

## Static Generation Equipment

High voltage DC static generators are a significant equipment sector of our range although both the number of equipment items available and their applications are more limited than those of static elimination equipment.

Although recently we have had several updated models of generator to keep pace with the continually new demands of the IML (IN MOULD LABEL) market there are now only two current models available but we hope to increase the range soon.

Both the 7300 V2 and the 7330 models are available in –ve or +ve single polarity outputs (usually the polarity chosen for an application will mirror the polarity of that which the material has as its natural position on the tribo-electric table). Most plastics are found on the –ve side of the scale and so more –ve generators are sold than +ve, which are mostly used for application where paper requires charging.

The 7300 series are powered by VAC mains from 90V to 264V and has manual adjustment from 0-30kVdc. The 7330 also operates between 0-30KV but is powered by 24VDC supply – it features remote and on board control of on/off switching, voltage or current regulation making this the ideal device for IML applications.

All charging heads and bars are resistively coupled preventing operator shocks and potential damaging spark overs. For multiple web or sheet pinning an earth rod or wire is usually set opposite the charge bar on the other side of the material to be charged – this earth wire / rod will be earthed back to the generator unit and will assume the opposite polarity to that of the generator bar deployed.

Where the materials are difficult to charge due possibly to thickness – the earth rod /wire may be substituted with a generator bar and generator of the opposite polarity – see application sketches.

## 7080 Generator Bar

*The new 7080 Generator Bars provide a safe, controllable, reliable and cost-effective method of applying static charge for temporary adhesion in industry.*



### Benefits and Advantages

- The emitters are spaced at 10mm pitch for an even application of static charge, without the striping effect common with wider spaced emitters.
- The 7080 Bar has emitters which are resistively coupled to the HV for safe, non-sparking performance.
- Compact size with rigid construction. Available in lengths up to 3000mm.
- Easy installation - with M8 x 60mm nylon studs sliding in the "T" slot at the base of the 7080 Bar.
- Flexible cable in protective nylon conduit.

### How it works:

The system consists of a Static Generator and one or more Charging Bar. The Generator produces direct current up to 30kV. The 7080 Bar emits this current in the form of an ion cloud.

Materials passing through this ion cloud become charged at the same polarity as the Generator on the side of the Bar, with a mirror image charge on the opposite side, produced by the earth. The non-conductive barrier (i.e. the material) prevents these two charges coming together - this is what causes the adhesion. If the barrier is a good non-conductor like plastic film the adhesion will be strong. If the material is less conductive, like paper, the adhesion will be weaker as more current will pass through the material.

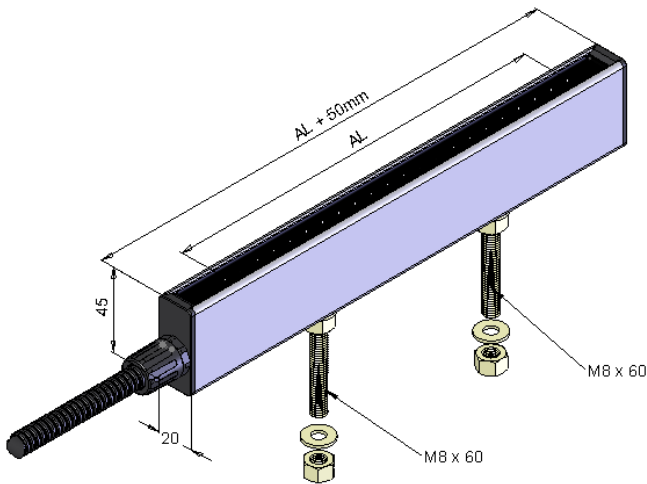


7300 Generator and 7080 Bar

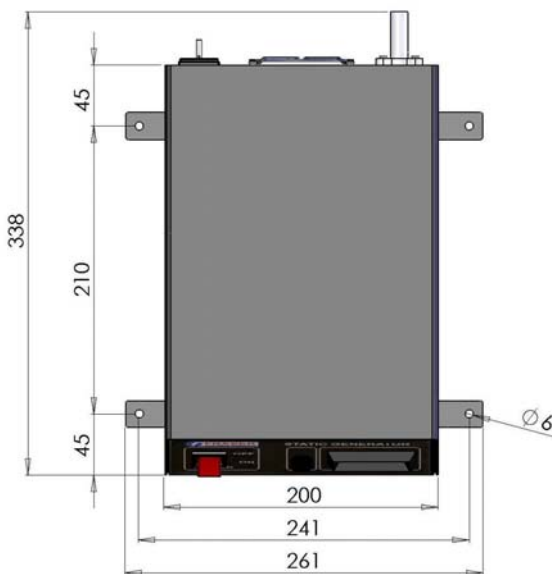
### Applications

Fraser Static Generators provide improved productivity in a range of Industrial applications including interleaving steel sheets, pinning plastic sheets and webs, bag making, wrapping machines and other areas of temporary adhesion.

<b>Construction:</b>	Extruded PVC with ABS endcaps, epoxy resin. "Stay sharp" alloy emitters at 10mm pitch.
<b>Length:</b>	Available from 60mm to 3000mm. Cross section: 45mm high x 20mm wide. Effective length is 50mm less than overall length.
<b>Cable:</b>	2m HT cable is standard. Max cable length 10m. Cable terminates in HV plug rated at 35kV. Protective nylon conduit on cable. Flexible conduit with bend radius of <25mm.
<b>Conditions:</b>	60°C maximum temperature. Maximum humidity 70%RH non-dewing. Must be kept dry and clean.
<b>Safety:</b>	100MOhm resistance for <b>safe</b> operation.



**Model 7080 Static Generator Bar**



**Model 7300 Static Generator**

# 7090 and 7095 Static Pinners

*Fraser offers two types of electrode for electrostatic charging of small areas and pinning.*

*They are used for neck-in applications on cast film lines, edge pinning of films, in-mould labelling and other areas where temporary adhesion of two materials is required.*



## Benefits and Advantages

- Easy to use static generation electrodes for use throughout industry.
- For use with 3700 and 7324 Static Generator - for voltages up to 30kV
- Choice of two models: the compact 7090 and the wider 7095
- High voltage is resistively coupled with inline 100MOhm resistance for safe and spark free operation
- The high voltage terminations and resistors are encapsulated to ensure a longer life than unpotted competitive models.
- HT cable protected by plastic conduit.

## Specification

	<b>7090</b>	<b>7095</b>
Size:	Diameter: 20mm length of body 80mm	Body: 65mm by 45mm Holder: 40mm x 20mm diameter
Emitters:	Emitter pins made from Tungsten carbide	6 x emitter pins in special alloy
Safety:	100Mohm resistance	100MOhm resistance
Material:	Flame retardant UL94V0 PVC and epoxy for both 7090 and 7095	
Temperature:	60° C Max	60° C max
Weight:	140g + cable	160g + cable
Cable:	2m of HT cable protected by plastic conduit. Lengths up to 10m are possible.	
Power Unit	30kV Model 7300 or 7324	30kV Model 7300 or 7324

## 7300 Static Generator

*Static electricity is increasingly used as a method of temporary adhesion in industrial processes. The new 7300 Static Generator provides a safe, controllable, reliable and cost-effective method of generating static charge.*



### Benefits and Advantages

- The 7300 uses solid state electronics and high frequency switching technology for stability and reliability. Regulation and stabilisation better than 5%.
- The 7300 is overload-, short-circuit and spark protected for market-leading reliability.
- Full control for optimal performance - output adjustable from 0 - 30kV with 1mA of current available. Display of actual voltage.
- Use with 7080 Bar or custom designs with emitters which are resistively coupled to the HV for safe and even distribution of the static charge.
- The 7300 Generator can be wall or bench mounted.

### How It Works:

Static electricity is widely used in industry for temporary adhesion. It is simple, clean, economical and easy to install.

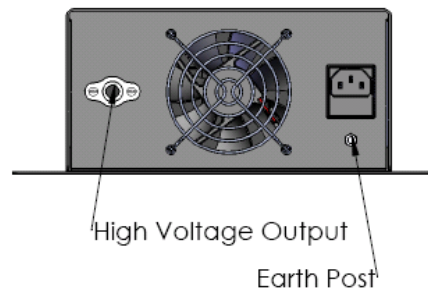
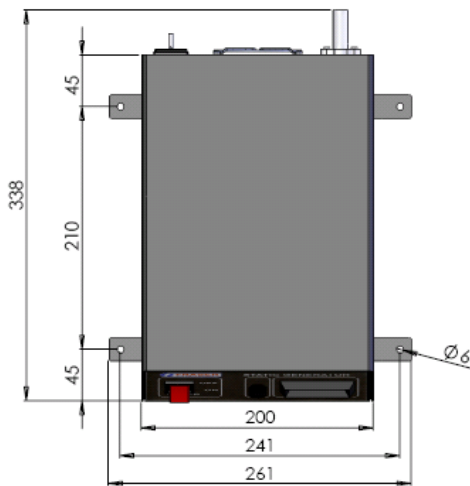
The system consists of a Static Generator and one or more Charging Bar. The Generator produces direct current up to 30kV. The 7080 Bar emits this current in the form of an ion cloud.

Materials passing through this ion cloud become charged at the same polarity as the Generator on the side of the Bar, with a mirror image charge on the opposite side, produced by the earth. The non-conductive barrier (i.e. the material) prevents these two charges coming together - this is what causes the adhesion. If the barrier is a good non-conductor adhesion like plastic film the adhesion will be strong. If the material is less conductive, like paper, the adhesion will be weaker as more current will pass through the material.



**7300 Generator with a 7080 Bar**

<b>Construction:</b>	Powder coated steel with aluminium mounting plate.
<b>Size:</b>	100mm high x 200mm x 300mm. 4.7kg net weight
<b>Electrical:</b>	Input 90 - 264VAC 50/60Hz. 30 Watt.
<b>Output:</b>	0-30kV variable with finger dial. 1mA max current. Digital display. Customer to specify positive or negative polarity. One HV output connection is standard - up to 4 can be specified.
<b>Load:</b>	Up to 8m of Bar and 10m of Cable.
<b>Installation:</b>	Dry, oil-free location required with ambient temperature of 50° or less.
<b>CE Compliant:</b>	Low Voltage Directive: 72/23 EEC EMC Directive: 89/336/EEC



# 7330

## Static Generator

*The 7330 Static Generator has been designed to allow full integration with the controls of a machine or process.*

*It provides safe, controllable and reliable power up to 30kV, 1.1mA from a 24VDC supply. It offers local or remote control of voltage or current.*



### Benefits and Advantages

- The 7330 uses solid state electronics and high frequency switching technology for stability and reliability. Regulation and stabilisation better than 1%.
- Local or remote on/off and remote signal showing operational condition.
- Local or remote control of voltage or current - with LEDs showing which is active.
- Remote adjustment of high voltage or current with a 0 - 10V analogue control. Local adjustment through "Adjust" dial.
- 30kV / 1.1mA available. LED display of actual voltage / current.
- Fast rise and decay times (typical rise time 10-40mS, typical fall time 100mS)
- 24VDC supply
- The 7330 is overload, short-circuit and spark protected for market-leading reliability.
- Use with Fraser 7080 Bar or Pinner Bars with emitters which are resistively coupled to the HV for safe and even distribution of the static charge.
- Connections for 2 Static Generator Bars are standard. Can be used with a connector box for multi-Bar installations
- The 7330 Generator can be wall or bench mounted.
- Supplied with 7 Pin connector and 5m cable.

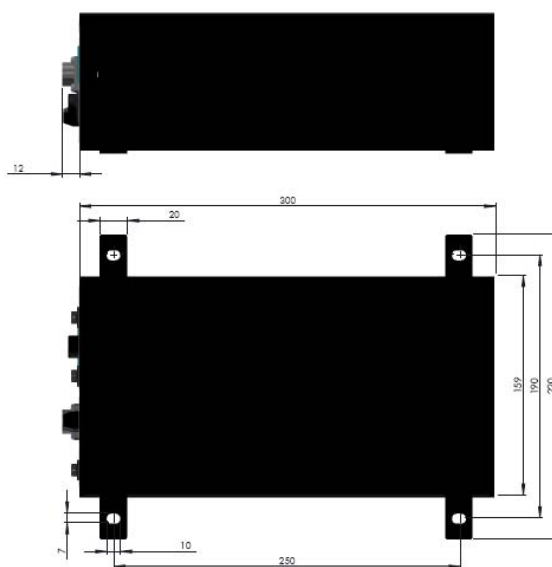
### How It Works:

Static electricity is widely used in industry for temporary adhesion. It is simple, clean, economical and easy to install.

The system consists of a Static Generator and one or more Charging Electrodes - which can be longer Bars, or single point devices. The Generator produces direct current up to 30kV. The electrodes emit this current in the form of an ion cloud.

Materials passing through this ion cloud become charged at the same polarity as the Generator on the side of the electrode with a mirror image charge on the opposite side, produced by the earth or electrode of the opposite polarity. The non-conductive barrier (i.e. the material) prevents these two charges coming together - this is what causes the adhesion. If the barrier is a good non-conductor, like plastic film, the adhesion will be strong. If the material is less conductive, like paper, the adhesion will be weaker as more current will pass through the material.

<b>Construction:</b>	1.5mm steel with mounting brackets. 3.6kg net weight.
<b>Size:</b>	Box: 100mm high x 160mm x 300mm. Mounting holes: 190mm x 250mm, 7 x 10mm ellipse holes.
<b>Electrical:</b>	Input voltage: 22-26 VDC Input current: Max 2.0A under all operating conditions Fuse: 2.5A/250VAC  Connection: 7 way AOPULO connector on front panel PIN 1: 24VDC input PIN 2: Ground (24VDC return) PIN 3: fault indication (LED "on" = fault) PIN 4: HV switch (grounded = switch on) PIN 5: Working indicator (LED "on" = working) PIN 6: High Voltage level control 0 - 10V Pin 7: High Voltage control return A connector plug and 5m cable are supplied
<b>Output and Control:</b>	Switches on box to select local / remote and voltage / current control. 0-30kV / 1.1mA variable through external 0-10V analogue control or local "Adjust" pot. .  3 ½ digital LED display showing actual Voltage or Current - LEDs indicate which has been selected by operator  Ripple: better than 2% peak to peak at full load Regulation: better than 1%.  Protected against overload, arcing and short circuit.  Customer to specify positive or negative polarity.
<b>Load:</b>	Up to 10m of Bar and Cable, depending on installation Two HV output connections. An external connector box is available for more than two bars.
<b>Installation:</b>	Dry, oil-free location required with ambient temperature of 40° or less. The enclosure is IP50 so the atmosphere should not be wet or condensing.
<b>CE Compliant:</b>	Low Voltage Directive: 72/23 EEC EMC Directive: 89/336/EEC





Static electricity can be used to “pin” the film to the last steel cylinder before the winder. This will prevent the web from moving laterally from side to side and causing a bad reel.

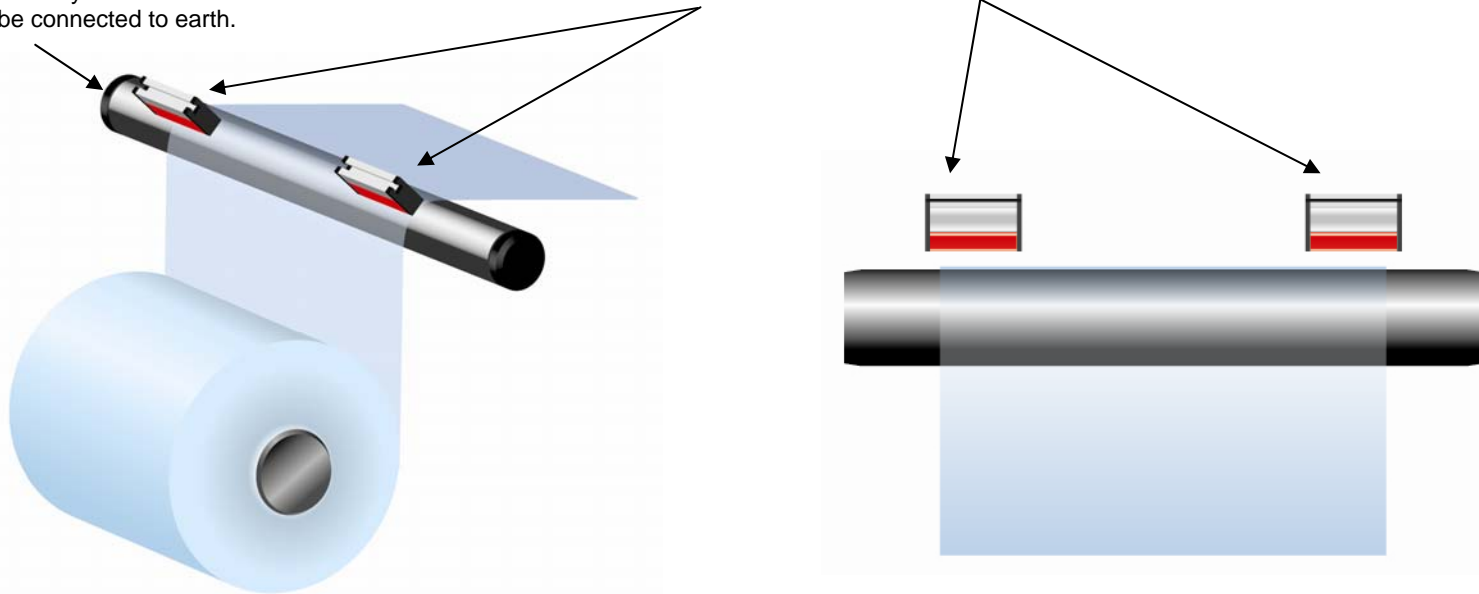
The same technique is used on cast film lines to prevent the film shrinking (or neck-in) when it touches the chill roller.

There is no need to “pin” the whole web to the cylinder - you only need to pin the edges.

## Edge Pinning on a winder

Steel cylinder - it must be connected to earth.

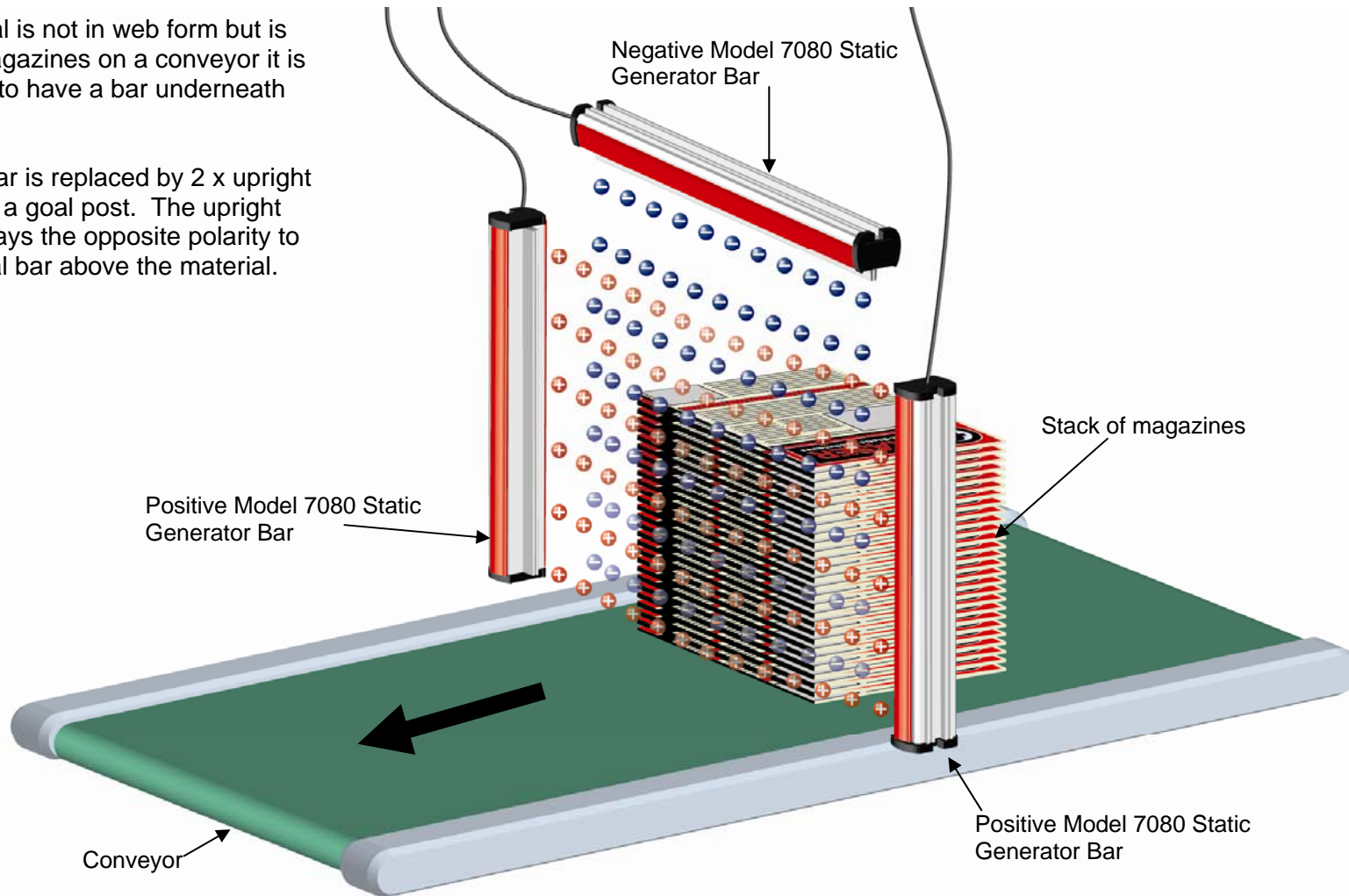
7080 Static Generator Bars, 150mm long. Positioned at each edge of the film at a distance of approximately 20mm from the film.

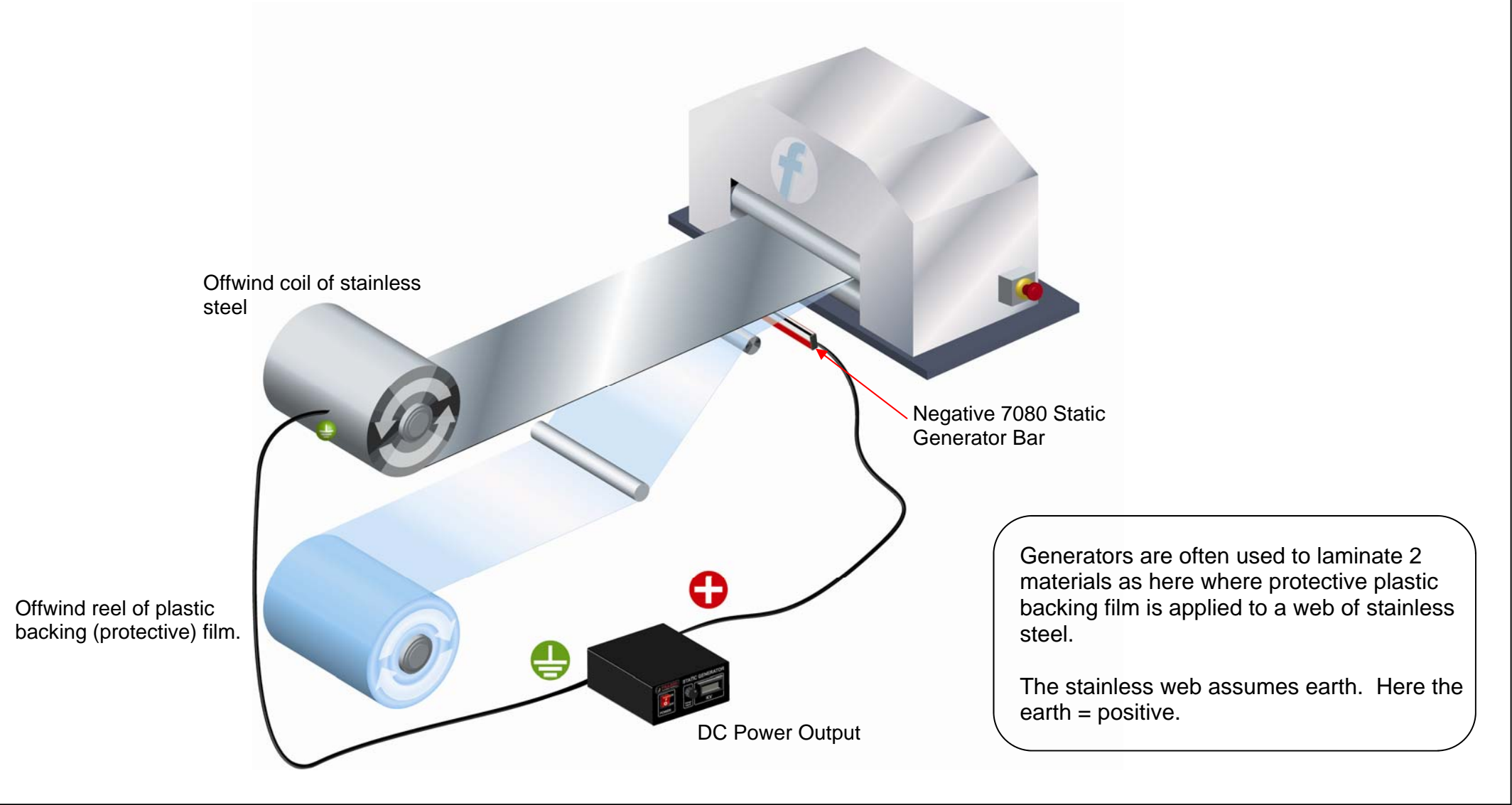


7080 Bar and 7300 Generator

If the material is not in web form but is sheets or magazines on a conveyor it is not possible to have a bar underneath the material.

This lower Bar is replaced by 2 x upright bars forming a goal post. The upright bars are always the opposite polarity to the horizontal bar above the material.

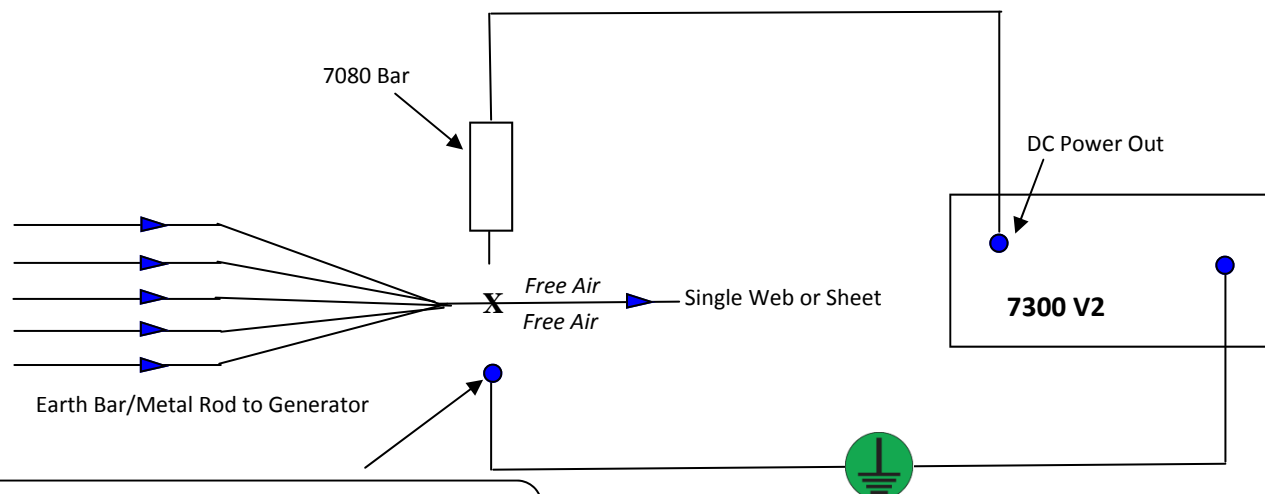




DC Generator Bars Model 7080 can be used to adhere (pin) two or more webs together, expelling trapped air and producing a long lasting bond that allows easier processing further down line. The materials can be the same but are often different - say paper and plastic film.

In most cases using a single polarity generator bar and a proximity earth is enough to produce the desired effect.

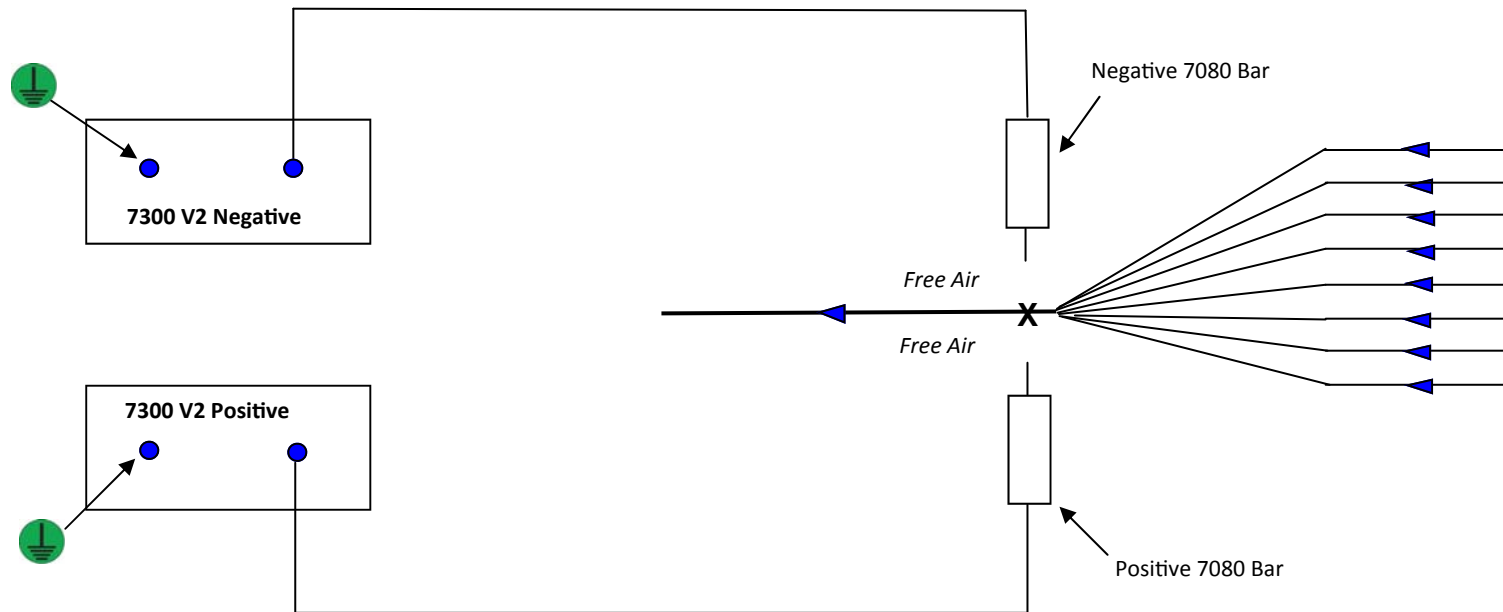
Choosing the desired polarity of the generator is influenced by the position of the material on the triboelectric scale - most plastics are negative and paper is positive. If pinning materials from both sides then you can select either polarity generator.



The earth bar/metal rod assumes the opposite polarity to that of the 7080 Generator Bar. If the Bar is negative (-) the earth bar/metal rod will become positive (+) and vice versa.

**X** = the position where multiple webs or sheets are pinned to form a bonded single sheet or web.

Where multiple webs (more than two) or thicker materials require bonding the use of one a single powered bar and proximity earth may not be powerful enough -- however replacing the earth bar with a powered generator bar of the opposite polarity to that of the original bar can double the power and the pinning capacity.



**X** = the position where multiple webs or sheets are pinned to form a bonded single sheet or web.