

Which surface treating technology is best for my application?

Ultimately your application's requirements will define which technology is best for you. Enercon can compare various plasma & flame surface treating technologies for your application in our lab, and we can run trials in your facility to prove which is best for you.

In this document we'll share insights on the application variables that can impact which technology is right for you.

Classification of plasmas:

Blow-ion™

Blown-arc™

Flame plasma

Important Application Variables:

- Type of material(s) to be treated
- Area of material to be treated
- Goal of treatment
- Type of process (ink, adhesive etc...)
- Implementation (automated, robotic etc...)

Examples of common application considerations:

- Conductive surfaces can not be treated with Blown-arc™
- Heat sensitive surfaces are not ideal for flame treatment
- Areas wider than 2" needing treatment in a single pass are best served with flame & Blown-ion™ plasma
- Variations in materials- PET is responsive to low levels of treatment, but PP requires higher levels

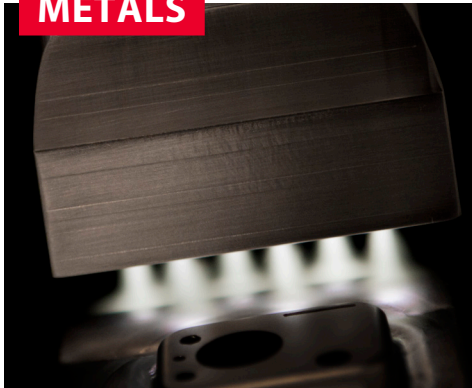
PLASTICS



Commonly treated plastics and polymers:

ABS, ASA, EPDM, EVA, HDPE, LDPE, PC, PE, PET, PMMA, PP, PS, PU, PVC, PBT, and TPU

METALS



Metal surfaces are often treated to cleaning and removing oils.

Plasma is used for moderately sized areas and flame treatment is used for larger areas.

GLASS



Glass is usually treated for cleaning and sterilization.

Both plasma & flame surface treatment is effective at treating glass.



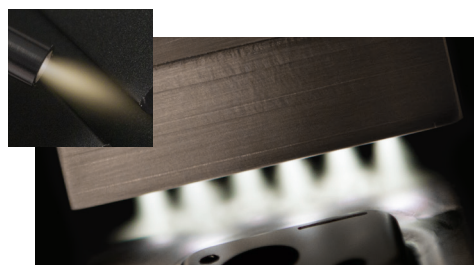
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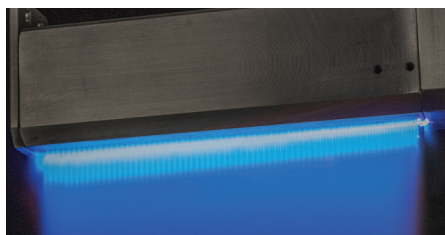
Plasma & Flame Discharge Technologies



Blown-arc™ air plasma technology is formed by blowing atmospheric air past two high-voltage powered electrodes and is sometimes referred to as corona treatment. The electrical discharge positively charges the ion particles surrounding it. Through direct contact, these particles positively charge the treated area of the object's surface. This makes the surface more receptive to any applied substance such as inks.



Blown-ion™ air plasma technology pushes pressurized air past a single electrode which discharges inside the treater head. The electrode energizes electrons which, through bombardment, create positively charged ions within the discharge chamber. The air pressure forces the ions to accelerate and stream out of the tip of the head at high velocity toward the substrate surface. Again, through direct contact, these ions positively charge the object's surface, increasing its surface energy and making it more receptive to inks and coatings.



Flame plasma is formed when a flammable gas and atmospheric air are combined and combusted to form an intense blue flame. The surface of materials are made polar as species in the flame plasma affect the electron distribution and density on the surface. This polarization is made through oxidation. In addition, functional groups are deposited on the surface.

General Guidelines	Blown-ion™	Blown-ion™ 500	Blown-arc™	Flame
Treats Conductive Surfaces	Yes	Yes		Yes
Requires Compressed Air	Yes	Yes	Yes	Yes
Requires Natural Gas or Propane				Yes
Treatment Width (per head) <small>*Widths vary based on applications and materials.</small>	Up to 0.75"	Up to 2.25"	Up to 3.5"	Unlimited
Effective on parts with varying surface geometries	Yes	Yes w/ part consideration	Yes	Yes
Cost	Moderate	Moderate	Low	Moderate
Suitable for Robotic Integration	Yes	Yes	Some	Yes
Typical Improvement in Surface Energy	High	Higher	Moderate	Highest

Putting your application to the test is the best way to find the optimal surface treating solution.

Enercon offers free plasma and flame surface treating laboratory trials to help you determine which technology is best for your application.