ELTECH ENGINEERS PVT LTD

An ISO 9001 - 2015 Company

CE

RoHS COMPLIANT

Since 1992

Plasma Surface Treatment

About us

ELTECH ENGINEERS PVT LTD , established in 1992 is an ISO 9001 : 2015 certified Indian Company engaged in the manufacturing activity of Corona treater, Plasma Treatment Systems, Static Charge Eliminator,Static Chargers,Static Meters, Ionizing Air gun, Blowers etc. Our clients always look upto us for their different requirements because of our high quality standards, superior performance, zero defect products, timely deliveries and very reasonable price.

WHY US?

We are a customer-focussed company, which works with customer perspectives in mind.Some of our specialities, which make us a preferred business partner for our clients are:

- Highest standards of quality.
- Innovative Approach
- Timely Deliveries
- Competitive Pricing
- Unending pursuit of product, process & performance optimization

www.eltech.in rajesh@eltech.in

Eltech is an innovative organization with a high level of know-how, continuously developing new Plasma and Corona equipment to help solving adhesion problems, and to meet high customer demands.

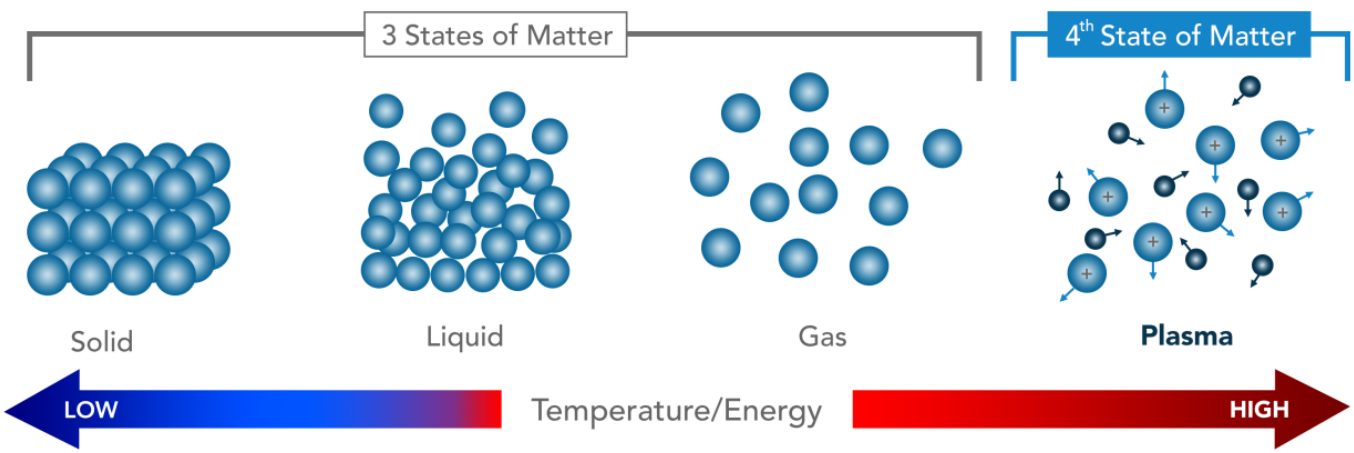
Superior , Versatile Surface Treatment Solutions

- Eltech Engineers manufacturers a complete line of highly reliable, innovative plasma surface treatment systems. Our systems improve adhesion on a wide array of plastics, composites cardboard , rubber , foam , glass and metal.
- Eltech Engineers system creates powerful bonding for printing, painting, coating,laminating and adhesion applications. Our technology is uniquely designed to treat moulded and extruded 3-dimensional parts, as well as many other applications requiring Improved surface energy and long-lasting activation.
- Eltech Engineers is a leader in the surface treatment industry because only Eltech provides truly custom design, continual technological advancement, exceptional customer service , and Reliable, long-lived systems made in INDIA.
- Eltech Engineers is your single source for design, manufacture, product handling, installation and service. With more than 25 years of experience, we offer the most advanced, adaptable and Dependable systems worldwide.

What is Plasma ?

Plasma is a partially-ionised gas, in which the degree of ionisation fluctuates and may sometimes be very low. More than 99% of the universe surrounding us is in a plasma state. Examples of this include lightning, polar lights, sunlight or candlelight. As plasma is created by high energy input, it is considered the 4th state of matter and is typically in a gaseous state.

solid ⇒ liquid ⇒ gas⇒ plasma



Technically ,

Plasma is generated through the creation of an electric field which ignites a gas flowing through (e.g. air or other gases) to form plasma. Plasma is quasi-neutral, but as it consists of free charge carriers or highly-reactive particles, it is energy-rich and can trigger various physical and chemical reactions.This characteristic is used in industry to generate various effects.

Why pre-treat with plasma?

To be able to successfully bond, coat, print or paint polymers and metals, the surface must first meet a few requirements. It has to be very clean and has to be sufficiently active to form an adhesive bond with the coating material. Plasma pre-treatment takes care of both of these requirements: The reactive plasma species transform the finest organic layers to the gas phase during ultra-fine cleaning. And with polymers, the functional groups described above are bonded to the outer-most molecular layer, the surface polarity increases and the prerequisite for adhesive bonding with the applied material is fulfilled.

PLASMA TREATED / UNTREATED

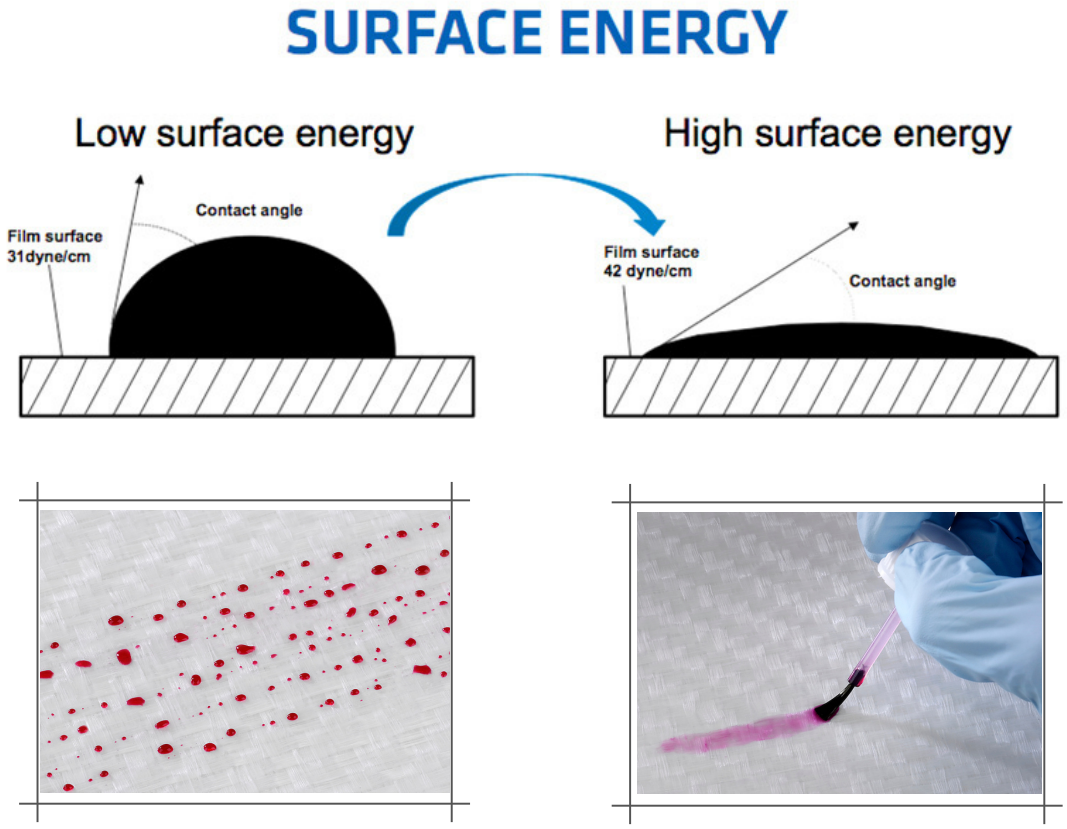
Principle of Surface Treatment by plasma treatment

The ion and electron mixed in the plasma zone collide at high-speed on the surface of the substrate, which eliminates the contaminant (dust & release oils etc) and helps the functional coating radical to stick on the surface. It is possible to get the rising effect and hydrophile effect on the surface through the above progress. This means the increase of surface energy. Plasma surface treatment system for 2D or 3D objective enhances surface energy and it leads enhancement of adhesion for those processes such as printing , coating , laminating , transforming and extrusion molding and so on.

Process Workflow

- Plasma pre-treatment (ultra-fine cleaning / activation)
- Increase of substrate surface energy
- Good surface wettability
- Interaction between substrate and application
- Adhesive bonding of material to ink, paint, adhesive

Surface Wettability



- Figure helps to illustrate the difference between good and poor wettability.
- The higher the surface energy of the solid substrate in relation to the surface tension of the liquid, the better its wettability and the smaller the contact angle.
- In order for a proper bond to exist between a liquid and a substrate surface, the substrate's surface energy should exceed the liquid's tension by about 2-mN/m.

Surface Energy of solid materials

Surface Energy of base Material		Needed Surface energy for adhesion with :		
PTFE	20 Mn/m			
SILICONE	20 Mn/m	UV INK	48 - 56	Mn/m
PP	30 Mn/m	WATERBASED	50 - 56	Mn/m
PE	32 Mn/m	COATING	46 - 52	Mn/m
PS	34 Mn/m	UV GLUE	44 - 50	Mn/m
PC	34 Mn/m	WATERBASED GLUE	48 - 56	Mn/m
ABS	34 Mn/m			
XLPE	32 Mn/m			
PUR	34 Mn/m			

Figure shows absolute values of surface energy for solid materials and the surface tension of many plastics including polyethylene and polypropylene is often insufficient for bonding or printing.These materials have very useful properties such as chemical inertness, a low coefficient of friction, high wear, puncture and tear resistance, etc. However, the poor wettability of these polymers presents the designer with the problem of bonding or decorating these materials. Surface treatment can improve wettability of the material by raising the material's surface energy and positively affect adhesive characteristics by creating bonding sites. The most advanced and successful methods of surface treatment are based on a principle of high voltage discharge in air.

Features

- Advanced IGBT Technology.
- Compact simple construction.
- Ultra High Frequency.
- Soft Start.
- Maximum Operator Safety.
- Force cooled convertor for longer life.
- HV transformer is able to be used long hours & continous work.
- Applying to All kinds of materials of conductivity & non-conductivity.

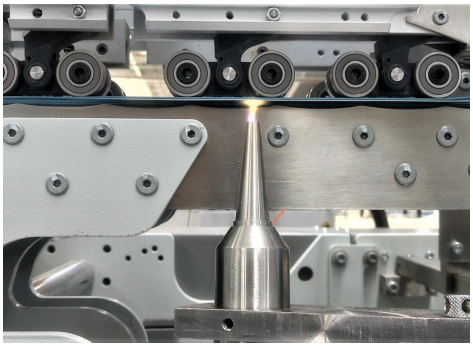
Superior Bonding

Eltech's Plasma radically improves adhesion by raising the surface tension on substrates , thereby ensuring consistent , repeatable bonding results.

Applications of Plasma treatment

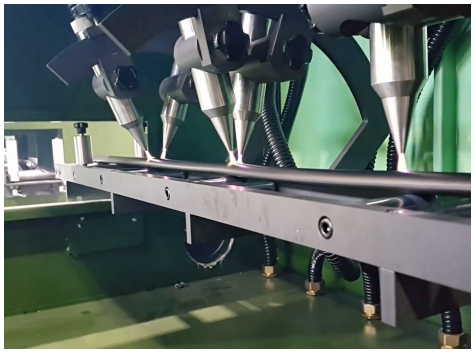
- Improve folding carton bond strength
- Extruded pipe , tubing , profiles
- Wires & Cables (HDPE , XLPE)
- Painting & decorating
- Medical and Pharmaceutical
- Electrical / Electronic components
- Hot stamping
- Pad printing
- Adhesive coating
- DCM
- Laminating
- Automotive – ABS, bonding of headlight &tail lights
- Packaging
- Transportation
- Consumer goods
- Textiles
- Life sciences
- Aerospace & many more.....

Applications



On Folding Carton Box

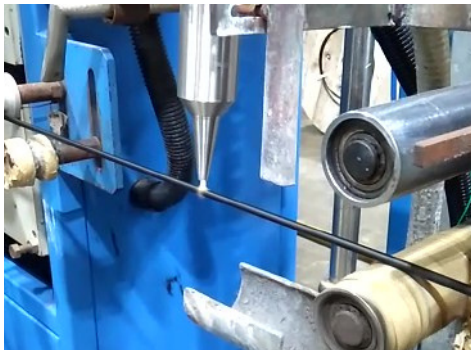
On MCB Before Pad Printing



On EPDM rubber

On Boeing Components

On Pipe Before Inkjet Printing



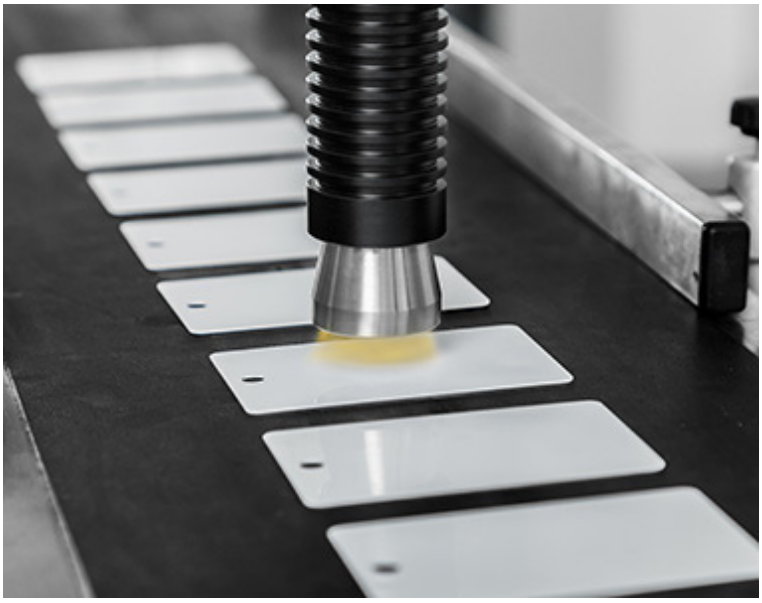
On Wire Before Inkjet Printing

ELTECH PLASMA MODELS

10N PLASMA
10 - 12 MM

VORTEX PLASMA
20 - 70 MM

About Vortex Plasma



Eltech's New Vortex Plasma treatment system is built around the concept of a high voltage Plasma discharge in atmospheric air while the plasma head is rotating. The versatility of this unit allows for use in fully integrated on robots, as a standalone unit, or any production line for covering more treatment area as the treatment head diameter is larger & rotating.

The purpose of surface treatment of polymer based materials is to increase surface wettability through plasma discharge. The low surface energy of polymer based substrates often leads to poor adhesion of inks, glues and coatings. To obtain optimum adhesion, it is necessary to increase the surface energy of the substrate to just above that of the material to be applied. Surface treatment with plasma results in improved surface adhesion properties.

Eltech offers a cost effective method for optimising the adhesion properties of printing inks, coatings, glue, paint onto a polymer surface including commonly used materials like polypropylene and polyethylene. This universal system developed by Eltech operates with special rotating DC motor for spinning Plasma Nozzles pointing inwards for uniform treatment and to minimize heat impact & Cover larger area. The system is able to rotate up to 3000 rpm / min. These self contained units can be installed within existing production lines or used as an off line process.

The system includes a high frequency generator, high voltage transformers, rotary plasma heads and customised stand alone or bench top treating station. To ensure proper Plasma Discharge from the Discharge Nozzle the compressed air must be within a certain level of pressure and volume. Eltech's Vortex Plasma conforms with CE regulations and is CE marked.

Printing

Surface treating parts prior to printing enhances ink adhesion. It makes printing easier, and for others it makes printing possible.

Painting

Injection molded or thermoformed parts are often treated prior to painting. Surface treatment allows the paint to adhere and also increases the life and durability of the paint on the object's surface.

Bonding

Bonding is primarily used to increase the strength of an adhesive. The medical and automotive industries rely on surface treating to remove contaminants such as dust, grease, oils, or mold to improve bonding. Typical cleaning solvents such as methyl ethyl ketone (MEK),trichloroethylene, toluene, or acetone may be used for this purpose, but cleaning agents that leave a film residue upon evaporation will retard bonding.

Labeling

Surface treating caps, bottles and lids ensure that labels will not peel off before complete destruction of the label occurs. Air, flame and chemical plasma treatment of materials like HMWHDPE can effectively improve adhesion of labels.

Coating

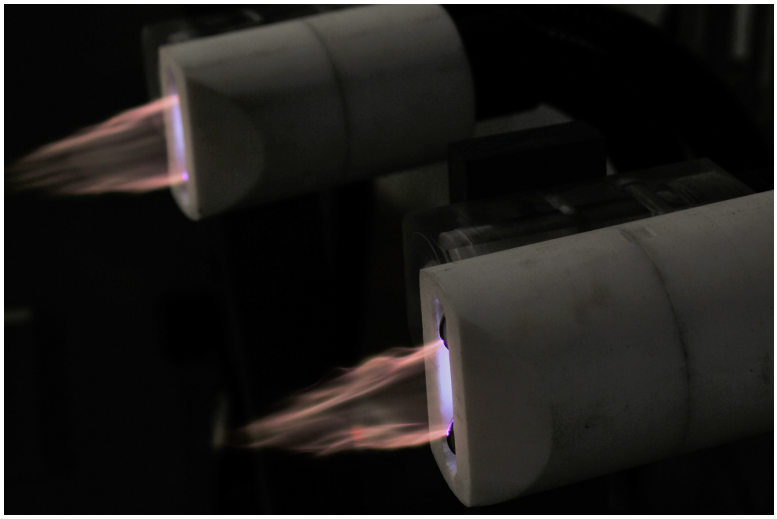
Products are coated to protect their surfaces from harsh environments or as decoration. Doors, frames, and extrusions/profiles are often coated. The medical industry uses surface treating to improve adhesion of antimicrobial/antibiotic coatings.

Technical Specifications :

Treating head : 12 mm - 70mm width
Mains supply : 230 VAC
Mains frequency : 50Hz
Speed : As per material and product
Output frequency : 30 Khz
App. output power : 1000 watt
Plasma output : Constant at same speed
No influence of supply voltage
Dynes level : 38-48 Dynes/cm
Dimension : 375 mm x 300 mm x 875 mm
Weight : 35 kg

Eltech's Plasma Arc system readily solve surface adhesion problems for a wide variety of products and applications:

- Caps and closures
- Cups and containers
- Painting and decorating
- Consumer products
- Extruded pipe, tubing, profiles
- Medical and health care products
- Electrical/electronic components
- Direct printing
- Hot stamping
- Laminating
- Pad printing
- Adhesive coating
- Wire and cable



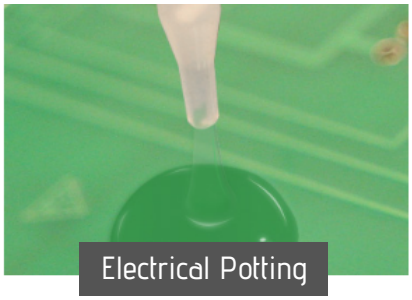
Features

- Advanced IGBT Technology
- Compact simple construction
- Ultra High Frequency
- Soft Start
- Maximum operator safety
- Forced cooled convertor for longer life

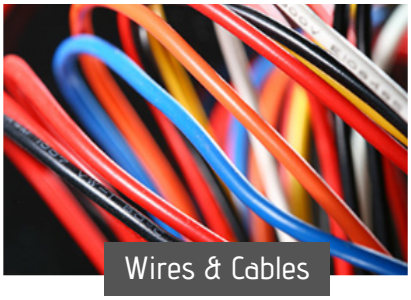
Adhesives

Printing

Automobiles


Electrical Potting

Windows & doors


Wires & Cables

Certifications

Certificate of Compliance

This is to Certify that the following designated products :

Corona Treater, Lab Corona Treater, Sheet Corona Treater, Plasma Ion Treatment, Plasma ARC Treatment, Plasma Vortex Treatment, Induction Cap Sealer, Static Eliminator, Ionizing Air Gun, Ionizing Air Nozzle, Ionizing Air Blower, Static Charger, Static Charge Meter and Silicone Items.

This certificate is issued under the following conditions:

1- It applies only to the above referenced set of products mentioned above. The manufacturer is obligated to assure that all products of the respective model confirm to the type assessed by this certificate
2-The Certificate validity is conditioned by the positive result of the surveillance audits.
3- The Certificate remains valid until the manufacturing conditions, the quality systems or relevant legislation are changed but until the 00/00/0000
4- After Fulfilling the EU legislation requirments, the manufacturer shall affix to each product of the above referenced models, CE Marking according to the following example

Manufactured By

ELTECH ENGINEERS PRIVATE LIMITED

A - 108, Diamond Industrial Estate, Ketkipada Road, Near Toll Plaza, Off. Western Express Highway, Dahisar-(East), Mumbai - 400068, Maharashtra, India

Conforms with the Applicable requirements of Medical Device Directive MDD (93/42/EEC)

CERTIFICATE No. : 19ZMZC0053C

ISSUED DATE : 02/07/2019
EXPIRY DATE : 01/07/2022

1ST SURVEILLANCE : 01/06/2020
2ND SURVEILLANCE : 01/06/2021

Managing Director

For BMG Conformity Assessment Services Pvt. Ltd.
C-338, 2nd Floor, Sector-10, Noida-201301, G.B. Nagar, (U.P.)

Certificate OF REGISTRATION

This is to Certify that the Quality Management System of

ELTECH ENGINEERS PVT. LTD.

A-108, DIAMOND INDUSTRIAL ESTATE, KETKIPADA ROAD, NEAR TOLL NAKA OFF. W. E. HIGHWAY, DAHISAR (EAST), MUMBAI - 400068, MAHARASHTRA, INDIA

has been independently assessed and is compliant with the requirements of

ISO 9001:2015

This Certificate is applicable to the following product or service ranges:

MANUFACTURERS OF CORONA TREATER, PLASMA ION TREATMENT, PLASMA ARC TREATMENT, PLASMA VORTEX TREATMENT, OZONE GENERATOR, OXYGEN CONCENTRATOR, INDUCTION CAP SEALING MACHINE, STATIC ELIMINATOR, STATIC CHARGER & SILICON ITEMS

::Certificate No:: IN6130A

Date of initial registration 21 March 2018
Date of this certificate 11 June 2019
Recertification Due/ Certification expiry 20 March 2021

Validity of this Certificate is subject to completion of surveillance audit on or before of due date in case surveillance audit not allowed to be conducted this Certificate shall be suspended / withdrawals. This certificate is property of ICL Certifications and shall be returned immediately when demanded.

Accreditation

Director

ICL/FM-001/REV06

For verification and updated information concerning the present certificate visit to www.iclcert.com

This Certificate is the property of Integral Certification Private Limited and shall be returned immediately when demanded.

Integral Certification (P) Ltd.
U-60 (3rd Floor), Shakar Pur, Laxmi Nagar, Delhi-110092
E-mail: info@iclcert.com Website : www.iclcert.com
Contact No. : +91-11-33257055

QUALITY CERTIFICATION

Certificate of Compliance

This is to Certify that the following designated products :

Corona Treater, Lab Corona Treater, Sheet Corona Treater, Plasma Ion Treatment, Plasma Arc Treatment, Plasma Vortex Treatment, Induction Cap Sealer, Static Eliminator, Ionizing Air Gun, Ionizing Air Nozzle, Ionizing Air Blower, Static Charger, Static Charge Meter and Silicone Items.

This certificate of compliance is based on the technical file of above mention products

Manufactured By :

M/S. ELTECH ENGINEERS PVT.LTD.

A-108, Diamond Industrial Estate, Ketkipada Road, Near Toll Naka Off. W. E. Highway, Dahisar (East), Mumbai - 400068, Maharashtra, India

Application of Council Directive on the Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment 2011/65/EU

CERTIFICATE No. : 19ZMZG02176R

ISSUED DATE : 04/07/2019
EXPIRY DATE : 03/07/2022

1ST SURVEILLANCE : 03/07/2020
2ND SURVEILLANCE : 03/07/2021

UKAC
UK ACKREDITERING CERTIFICATION LIMITED

Authorised Signatory

INTERNATIONAL QUALITY CERTIFICATION SERVICES UK LTD
272, Bath Street, Glasgow, G2 4JR, U.K.

RoHS compliant