Gambetti Kenologia

Vacuum Plasma Systems

Gambetti
Vacuum Technology
and Related Solutions

50 years

High vacuum technologies

For the past 50 years, **Gambetti Kenologia** has been dedicated to pioneering **high-tech solutions** tailored in **high vacuum technologies**, surface analysis and characterization.

Thanks to the innovative and cutting-edge approach of its founder, Glauco Gambetti, we have been producing a range of **plasma systems operating in vacuum** since 2003, available in various sizes to suit **different chamber volumes**.

These laboratory devices are accompanied by specific accessories.

We offer the ultimate, **effective and environmentally friendly solution** to **transform surfaces** into masterpieces of efficiency!

Count on our team of experts!

We transform every inch of surface into something extraordinary.

Thanks to **vacuum plasma,** our cutting-edge technology **eliminates adhesion issues** once and for all.

With vacuum plasma pre-treatment, we ensure **especially efficient surfaces modification**, preparing them perfectly for all kinds of treatment: from **coating** to **bonding**, from **wetting** to **printing**, from **painting** to **precision micro-cleaning.**

We maximize the potentials of materials to guarantee **impeccable outcomes** that create a meaningful impact.

Discover the power of Plasma!

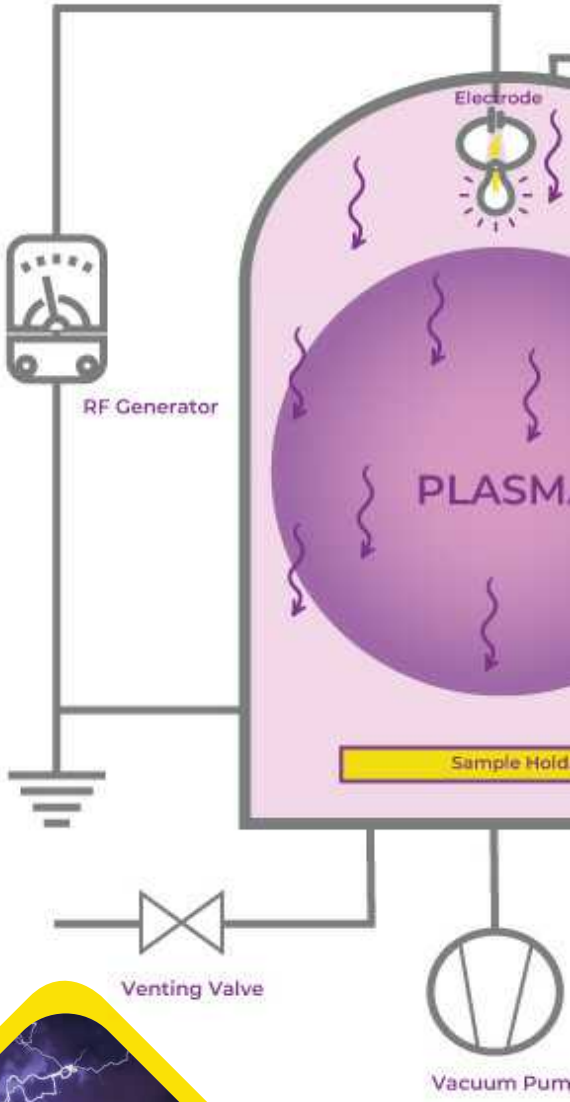
It transforms surfaces with advanced technology.

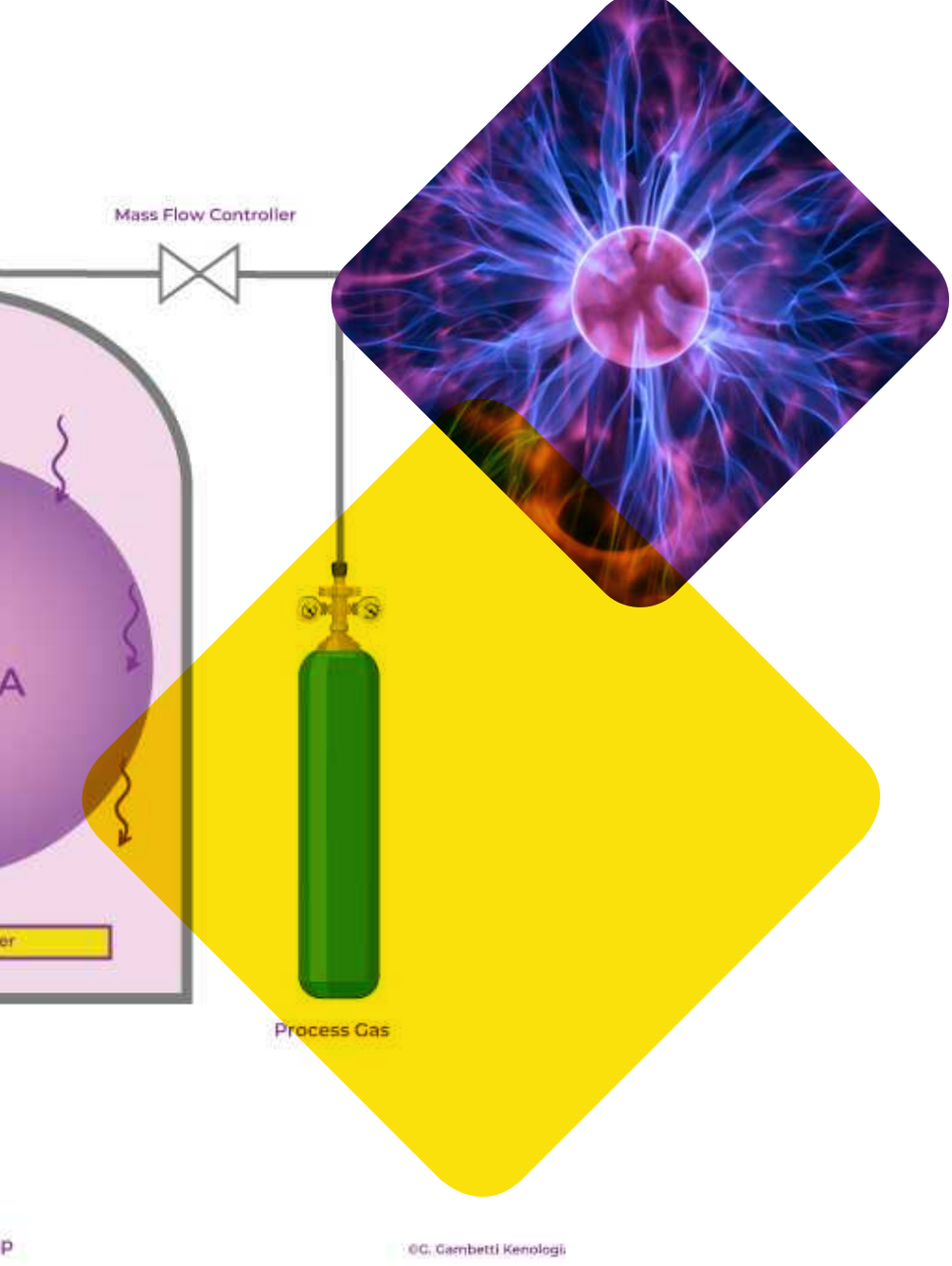
PLASMA is a **highly energetic gas** state created in a vacuum chamber through the application of a high-frequency magnetic field.

This process generates a light discharge containing ions, electrons, radicals and UV rays. Imagine the sun, stars or northern lights: PLASMA occurs under these natural conditions with **extraordinary energy**.

That is why **PLASMA is the key to transforming material surfaces** in innovative and effective ways at low temperatures.

Through the activation of radicals or the deposition of chemically active films, amazing results can be achieved.





Explore the potential of PLASMA technology and revolutionize surface transformations with state-of-the-art innovation!

Surface activation

Get **superior bonding** and **improve substrate wettability**. PLASMA optimally prepares surfaces, ensuring quality results.

Extreme cleanliness

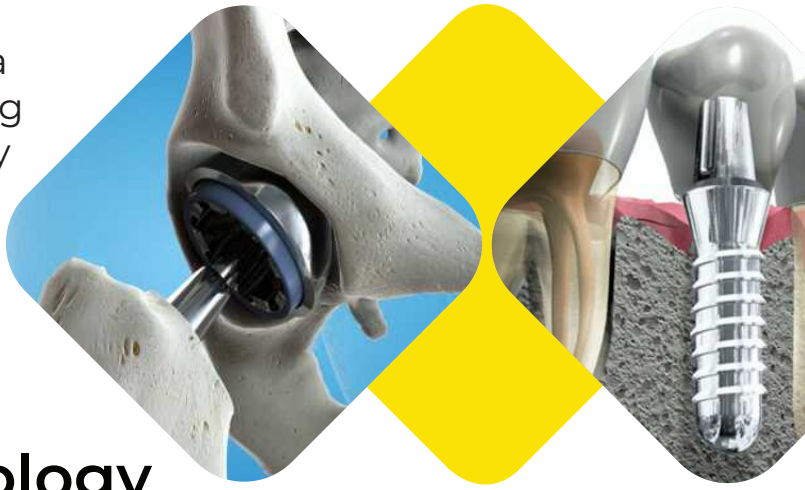
It removes even the smallest layer of organic contaminant. Components that cannot tolerate even the smallest amount of dirt find their solution in the PLASMA cleaning process.

Maximum sustainability

This process is **enviromentally friendly** to the max! The gases produced and released into the atmosphere are water and carbon dioxide, ensuring **minimal environmental impact**.

Plasma in industry

In the world of modern industry, plasma has established itself as a versatile tool and effective finding application in an amazing variety of processes and sectors.



Bio-Medical Technology

Decontamination and activation of titanium prosthetic implant.

In biomedical manufacturing processes, the surfaces of dental devices or implant must not only be clean, but also **absolutely flawless or sterile.**

With plasma, artificial implants are permanently integrated into the organic matter with **greater rapidity and stability** and **without causing infection.**

Plasma can be a **valuable ally in sterilization**, **decontamination**, **cleaning** and **surface activation** of a medical implantable, because of its ability to open covalent bonds and break organic chians, transforming contaminants in inert volatile compounds (mostly water and carbon dioxide), leaving no residue on the treated surface.

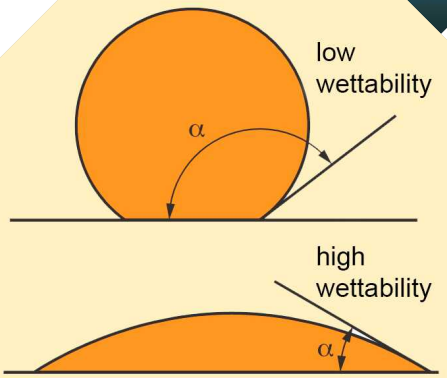
Ions and active species in the plasma in contact with the surface, **increase its surface energy**, thereby making the surface more **hydrophillic**. As a result, the resultant implant is more likely to be **completely wet by biological fluid**s, also can improve cell adhesion and rooting.

Plastic

Contamination removal and surface activation

Plasma treatment represents an **innovative and versatile solution** to improve the surface properties of materials, offering **new perspectives** in the filed of **polymer adhesion**.

Examples of this are the improved adherence of materials that are notoriously difficult to adhere to, such as the polyethylene and polypropylene.

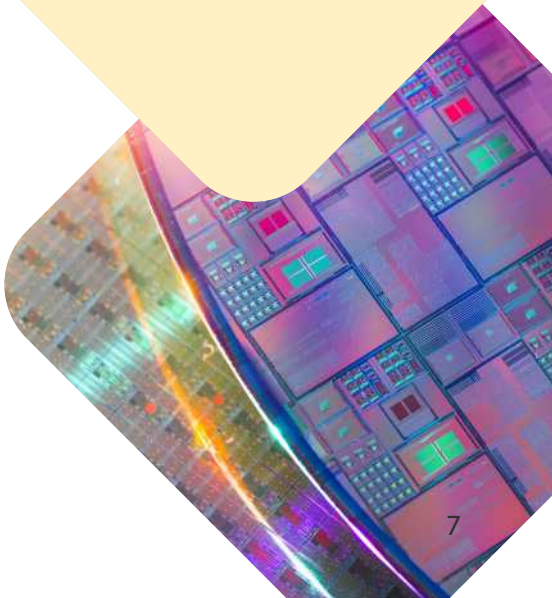


Semiconductors

Homogeneous or selective removal of materials and contaminants

Vacuum plasmas in the semiconductor industry can be used in both **isotropic and anisotropic form**. The isotropic plasma acts uniformly on all directions of the material surface, ensuring **homogeneous removal of contaminants** and uniform deposition of thin films.

In contrast, anisotropic plasma is directional, allowing **selective removal of materials** from specific areas of the semiconductor surface. This ability for **precise control** is essential for processes such as defining contours and creating micro and nano-metric structures in semiconductor devices.




Gambetti
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FALCON plasma RIE
Gambetti
Door open

Our range

Discover our range of vacuum plasmas, designed to meet any requirements for surface modification and ensure high-level performance.

COLIBRÌ perfect for professionals in search of an efficient solution that's both compact and affordable.

TUCANO crafted for professionals needing the highest level of process reproducibility.

FALCON RIE+ capable of functioning with both isotropic and anisotropic plasmas, this introduces new opportunities in the realms of cleaning and micromachining.

FALCON RIE+

Vacuum benchtop plasma reactor

The newest **vacuum plasma reactor** developed by Gambetti Kenologia is the **FALCON RIE+.**

This innovative system is designed to operate in two distinctive modes: **anisotropic**, with polarization of the sample holder, or **isotropic**, with polarization of the upper electrode.

The spacious chamber allows the insertion of samples with a maximum diameter of 8”. In addtion, the use of a **turbomolecolar pump** ensures optimal directional etch during the RIE process.

Dimensions and Weight

710 x 635 x 750-1000 mm.
Net weight: 80 Kg without vacuum pump.
Volume of ≥ 14liters.
Ø 252 mm.
L 250 mm.

Vacuum chamber

Cylindrical aluminum process chamber equipped with a window that allows inspection of the interior during the execution of the process.
Bottom-up opening.
RF signal.
13.56 MHz 200W generator.
Automatic adaptive network.

Gas inlet

Controlled by mass flow controller with flow rate of: 100/200 sccm.
Maximum number of gas inputs: 4 (Mass Flow Controller from MKS Instruments) 3 standard.
Gas distribution system: via upper electrode.

Electrodes

Flat and parallel, upper electrode equipped with “Dark Shield”
Active working area of the specimen tray: Ø 210 mm.
Useful distance between sample holder and electrode: 162 mm.
Material: Aluminum.

Control system

Industrial graphic type HMI PLC.
User interface: touch-screen display.

Power supply

Single phase + ground 220/240 VAC, 8 Amax 50/60 Hz, 13 AWG.
Single phase + ground 110/120 VAC, 16 Amax, 50/60 Hz, 10 AWG.
Process gas inlet: ¼’ OD, Swagelok.

TUCANO

Multipurpose benchtop plasma system

Tucano represents a **vacuum plasma device** in benchtop format, capacitive and RF-powered 200W at 13.56MHz.

Recognized for its **user-friendly interface** and straightforward design, it's tailored for individuals requiring cleaning, modification, or activation tasks on surfaces of diverse materials like metals, plastics, ceramics, or paper, along with photoresist removal capabilities.

It proves to be an ideal option for both R&D and small-scale production activities.

Dimensions and Weight

450 x 504 x 440 mm.
Net weight: 33,5 Kg without vacuum pump.

Vacuum chamber

Seamless aluminum cylinder with a volume of 5.9 liters - Ø 153 mm W 324 mm, with hinged door in black anodized aluminum with screened visual specula.
RF signal.
13.56 MHz 200W generator.
Manual adaptation network.

Vacuum pump

Edwards brand pump model RV5F.
Maximum pumping capacity 5 m3/h.
Fomblin 06/6 oil.
Accessories provided: corrugated connecting pipe.

Gas inlet

Number of process gas inputs: 2 regulated by Mass Flow Controller (MKS Inst.).
Available flows: 50 sccm.

Electrodes

Plane and parallel configuration, upper electrode equipped with “Dark Shield”.
Active working area of the specimen tray: 118 mm x 310 mm.
Useful distance between electrode and sample holder: 68 mm.
Material: Aluminum.

Control system

Industrial PLC of graphical HMI type.
User interface: touch-screen display.

Power supply

Electrical: single phase + Earth 220/240 VAC, 8 Amax 50/60 Hz.
Process gas connection, type and size: 6 mm OD.

COLIBRÌ

Multipurpose benchtop plasma system

Colibrì represents an innovative **tabletopvacuum plasma capacitive system** operating at low frequency (LF) with a power of 200W and a frequency of 50KHz.

This solution is perfectly suitable for cleaning treatments or surface activation on a **variety of materials**, including metals, plastics, ceramics and paper.

It proves to be an ideal tool for R&D applications, as well as for use in small production batches.

Dimensions and Weight

464 mm x 436 mm x 240 mm.
Net weight: 20 Kg without vacuum pump.

Vacuum chamber

Seamless aluminum cylinder with a volume of 2 L (128.6 in^3) - Ø 102 mm W 256 mm, with black anodized aluminum hinged door with screened visual specula.

Vacuum pump

Edwards brand pump model RV3F.
Maximum pumping capacity 3 m3/h.
Fomblin 06/6 oil.
Accessories provided: corrugated connecting pipe.

Control System

Microcontroller.
User interface: display and panel keyboard.

Electrodes

Plane and parallel configuration, upper electrode equipped with “Dark Shield”.
Active work area/Tray: 83 mm x 250 mm.
Useful distance between electrodes: 43 mm.
Material: Aluminum.

Gas inlet

Manual needle valve.
Stainless steel flow microregulator.
Number 1 maximum gas.

Power supply

Electrical: Single phase + Ground 220/240 VAC, 8 Amax 50/60 Hz, 13 AWG.
Single-phase + Ground 115/120 VAC, 16 Amax, 50/60 Hz, 10 AWG.

Components

The Gambetti Kenologia product range offers a number of components for vacuum palsma generation system.

GGK-RF15 200-watt 13.56 MHz **Generator** for plasma applications

GGK-LF 500-W 50Khz **Generator**

GGK-AM1 automatic or manual adaptation networks

From left: GGK-RF 15, GGK-LR, adaptation network.


AUTO MATCHING UNIT 60K-AMI
PH-
PH+
MAG-
MAG+
T-MIN
T-MAX
L-MIN
L-MAX
50 OHM RF INPUT
Gambetti
Gambetti

Training, Support and Maintenance

We provide training for the efficient operation of our systems, coupled with **expert consulting and customized support** designed to meet the unique needs of every client.

The steadfast dedication to delivering personalized attention will be evident in the continuous quest for **the most suitable solution** tailored to the specific requirements of every customer.

We collaborate closely with our clients, serving as **essential partners** and experts in addressing challenges associated with plasma surface treatment.

We recognize that a company's success is deeply linked to the quality of its equipment. A machine malfunction that causes production to halt can have significant financial repercussions.

Offering regular and consistent **after-sales maintenance** on our systems is a testament to our commitment to minimizing the risk of failure. This service is a point of pride for us.

Additionally, we provide **demonstration services** for your samples in our laboratory.

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