Technics Plasma GmbH

Plasma- und Ionenstrahlsysteme

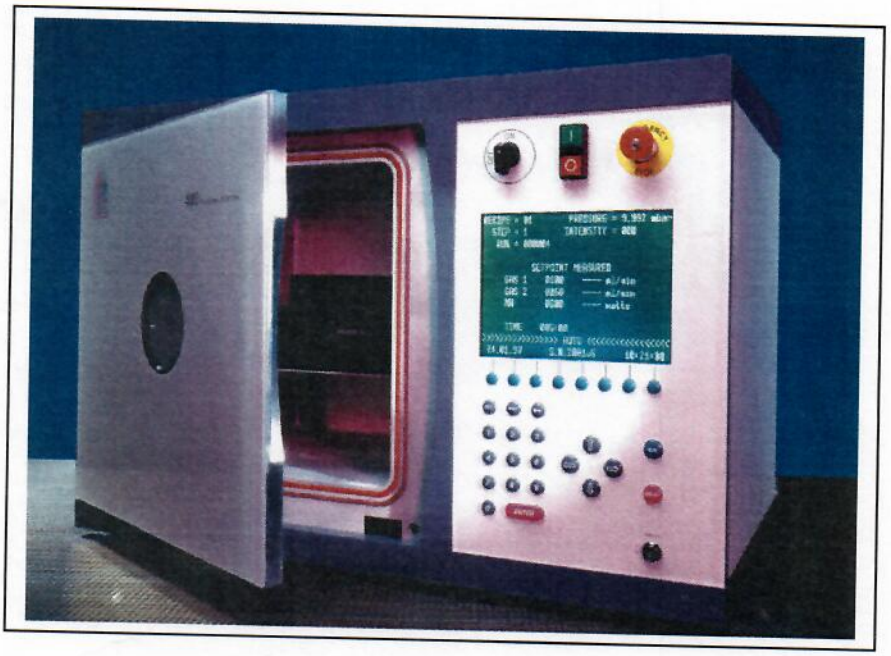
Technics Plasma GmbH · Dieselstraße 22a · D-85551 Kirchheim bei München

Technics Plasma GmbH
Dieselstr. 22 a
85551 Kirchheim / München

Systemdescription

Plasma - System
400
SN 2169

CE



14.09.98

Keep in place for further use!

Introduction

In order to achieve an improvement in adhesion during bonding, metal plating, coating, painting, or pressing, surfaces must be cleaned or modified. Treatment in low-pressure plasma meets this stringent requirement in an environmentally friendly, safe and cost-effective manner.

Generally, all materials that tolerate vacuum and can withstand a temperature of at least 60 degrees Celsius can be treated in plasma. Examples include plastics, ceramics, glass, metal, and semiconductors.

While plasma is mainly used for cleaning inorganic materials, a change in surface characteristics that results in a drastic increase in the matrix-forming ability can be achieved in many plastics. The resultant adhesion is essentially dependent on the type of treatment gas and on the treatment time.

Among the different gases, oxygen **(!!)** has proven to be the best process gas for most materials. In modifying synthetic materials, it has been found that treatment times of less than one minute have led to considerable improvements in adhesion, which increased only slightly with longer process times. However, excessively long treatment times can lead to a worsening of these parameters.

Oxygen **(!!)** is also very well suited for surface cleaning (for example, removal of organic layers). By adding a few percent CF_4 (typically 10%), the effectiveness of the plasma can be enhanced.

Other gases or gas mixtures such as nitrogen, argon or argon/hydrogen are used if the oxidative effect of the oxygen **(!!)** is undesirable, for example with silver or silver-containing materials.

(!!)
Caution!
Oxygen may not be used unless the pumps are operated with Fomblin oil.

Inhaltsverzeichnis

Operating Media

The process gas quality requirements greatly depend on the process.

Thus, for example, technical grade gases are suitable for cleaning or modifying surfaces, while gases with a very high quality standard of purity are required for complex processes such as in semiconductor technology.

The following are suitable process gases:

- Oxygen (O_2) **(!!)**
- Carbon Tetrafluoride (CF_4)
- Argon (Ar)
- Helium (He)
- Nitrogen (N_2)
- Air
- Nitrous Oxide (N_2O)
- Carbon Dioxide (CO_2)

Gas mixtures such as:

- Argon/Hydrogen (Ar/H_2) 93%/7%

and various other mixtures of the above gases.

(!!)
Caution!
Oxygen may only be used if the pump is operated with Fomblin oil.

Starting Up the System

Pre-Startup Conditions

- System is connected to the power line
- Process gases are connected (pressure up to 2,5 bar):

  MFC1 for O_2 (Oxygen) **(!!)**
  MFC2, MFC3 and MFC4 optional

If gases other than O_2 **(!!)**, N_2 are used, the corresponding correction factors must be bserved (see page 15) !

- Compressed air is connected (pressure approximately 4 bar) to main valve

Startup

The main breaker is located above the display.
It is identified as "Main Power."

Turn the main switch to ON (To the right).

Push the system breaker "I" (green button).

The STANDBY condition will be shown on the control display in the second row from the bottom. Further processor operation is accomplished using the key pad located under the display (see pages 9 through 25).

(!!)
Caution!
Oxygen may not be employed unless the pumps are operated with Fomblin oil.

Diagram: Plasma Processor 400