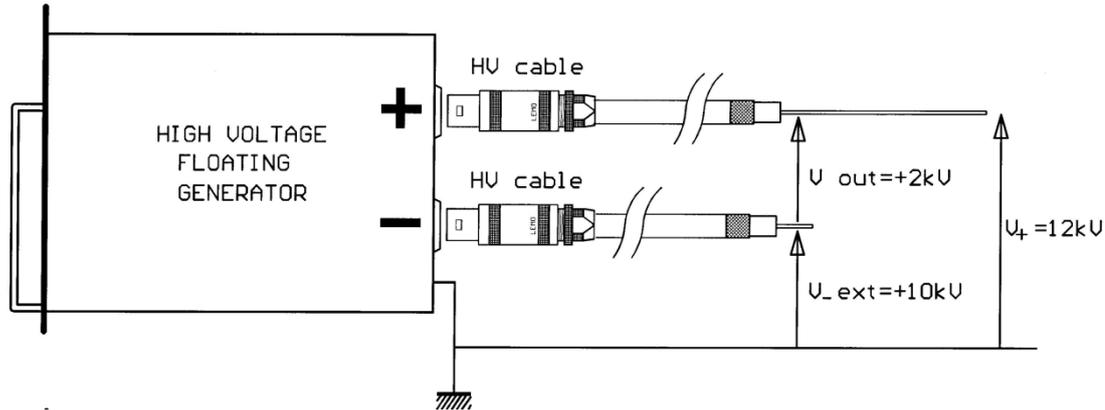


# Application note

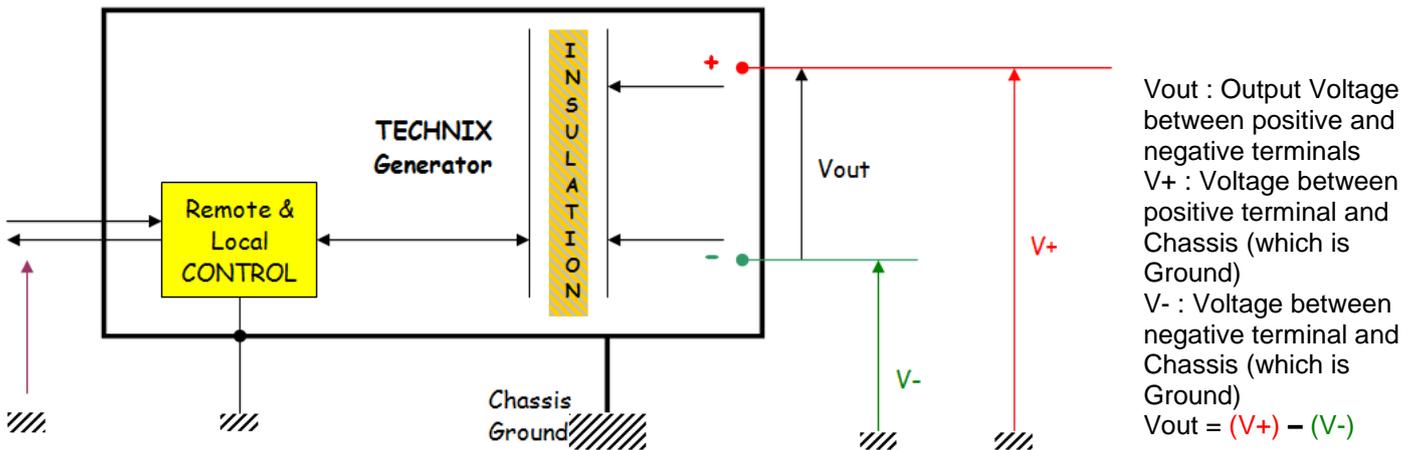
## FLOATING OUTPUTS

With this option, none of the poles ( + and - ) is connected to the ground.  
 The machine is delivered with :

- 2 shielded connectors ( PLUS pole and MINUS pole ),
- two HV shielded cables.



This is represented with the equivalent schematics:



### INSULATION

With standard floating option, TECHNIX provides insulation for a maximum external voltage of 10% of the full voltage range of the generator.  
 This means we provide an insulation of 110 % of  $V_{out}$  max on one or the other terminals referenced to ground/chassis.

$$V_{insulation} = |V_{out}| + |V_{ext}|$$

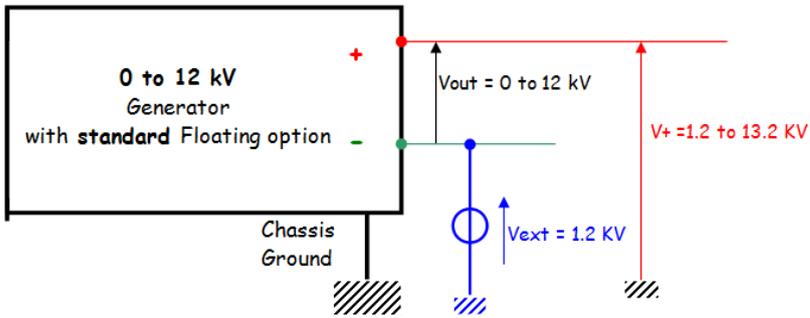
Where:

- V<sub>out</sub>** is the output voltage of the generator
- V<sub>ext</sub>** is the maximum external potential introduced on one or the other pole of the generator (referred to the chassis)

For instance a generator delivering 0 to 5 KV with a standard floating option will accept a maximum external voltage of |500 V| referenced to chassis/ground.  
 The other terminal voltage could be then at |5.5 KV| referenced to chassis/ground.

Please contact us, for applications where external voltage is more than 10% of  $V_{out}$ .

### Example 1: 12 KV Floating Generator with standard floating option



In this example external voltage represented in blue, is introduced upon the negative terminal at the maximum value of 1200 V for respecting insulation.  $V_+$ , voltage on positive terminal referenced to ground, will vary from 1.2 to 13.2 kV.

**Remark:**

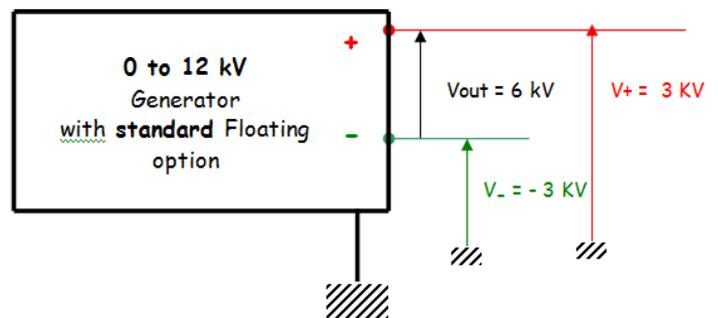
In the case of no external voltage is introduced, the output voltages will balance automatically at half of

the Output Voltage, referenced to the chassis.

Even in this case, we recommend adding protections between each generator output and the chassis ([transcient](#) or varistors).

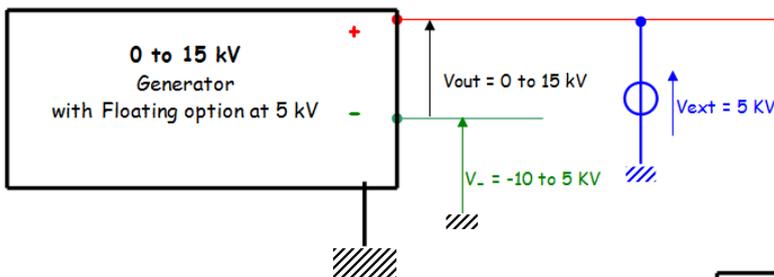
With  $V_{ext} = 0$  V:

At half scale, with no external voltage, the terminal voltages are automatically balanced referenced to ground.



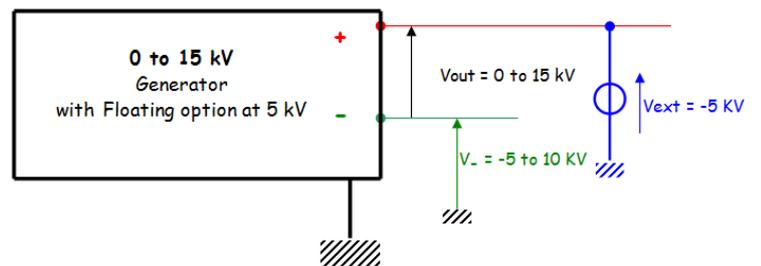
### Example 2: 15 KV Floating Generator with $V_{ext} = 5$ kV max

This is a **special floating option** since the external voltage can represent more than 10% of  $V_{out}$ .



If an external voltage of 5 kV is introduced upon positive terminal,  $V_-$  will vary between -10 kV (for  $V_{out} = 15$  kV) to 5 kV (for  $V_{out} = 0$  V)

If an external voltage of -5 kV is introduced upon positive terminal,  $V_-$  will vary between -5 kV (for  $V_{out} = 0$  V) to 10 kV (for  $V_{out} = 15$  kV)



### CONTROL IS GROUND REFERENCED

With our floating option, whole electronics of control is referenced to ground and insulation is made inside of the machine providing a maximum of safety.

This allows the user to work safety even on front panel.

In case of continuity fault of any component, there is no risk to have High Voltage or external Voltage feedback.