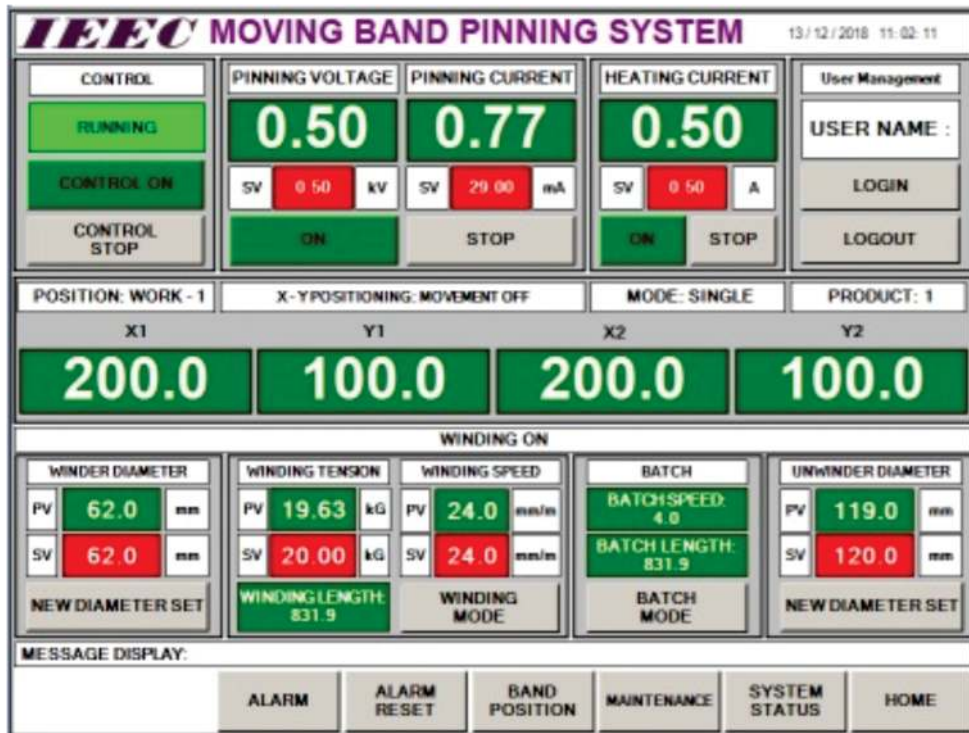


## WITH SPARK TRIP

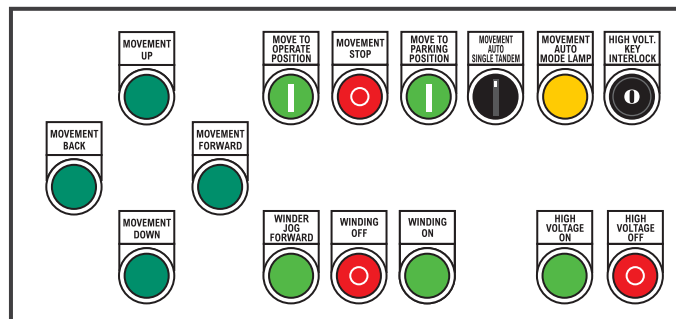


At the time of the Polyester / Polyimide film manufacturing due to pinholes in the film, sparks are generated and in case pinholes are big in size, continuous sparking between pinning wire / blade and Chill Roll may be possible. Due to this sparking, there are chances that the Chill Roll may get severely damaged. Our unique electronic spark arrester system which eliminates the sparking generated during the process.

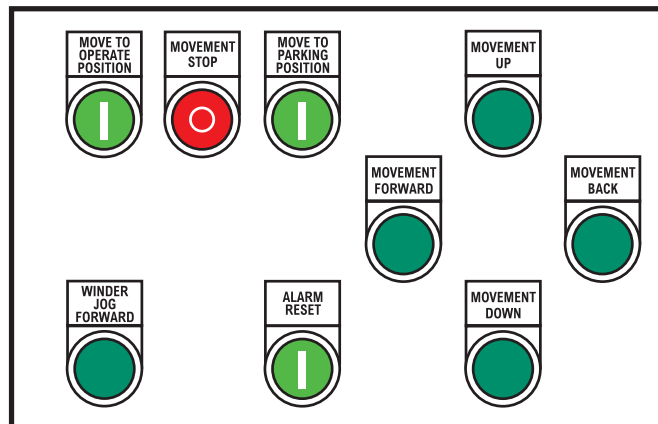
- 1) Stored energy in pinning and pinning heating process is discharge by spark arrester system.
- 2) Without the Spark Arrester System, the stored energy is generally discharged from the wire / blade on to the Chill Roll and hence, there is a possibility that the Chill Roll may get severely damaged.
- 3) For safety, the Spark Arrester discharge will be synchronized with the tripping operation of the Pinning Unit.
- 4) The entire discharge operation will be carried out within few microseconds thereby causing minimum or no damage to chill roll.



## OPERATOR PANEL – OPERATOR SIDE



## OPERATOR PANEL – DRIVE SIDE



## SPECIFICATIONS OF MAJOR COMPONENTS:



### High voltage pinning generator:

Our high voltage pinning generator consists of SMPS working on a current/voltage control mode used for pinning thin films on the chill roll using pinning wire or pinning band. The pinning generator gives highly stable DC voltage of about 15Kv with switching frequency of 20KHz having very low ripple factor (0.1% peak to peak) , fast recovery time (less than 1 msec) & can draw maximum 30mA constant current.

### Technical Specification:

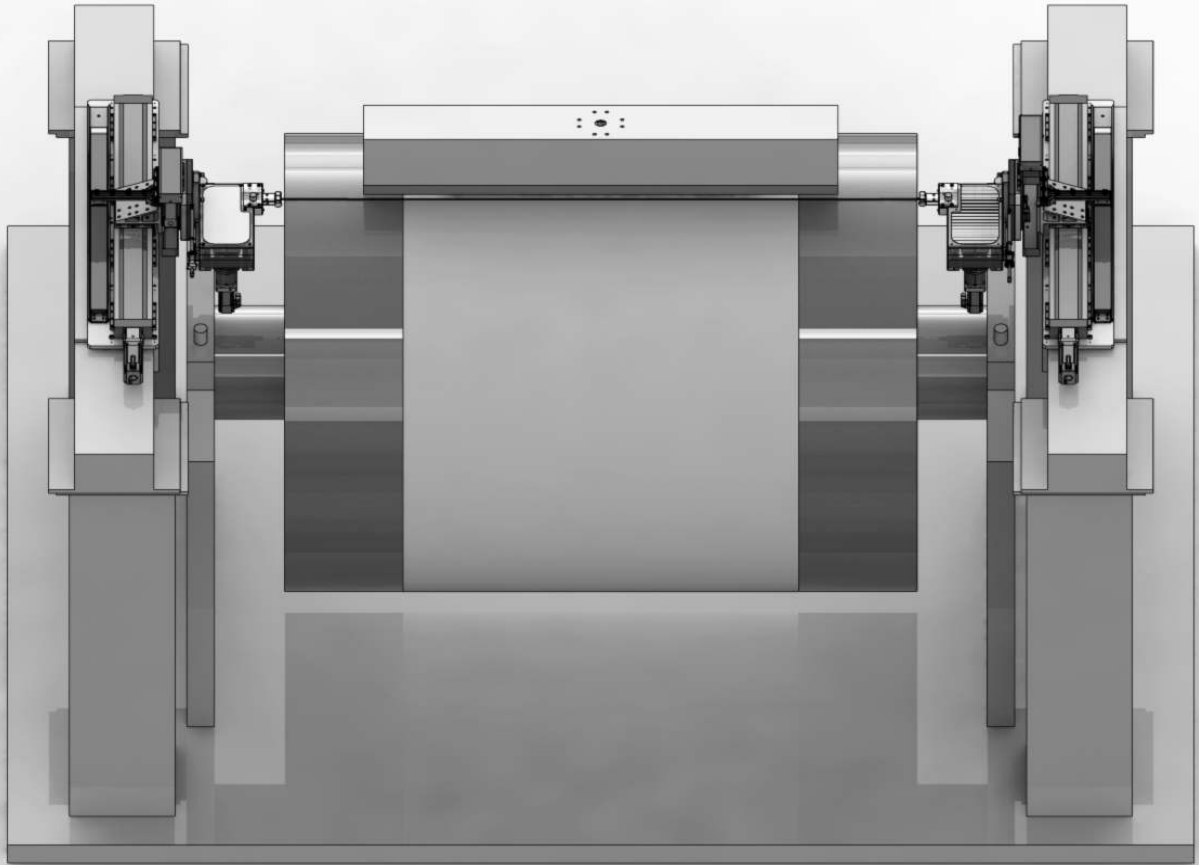
Mains voltage:	415VAc +/- 5%
Mains frequency:	50Hz / 60Hz +/- 5%
Inverter output frequency:	10 KHz – 20 KHz
Inverter output voltage:	15Kv
Inverter output current:	30ma max
Recovery time:	Less than 1 millisec
Ripple factor:	0.1% peak - peak

### Blade Heating Generator :

A Blade heating generator is a power supply working on current limiting principle. The design allows its output voltage to be applied on any DC bus voltage in the range of 0-15Kv. A Blade heating generator can provide constant output current at a maximum of 10 amp.

### Technical Specification :

Mains voltage:	415VAc +/- 5%
Mains frequency:	50Hz / 60Hz +/- 5%
Inverter output frequency:	10KHz – 20KHz
Inverter output voltage:	50 Volt
Inverter output current:	10.0 Amp max



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IEEC House, 72, BCD Government Industrial Estate, Charkop, Kandivali West, Mumbai 400067.  
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