



**BOA Group**

Your Flexible Solutions Partner



**Hose and Bellows Technology for  
Highest Purity Requirements**

# Our competences

**BOA ULTRA CLEAN Flexibles are a key component in the manufacture of micro-chips, in the optical, food and pharmaceutical industries.**

**Our offer:**

- Design of special solutions
- Welding (orbital and inert-gas shielded-arc welding under clean room conditions)
- Assembly of complete components
- Cleaning according to specification
- Class 5 , 6 and 7 clean rooms

**Manufacture of:**

- Corrugated metal hoses, which run in vacuum applications
- Metal bellows in beverage-filling plants
- Hoses in the area of lithographic processes
- Metal bellows and corrugated hoses for ultra-high vacuums



Welding



Assembly



Classes 5, 6 and 7 clean rooms

# Cooling, gas conveying and vacuum applications in the manufacture of micro-chips

**The manufacture of micro-chips requires hoses that are absolutely free of grease and particles for feeding of cooling fluid or gases, which are installed in the vacuum area.**

Particles that are many times smaller than the diameter of a human hair would jeopardize a micro-chip's subsequent function. Therefore, the hoses and bellows that will be used in the environment of manufacturing micro-chips are fabricated, cleaned and packed in special clean rooms.

Membrane bellow



Cooling hose



Typical cross-section of a hybrid hose with a PTFE inner hose



Gas hose  
Adaptation to existing installation spaces



## Use of bellows in the vacuum

**Vacuum applications place the highest demands on the purity and cleanliness of hoses and components.**

The slightest residues in water or hydrocarbons significantly impair the vacuum process.

The BOA Group has cleaning and drying processes which are specially coordinated to suit the subsequent utilization of products in the vacuum.

Bellows as a centre-piece of a vacuum pump



## Ultra Clean for foods

**Particularly stringent guidelines apply in the area of foods. ULTRA CLEAN components from the BOA Group are specially designed for that purpose.**

BOA ULTRA CLEAN bellows are used as filling supports for the filling of lemonade. The spring action of the bellows actuates the filling device's pressing and sealing operations during the filling of lemonade bottles.



## Special products according to individual requirements

**The BOA Group's particular competences in welding and assembly enable us to create products in close cooperation with customers, which satisfy their individual design guidelines.**

The BOA Group undertakes the fabricating processes in the clean room for you. We are at your service whenever you need a competent partner on account of bottlenecks or shortages in fabrication due to a lack of clean room capacities, or for checking purity and cleanliness.

Receptacle for samples in an electron microscope  
(Vacuum in the cavity wall)



Conducting gas



## Cleaning in the clean room

The BOA Group has clean rooms in classes 5, 6 and 7.

We supply ULTRA CLEAN Flexibles free of hydrocarbons and particles according to your specific application.



### Example of a cleaning operation

- Ultra-sonic cleaning with an alkaline cleaning agent
  - Pre-flushing with distilled water
  - Flushing with distilled water
- The water's conductivity is measured constantly and it determines the point in time for changing the water
- Drying in a nitrogen kiln

The cleaning operation is arranged independently of the customer's specification for requisite cleanliness.

## Checking the purity or cleanliness

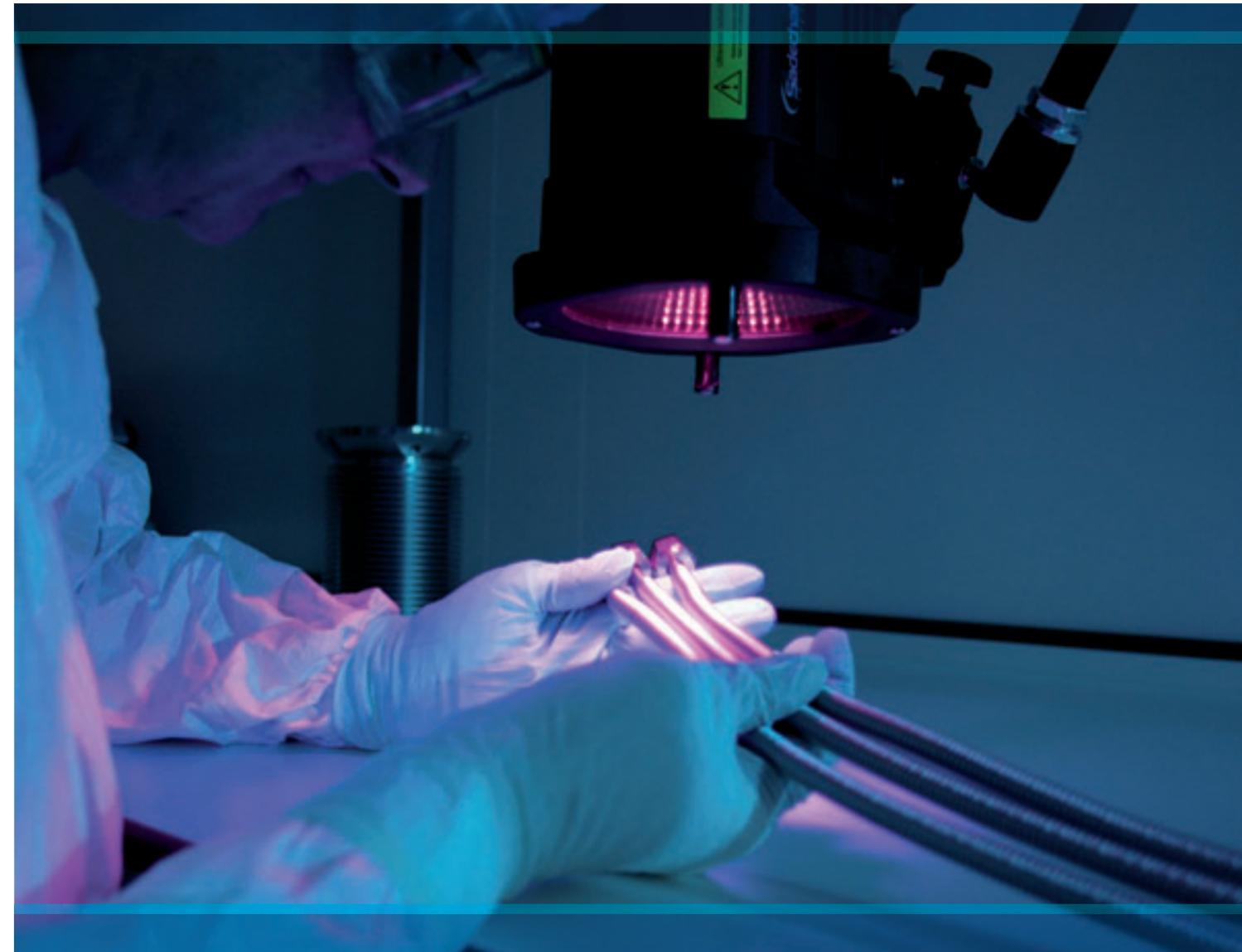
We can ascertain the product's degree of purity or cleanliness with the following procedures:

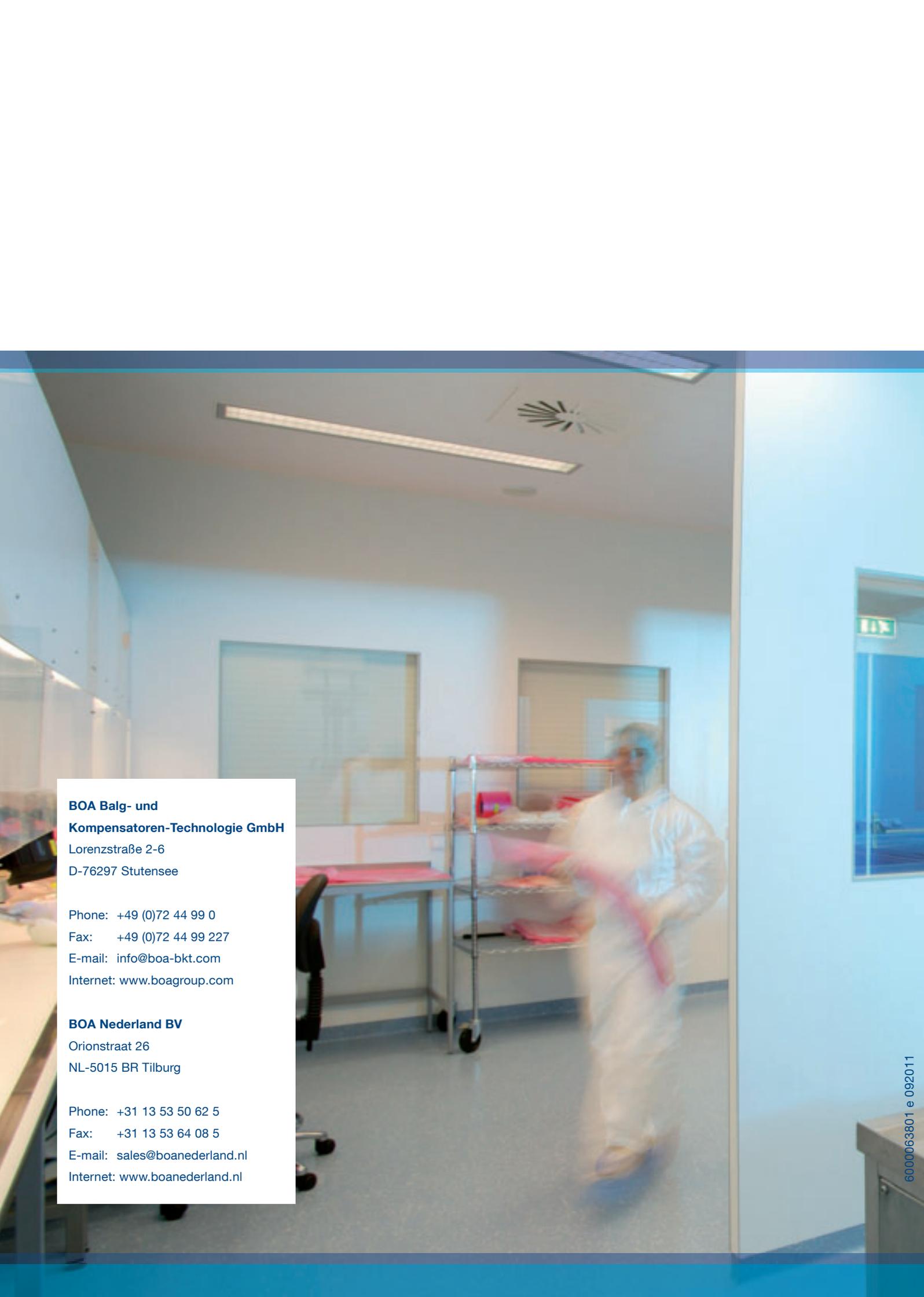
**APC** - Airborne Particle Count

**RGA** - Residual Gas Analysis

**TOC** - Total Organic Carbon

**UVA** - Particles down to 15  $\mu$  (microns) in size can be verified via UV light



A person wearing a full white protective suit, including a hood and mask, is working in a cleanroom. They are standing next to a metal cart with shelves, which has some pink items on it. The room has white walls, a grey floor, and a ceiling with a long fluorescent light fixture and a circular air vent. There are windows in the background with blinds. The overall atmosphere is sterile and professional.

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