DL-600 Online Plasma Cleaning Machine Technical Specification

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I. Company Profile

Shenzhen Fangrui Technology Co., Ltd. was founded in 2011, is a professional manufacturing enterprise specializing in the research and development, production, sales and promotion of vacuum and atmospheric plasma surface treatment technology equipment. The company has successively passed ISO 9001 quality management system certification and a high-tech enterprise certification: the company pays close attention to the development trend of plasma technology at home and abroad, combined with the actual situation of customers at home and abroad,and has formed a unique advantage in the industry. At present, the products are widely used in medical, plastic products, communications, automobiles, home appliances, optoelectronics, textiles, semiconductors and precision manufacturing industries; they are particularly prominent in surface printing, surface coating, surface bonding, and surface cleaning. At present, customers are widely distributed in automotive, electronics, semiconductor packaging, textile printing and dyeing, liquid crystal display, packaging and printing, aerospace, medical equipment, scientific research institutions and other fields.

With the continuous development of the company, the company includes the sales department, production department, foreign trade department, technology department, quality inspection department, after-sales service department and other complete management systems. Quality is the standard, providing users with high-quality and comprehensive technical support and maintenance services.

At present, the company has reached strategic cooperation agreements with many well-known enterprises and university research units, and has become the designated supplier of equipment for enterprises and units. Products are exported to the United States, Russia, Canada, India, Vietnam, Turkey, South Korea, Italy, Mexico,

Pakistan, Switzerland and other countries.

The company pursues “integrity-based, innovation as the soul” as the company’s tenet, combined with the corporate management policy of “market-oriented, quality-oriented production, innovation- oriented development, and management-oriented efficiency” to serve the world and a world-leading plasma surface treatment equipment supplier and service provider.

II. Customer Cases

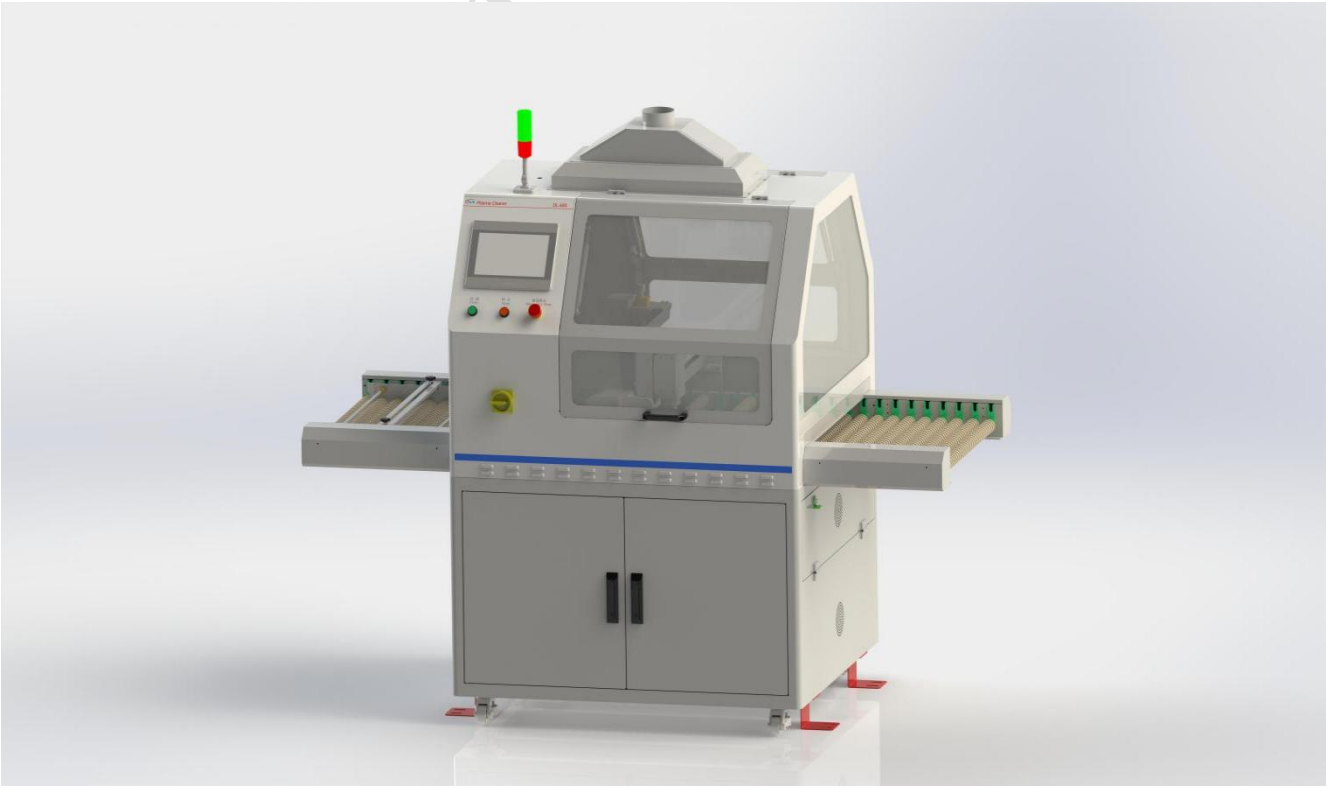
Relying on the international leading ultrasonic and plasma cleaning technology, as well as perfect and thorough after-sales service, Fangrui Technology has won the favor and high recognition of leading companies in various industries at home and abroad!

- **Laboratory equipment：** The University of Hong Kong, City University of Hong Kong, Peking University, Tsinghua University, Beihang University, Beijing Institute of Technology, Beijing Jiaotong University, Beijing University of Science and Technology, Beijing Normal University, Beijing University of Chemical Technology, Shanghai Jiaotong University, Tongji University, East China University of Science and Technology, Donghua University, East China Normal University, Ningbo University, Zhejiang University, Zhejiang University of Technology, Wenzhou University, Soochow University, Suzhou University of Science and Technology, Jinan University, Shandong University, Zhengzhou University, Lanzhou University, Northwestern Polytechnical University, Qingdao University, Qingdao University of Science and Technology, Guangxi University, Chongqing University, Chongqing University of Science and Technology, Nanjing University, Northeast Forestry University, Tianjin Polytechnic University, Wuhan University, Wuhan University

of Technology, Huazhong University of Science and Technology, University of Nottingham Ningbo, Dalian Institute of Physics, Chinese Academy of Sciences, Changchun Optics and Fine Mechanics, Chinese Academy of Sciences Institute of Physics, Guangzhou Institute of Energy Research, Chinese Academy of Sciences, Ningbo Institute of Materials, Chinese Academy of Sciences, Shanghai Institute of Optics and Mechanics, Chinese Academy of Sciences, University of Science and Technology of China, Shenzhen Research Institute of Harbin Institute of Technology, Shenzhen Research Institute of Tsinghua University, etc.

- **Industrial equipment**：Foxconn (Shenzhen) Co., Ltd., BYD Automobile (Huizhou) Co., Ltd., Lens Technology Co., Ltd., OFILM Technology Co., Ltd., TDK Group, Changfang Group, Amphenol Group, Dechang Electric Group, Tianma Microelectronics , Kangyuan Electronics, Shennan Circuits, Huatong Computer, Green Point Technology, Bourne Optical (Huizhou) Co., Ltd., Shenzhen Guoxian Technology Co., Ltd., Shenzhen Leputai Technology Co., Ltd., Shenzhen Skyworth Precision Technology Co., Ltd., BBK Electronics, Toshiba Electric, Midea Electric, Topcreating , Sannuo Digital, Green Precision, Hehui Optoelectronics, Dijing Optoelectronics, Jingtai Optoelectronics, Tianjin Fuji Medical, Chongqing Hospital, Terumo Medical, Youwei Biotech, Tegent Biotech, Cardinal Medical, etc..

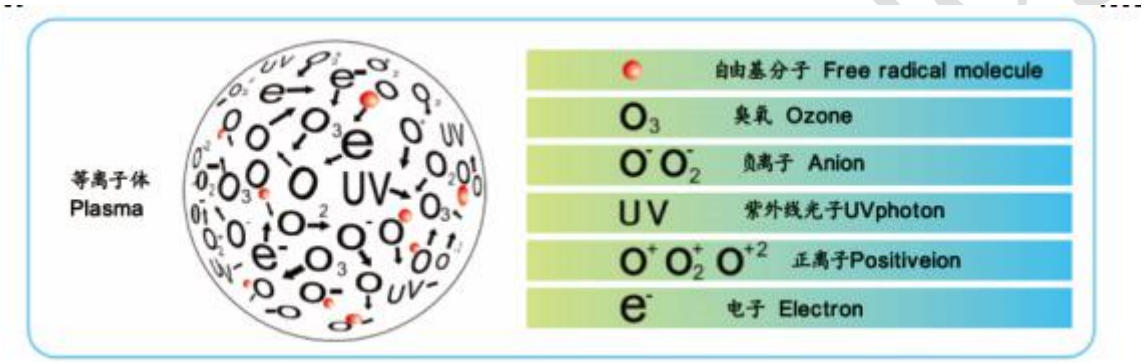
III.Product Introduction



3.1 Plasma Introduction

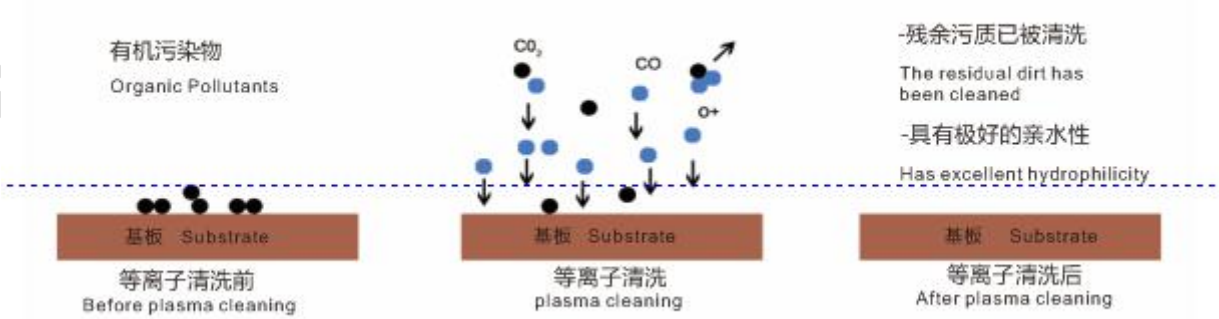
Plasma is a state of existence of matter. Generally, matter exists in three states: solid, liquid, and gas, such as matter on the surface of the sun and the ionosphere in the earth's atmosphere. The state in which this type of matter shrinks is called the plasma state, also known as the fourth state of matter.

The following substances exist in the plasma: electrons in high-speed moving transition states, neutral atoms, molecules, atomic groups (radicals) in excited transition states, and ultraviolet rays generated during the dissociation reaction of ionized atoms, molecules, and molecules. Reacting molecules, atoms, etc., but the substance remains electrically neutral in general. The "active" components of plasma include: ions, electrons, active groups, excited nuclides (metastable states), photons, etc.

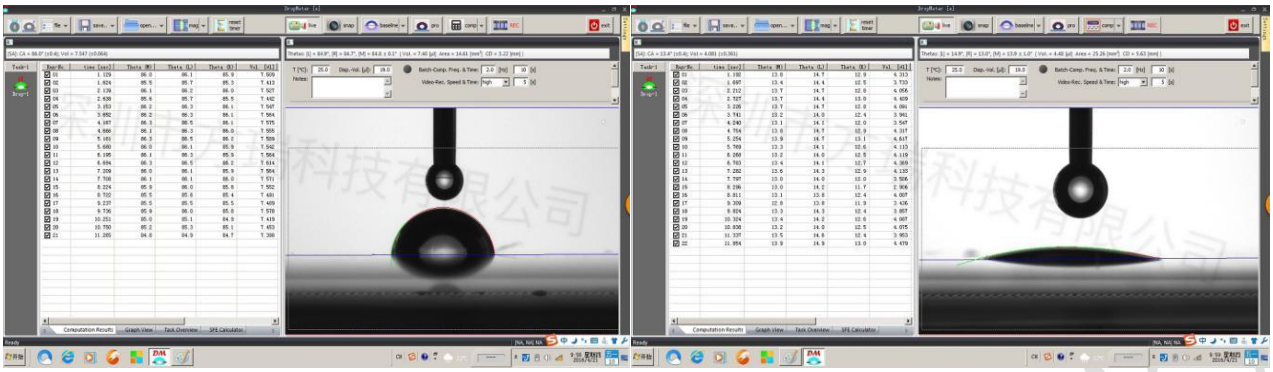


3.2 Theory of Plasma Cleaning

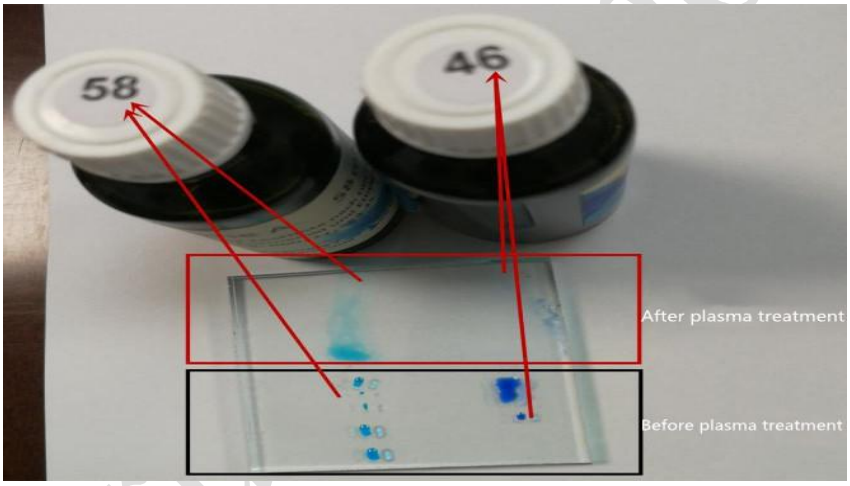
Plasma cleaning technology uses the characteristics of low-temperature plasma to make the plasma contact and react with the surface of the material, so that the surface of the processed material is chemically and physically cleaned, improving the wettability of the surface, implanting new chemical functional groups and surface etching.



3.3 Plasma Surface Treatment Effect Comparison



The contact angle of a liquid on the surface of a solid material is an important parameter to measure the wettability of the liquid on the surface of the material. If θ<90°, the solid surface is hydrophilic. The smaller the angle, the better the wettability; If θ>90°, the solid surface is hydrophobic.



The measurement of dyne value is very common in applications such as printing, coating, laminating, welding, etc.. It can reflect the difficulty of bonding on the surface of the material. Generally speaking, the greater the dyne value, the better the bonding performance between the surface and another material.

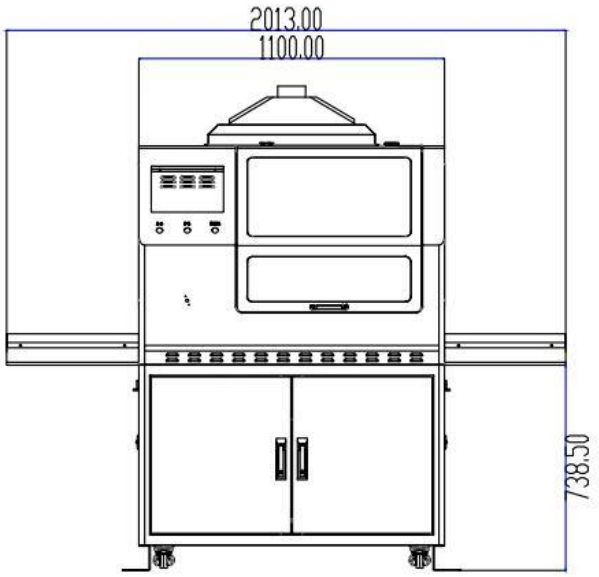
3.4 Application Industry

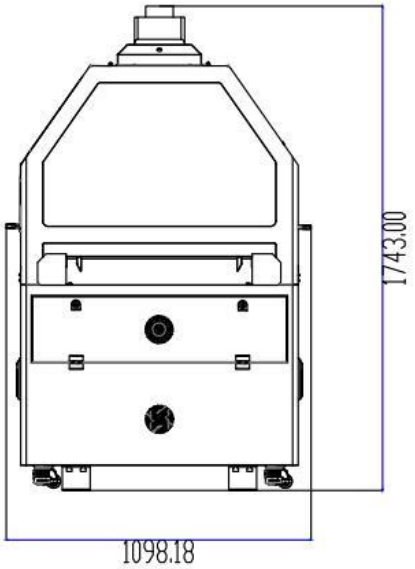
1. LCD panel industry STN/TFT/OLED/LTPS
2. Touch panel industry
3. Cleaning before packaging of optoelectronic components and electronic components LED
4. Packaging, PCB, FPC industry
5. Solar industry

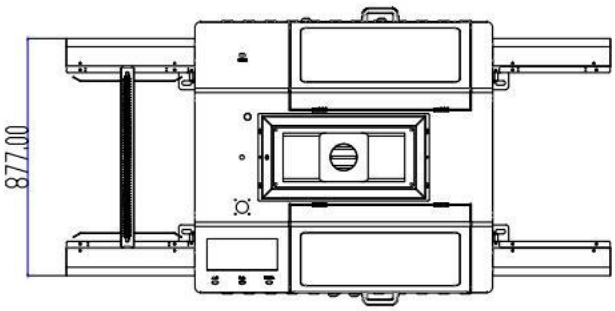
IV. Equipment Specifications

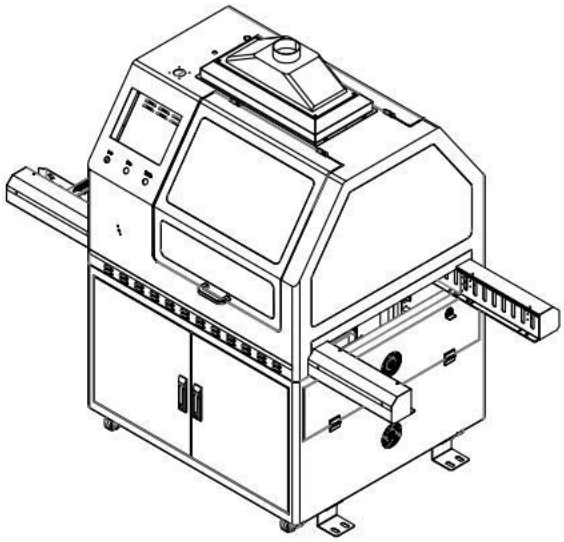
No	Project Type	Detail Parameter
1	Manufacturer name	Shenzhen Fangrui Technology Co., Ltd
2	Device model	DL-600
3	Device size	2013mm × 1100mm × 1743mm
4	Suit for the process product/material range	Product max treatment width 560mm
5	Brand of plasma nozzle	FARI
6	Quantity of plasma nozzle	4 pcs
7	Brand of plasma nozzle controller	FARI
8	Output power of single plasma nozzle	1000W
9	Treatment width of single plasma nozzle	55-60mm/75-80mm（optional）
10	Plasma surface cleaning	Ozone air pumping device is built in the plasma cleaning
11	Working mode of plasma nozzle	The quantity nozzle of up and down can be 2 or 4 (optional)
12	Whether it can treatment two kind product with different size	Yes
13	Working temperature	-10℃～+50℃
14	The distance from nozzle to substrate	10mm（±4mm）
15	Treatment effect	50～60 dyne
16	Transmission speed	1-3m/min
17	Lifespan of whole plasma nozzle	Lifespan is forever under normal use with human-being destroy
18	Moving speed of plasma nozzle	Max speed 500mm/second
19	Rotating speed of plasma nozzle	3000r/min
20	Drive mode of plasma nozzle	Motor drive
21	Lifespan of electrode	Replace it for each two year
22	Lifespan of nozzle	Replace it for each two year
23	Smart control	10 Inch touch screen interface control
24	Alarm function	Device has alarm function of the air pressure,voltage ,conveyor,servo and material shortage
25	Supervisory control of electrode	Hour monitoring
26	Operation system	PLC controller+Touch screen
27	Air source demand	Dry and clean compressor air
28	Power supply demand	220V（±10V）
29	Remote control function	Yes
30	MENS function	Yes
31	Danger marking	High voltage danger marking
32	Environmental conditions	Room temperature：15℃～30℃ Humidity：30% ～ 70% Flammable gas, corrosive gas, explosive or reactive dust is forbidden

V. Product Dimensions









VI. The Advantages of Plasma Cleaning

1）Plasma cleaning is dry cleaning, it don’t need pass the drying process than enter the next process that it can improve treatment efficiency.

2）After plasma cleaning, it won’t be produce hazardous pollutants and it won’t be hurt human body and

product surface.

3）The plasma produced by the high frequency using the radio wave range is different from the direct light such as the laser, and the orientation of the plasma is not strong, which allows it to go deep into the microaperture of the object and the sunken interior of the cleaning task， so it don't need much considering the product shape. The treatment effect of plasma cleaning is better than freon when treatment difficult position.

4）The cost of plasma is low than the traditional wet cleaning process because it just need the compressor air but don't need the expensive organic solvent. It was avoid the transportation, storage, emission treatment measures of solvent.

VII. Equipment Installation and Commissioning

The buyer need ready the electricity, compressed air, vacuum environment according to the seller demand. The seller will responsible for device transportation and installation. If it is any problem when machine under testing, The seller will deal with it.

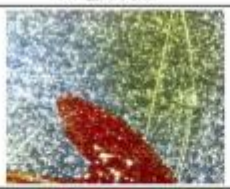
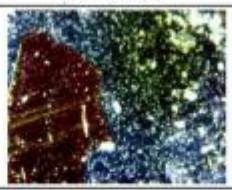
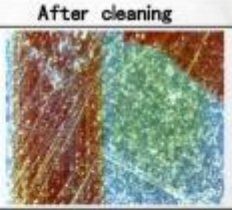
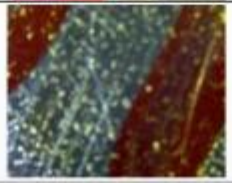
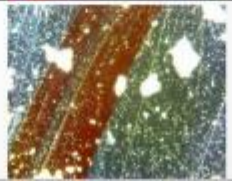
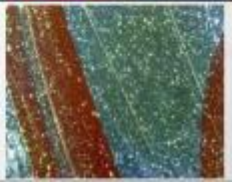
（1）Environment condition： Temperature: 0-55° C, humidity <90%

（2）Power supply： AC 220V

（3）The air joint specification： Φ8 air joint

（4）Air pressure： 0.2Mpa~1Mpa, if air pressure is over 1Mpa（10Kgf），it need add pressure limiting valve.

VIII. Cleaning Effect

Sample	No	Untreated	Add dust	After cleaning	Effect
	1				Cleaning effect 99.99%
	2				Cleaning effect 99.99%
	3				Cleaning effect 99.99%

IX. After-sales Service

9.1 Product Service

- One warranty warranty.
- We can provide lifetime maintenance services.
- We can provide hardware and software updated service.

9.2 Support training and technical service

- According to device feature, we can provide the training about device function, theory, operation, repair and maintain;
- 24 hour technical consultation until the solving problem;
- We have professional R&D and many patents. We are willing to work together to develop new plasma treatment processes with users to provide efficient, energy-saving and environmentally friendly processes for various industries.

9.3 Service Advantage

- ✓ We have many model plasma treatment device and we can provide free sample test.
- ✓ We can provide sample machine for test and our professional technician will provide assistance.
- ✓ We can provide generation processing and machine rent service that make customer pay less for using plasma technology.
- ✓ Relying on the system machining equipment and mature mechanical design ability, we can provide timely equipment improvement and additional function development.
- ✓ Relying on many years of experience in plasma surface modification research, to provide customers with professional and comprehensive technical guidance.
- ✓ Provide free future process optimization and upgrade services, and you can jointly develop with customers to solve other surface processing problems; With the fastest response time, the most timely door-to-door service, to solve various problems in the use of equipment, to relieve customers from their worries.

X. Contact Us

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