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# REAMODE

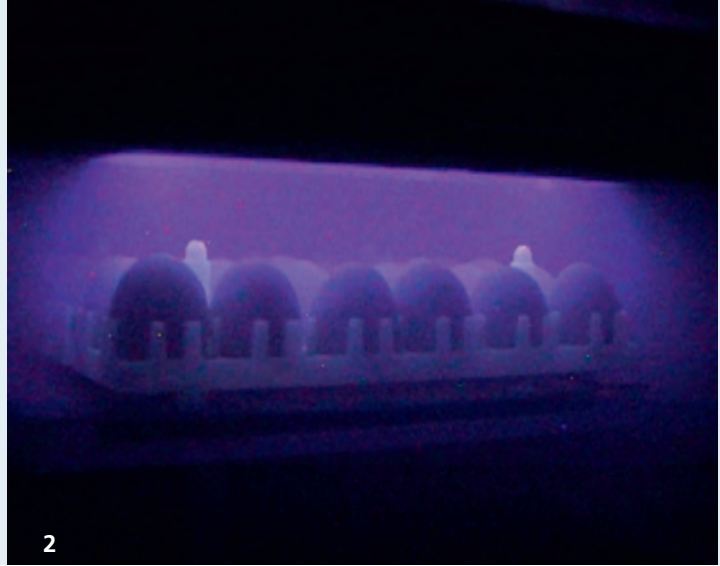
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Experimental equipment for modifying  
organic materials using accelerated electrons





Equipment with linear module



2

Eggs under electron veil for disinfection

## REAMODE

The REAMODE equipment uses an electron beam to modify surfaces for a variety of applications and to sterilize/disinfect surfaces and products.

The equipment parameters can be adjusted in order to control the penetration depth of the electrons and the intensity of the electron beam. This allows materials to be modified in a customized way.

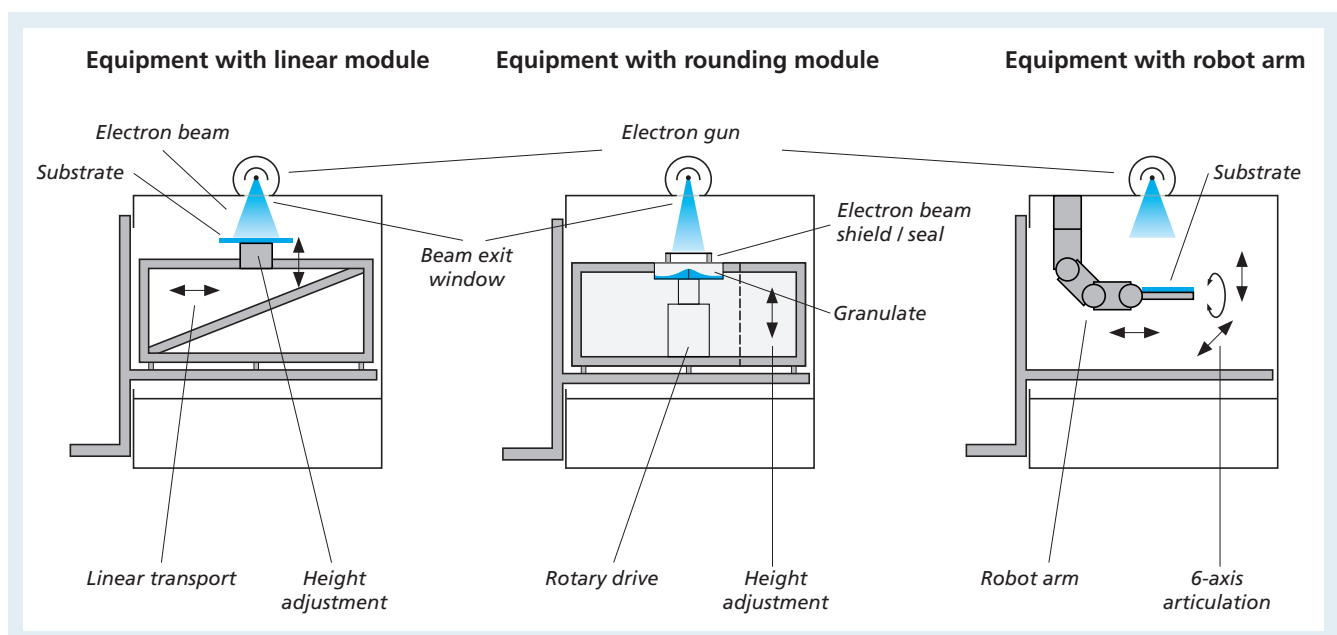
For example, lacquers can be efficiently cured, polymer surfaces can be modified and crosslinked, and products can be

disinfected or sterilized. The equipment has three different transport modules that allow treatment of substrates with 2-D or 3-D geometries, as well as bulk goods.

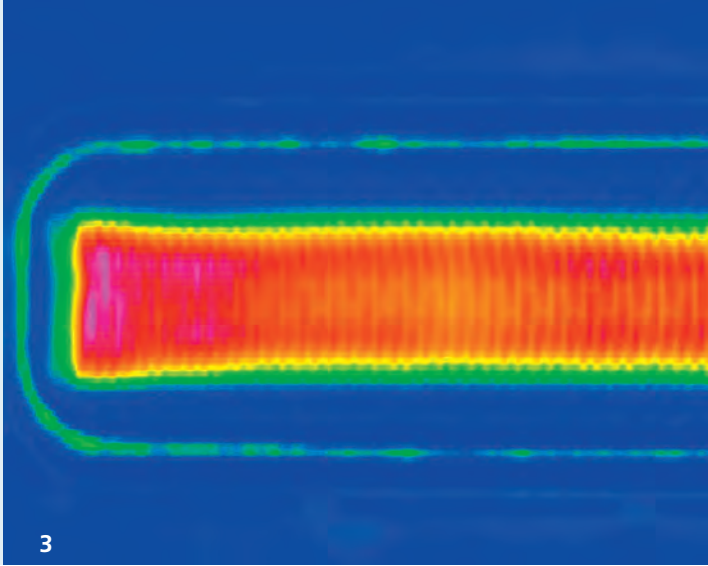
The substrates can be processed in the equipment under atmospheric pressure, under protective gas atmosphere, and under reduced pressure.

## Applications

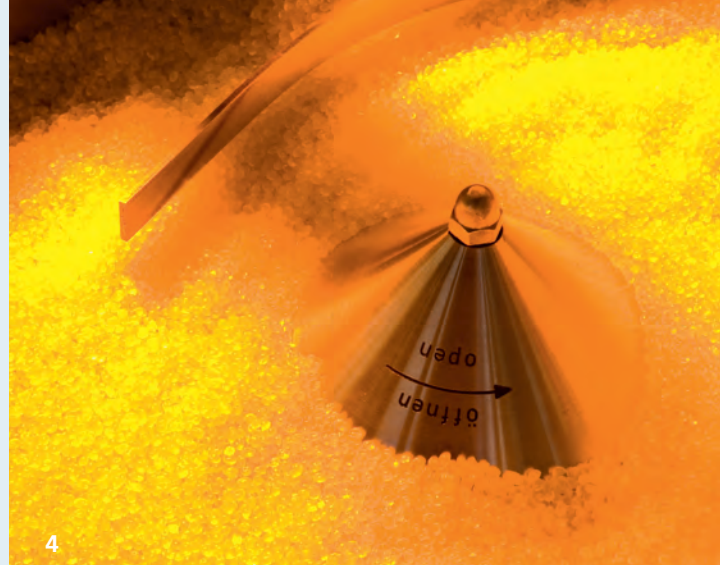
- Hardening and curing of lacquers, paints, polymer layers and papers
- Modification, crosslinking and grafting of polymer films, surfaces and granulates as well as fibers and fillers
- Degradation of synthetic and biological polymers, like cellulose
- Sterilization/disinfection of surfaces, also inside a packaging
- Germ reduction on surfaces of raw materials and packaging systems
- Modification of natural oils
- Testing, evaluation, and maintenance of electron beam sources



Schematic representation of the REAMODE equipment



3 Thermographic picture of an electron beam exit window



4 Polymer granulate in rounding module

## Our offer

- Feasibility studies and technology development in the area of surface treatment
- Identification of optimum process parameters for your application
- Product development for lacquers and polymer surfaces
- Accompanying chemical, mechanical, and microbiological analysis of surfaces
- Development and realization of new and customized electron beam sources
- Maintenance and repair of electron beam sources

## Technical specifications

Electron beam source	max. 2.5 kW at 200 kV
UV beam source – UMEX	max. 3.0 kW
Penetration (treatment) depth	10 ... 200 µm
Dynamic dosing	max. 10,000 kGy × mm/s
Usable chamber size (W × H × D)	900 × 1100 × 1300 mm
Max. electron beam source flange dimensions	1000 × 800 mm
Modular equipment concept	<ul style="list-style-type: none"> <li>■ Linear transport module for 2-D and 3-D <ul style="list-style-type: none"> <li>▪ product samples up to 300 × 400 × 300 mm</li> <li>▪ substrate speed 0.05 ... 2 m/s</li> <li>▪ load capacity of substrate platform max. 5.0 kg</li> </ul> </li> <li>■ Rounding module for bulk goods with <ul style="list-style-type: none"> <li>▪ particle sizes &gt; 500 µm</li> <li>▪ speed range 200 ... 1000 rpm</li> <li>▪ filling quantity (max. 3.0 kg)</li> </ul> </li> <li>■ Robot arm for 3-D substrates <ul style="list-style-type: none"> <li>▪ load capacity: max. 5.0 kg</li> <li>▪ substrate size up to 350 × 230 × 100 mm</li> </ul> </li> </ul>
Process conditions	<ul style="list-style-type: none"> <li>■ Different atmospheres, vacuum</li> <li>■ Process gas (air, CO<sub>2</sub>, N<sub>2</sub>), inert gas (Ar)</li> <li>■ Treatment temperature max. 360°C</li> </ul>
Process measurement technology	<ul style="list-style-type: none"> <li>■ High resolution IR thermography</li> <li>■ Various dosimetry systems</li> <li>■ Optical high dose measurement up to 5000 kGy</li> <li>■ Online beam monitoring</li> </ul>
Process data acquisition and accompanying process and product analysis, temperature monitoring and control (chamber, substrate)	

# Contact

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