

Living up to Life

**Leica**  
MICROSYSTEMS



# Leica EM CPD300

Automated Critical Point Dryer

Controlled Specimen Drying for Biological and Industrial Applications



## LEICA EM CPD300 – YOUR BENEFITS

### Trusted reliability

- › Fully reproducible processes through full automation
- › Highly reproducible sample preparation

### Time saving

- › Reduced process times through new Leica filler/sample holder concept
- › Minimal user interaction time through automation and intuitive software
- › Efficient synergy with Leica pre-treatment instrument EM TP Tissue Processor

### Ease of use

- › Ease of use by intuitive software and integrated touch screen
- › Store and recall drying programs
- › Expected process time calculated and displayed according to selected process parameters
- › Timer function
- › Flexibility in sample size
- › Large variety of sample holders



# Leica EM CPD300 Critical Point Dryer

The new Leica EM CPD300 dries specimens such as pollen, tissue, plants, insects, etc. as well as industrial samples, for example Micro Electro Mechanical Systems (MEMS), in a fully automated and controlled process. This automated, controlled technique leads to perfect, reproducible results and ensures the same sample quality from every run.

## Cost saving

- › Minimized CO<sub>2</sub> consumption through new Leica filler/sample holder concept
- › Minimal user interaction time

## Enhanced safety for user

- › Increased safety by software controlled temperature and pressure cut off function
- › Integrated waste separator avoids direct contact

## CRITICAL POINT DRYING

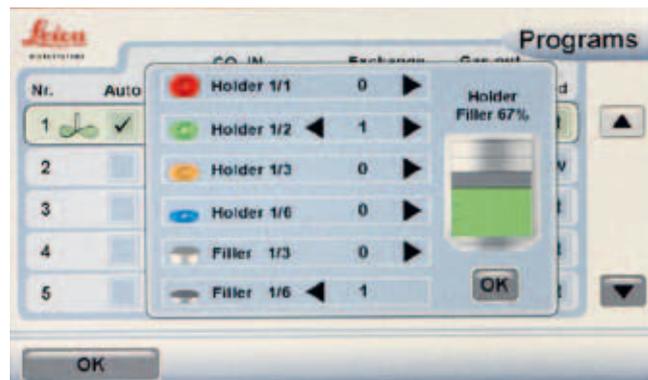
The procedure of critical point drying is an efficient method for drying delicate samples for SEM applications. It preserves the surface structure of a specimen which could otherwise be damaged due to surface tension when changing from the liquid to gaseous state. In the past, critical point drying was a time consuming process with low sample reproducibility due to the many manual operations required.

Before drying, many biological samples are commonly prepared through fixation and dehydration and coated after drying with metal such as gold, platinum or palladium to make their surfaces electrically conductive for SEM analysis.

# The New Leica Filler Concept – Reduced CO<sub>2</sub> Consumption and Process Time

Sample container with sample holder and filler

The Leica Filler Concept was developed to meet customer demands to reduce CO<sub>2</sub> consumption and process time. With the ability to adjust the chamber volume to the sample size, the exchange volume is reduced, thus minimizing process time and CO<sub>2</sub> consumption.



Filler/holder setting can be programmed to reduce CO<sub>2</sub> consumption and process time.



**SAMPLE CONTAINER WITH QUICK RELEASE PIN:**

For transferring specimens immersed in exchange fluid to the pressure chamber of the critical point dryer.



**HOLDER FOR GRIDS:** Slotted specimen holder for 32 grids.

Ideal for drying specimens applied to film-coated grids such as bacteria, viruses, microorganisms, etc.



**FILTER DISCS AND POROUS POTS HOLDER:** Specimen holder with four numbered chambers for filter discs, porous pots etc. Ideal for small specimens such as bacteria, viruses, microorganisms, etc. Can also be used without filter discs or porous pots for medium sized samples.



**WAFER HOLDER:** Wafer holder for four 2" wafers.



**FILLERS:** Filler sizes with a volume of 1/3 and 1/6 of the chamber are available and can be combined with different sample holders and fillers. With the fillers, the chamber volume can be adjusted to the sample size. The exchange volume is reduced which leads to minimized process time and CO<sub>2</sub> consumption.



**LEICA EM TP STEM HOLDER:** The EM TP sample basket stem fits directly to the EM CPD300 TP stem holder without unloading the samples from the TP baskets. Can also be used as a universal sample holder for small specimens.



**COVERSLIP HOLDERS (can also be used without coverslips for larger samples):** Holder for 22 x 22 mm square coverslips.

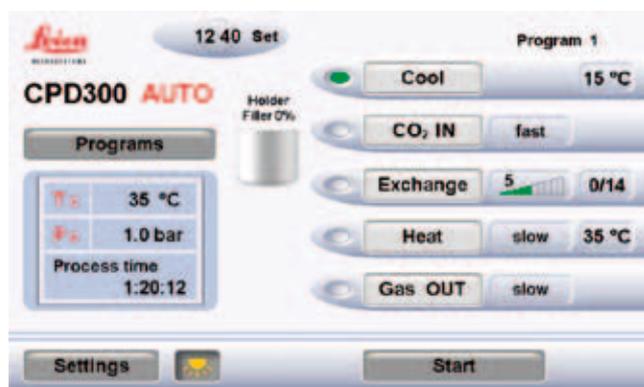


**COVERSLIP HOLDERS (can also be used without coverslips for larger samples):** Holder for 18 mm diameter coverslips.

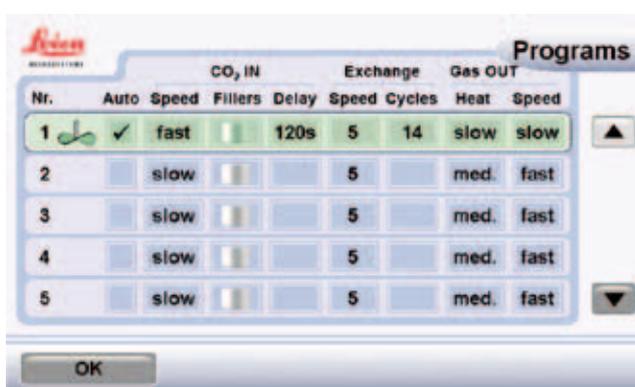


**COVERSLIP HOLDERS (can also be used without coverslips for larger samples):** Holder for 12 mm diameter coverslips.

# Intuitive Software and User Interface with Integrated Touch Screen



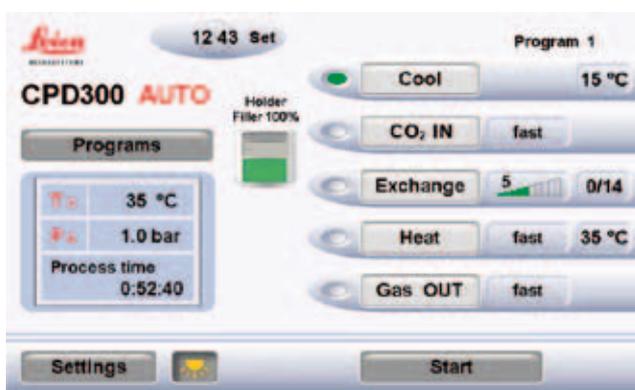
**Main display before programming:** Left side: Temperature, pressure and process time display, including timer function and holder-filler settings; right side: indicates current process status with:



**Program display** for storing and retrieving programs. Parameter settings for CO<sub>2</sub> IN, fillers, exchange steps and gas OUT settings.



**Pop up-filler display:** Filler and sample holder settings affect process time. Automated adjustment of the CO<sub>2</sub> IN time, exchange time and gas OUT time to filler-holder status.

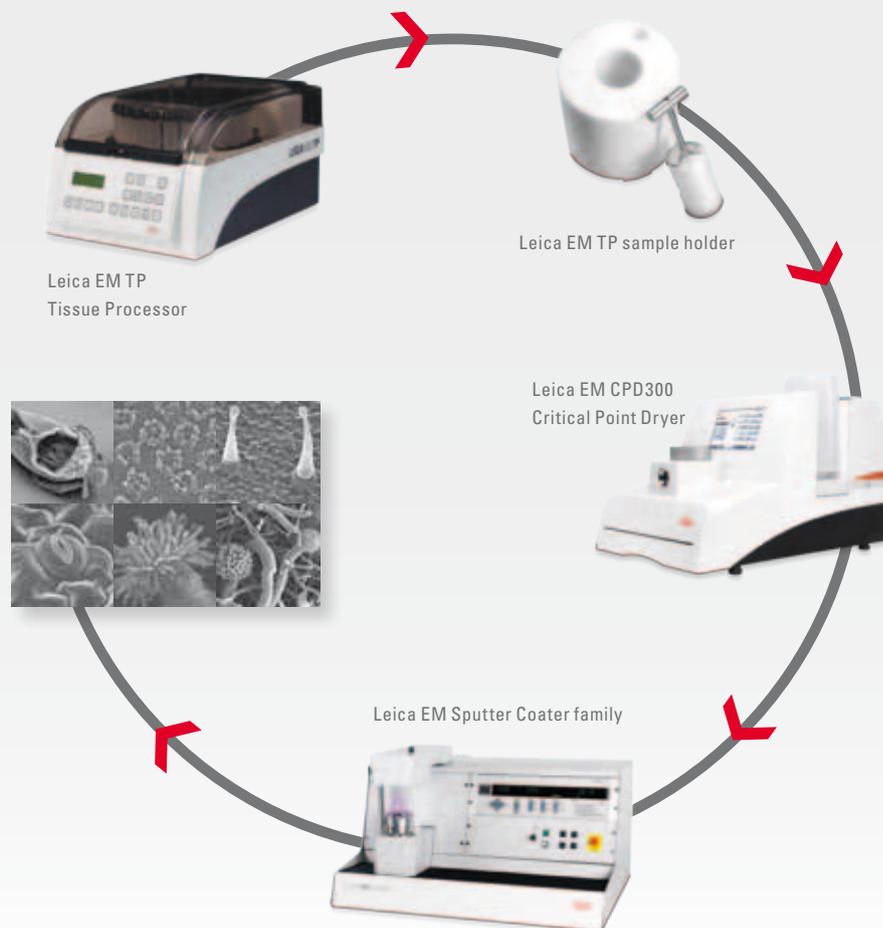


**Main display:** After programming parameters, activated program and process time is indicated (bottom left and top right). Program can be activated with start button.

# The Automated Leica SEM Workflow

Leica Microsystems offers a complete preparation package for SEM workflow. The Leica EM TP is the ideal instrument for tissue processing. After dehydration of the samples with the EM TP, the TP sample basket stem fits directly to the CPD300 TP stem holder without unloading the samples from the TP baskets. Only one user interaction is necessary to facilitate the workflow for dehydration and critical point drying.

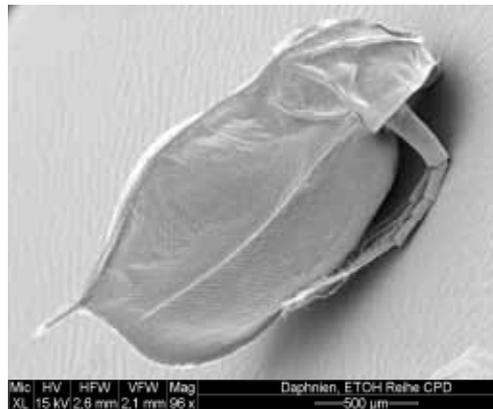
Leica Microsystems provides a full range of high quality coating systems as a follow-on procedure to critical point drying.



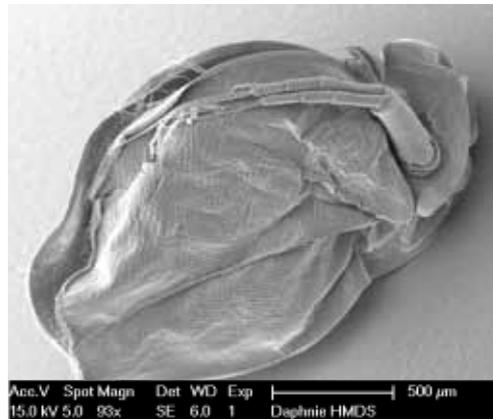
# Comparison of Drying Methods

Water flea (*Daphnia sp.*)

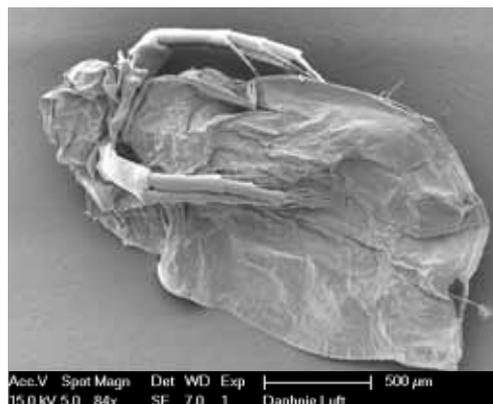
Drying method: **Critical Point Drying with Leica CPD300**



Drying method: **Chemical**



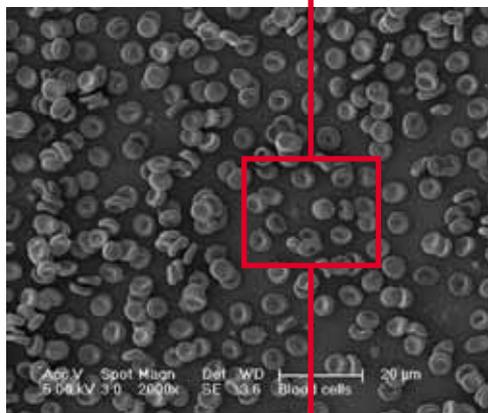
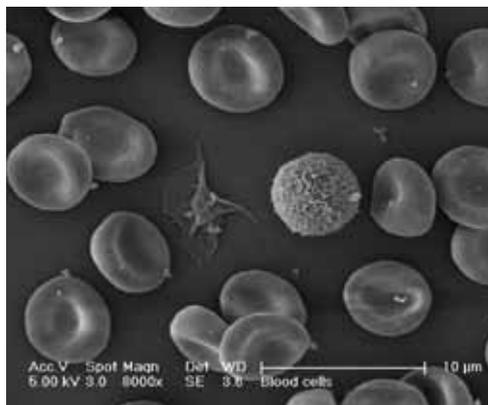
Drying method: **Air**



Courtesy of D. Gruber, University of Vienna,  
Austria

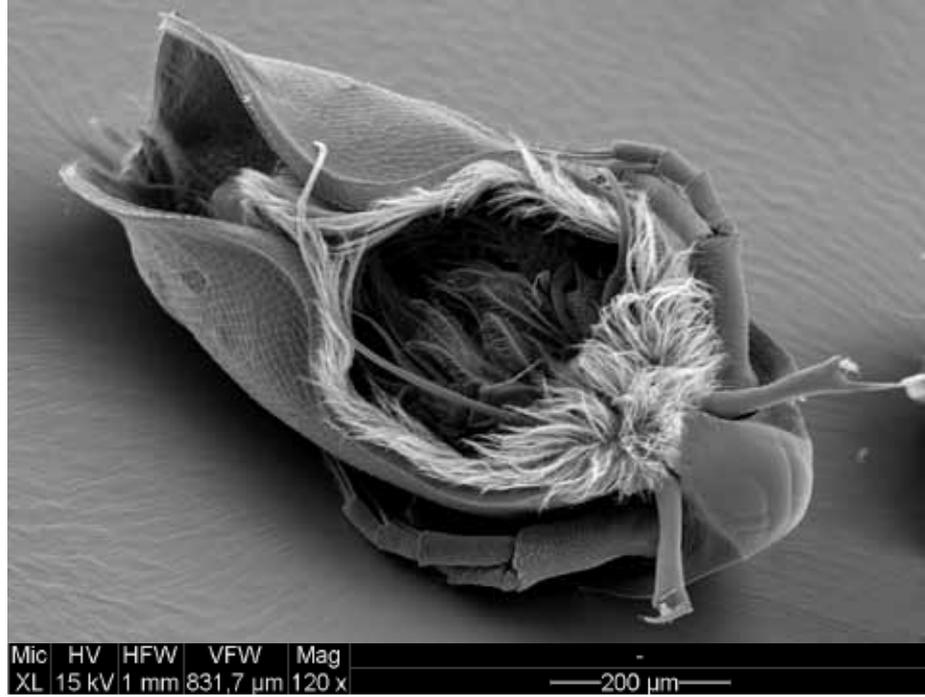
# Applications

## Blood Cells (Erythrocytes and Lymphocytes)

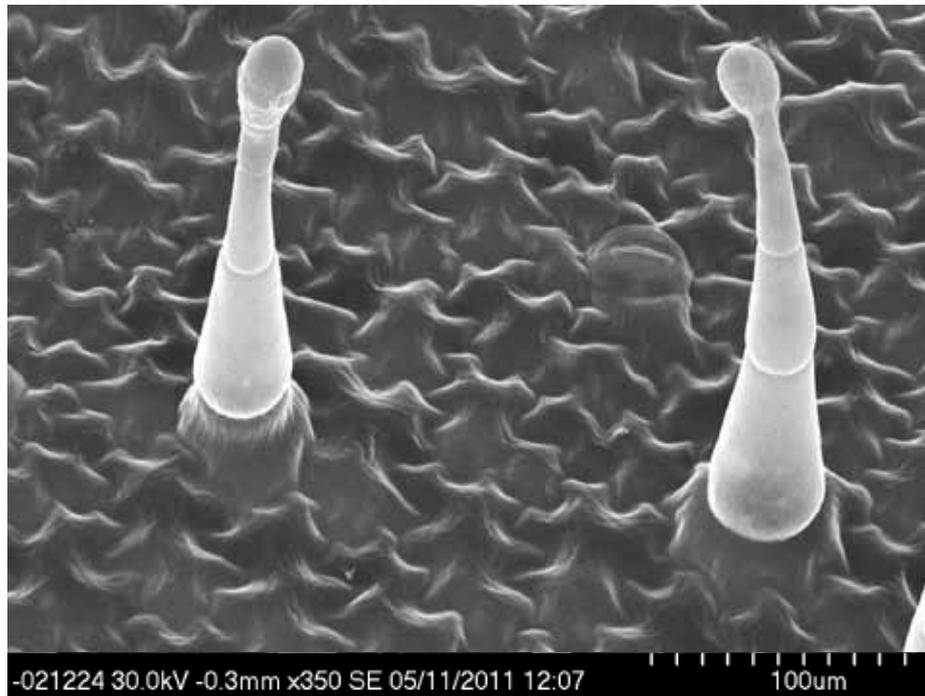


**Water flea (*Daphnia sp.*)**

(Courtesy of Mag. Daniela Gruber, University of Vienna, Austria)

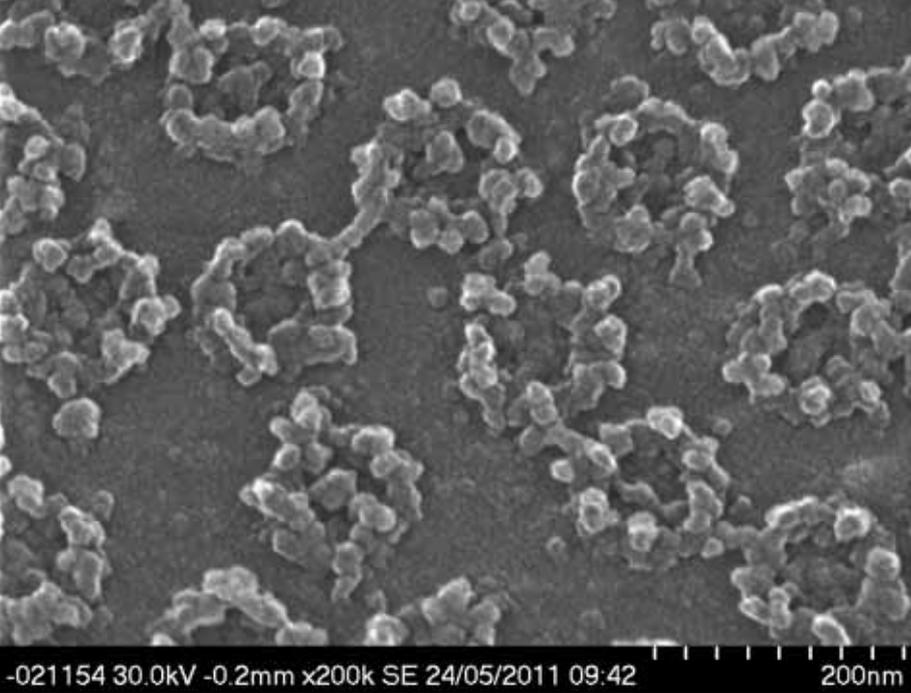


**Tobacco leaf (*Nicotiana tabacum*), trichomes and stomata** (Courtesy of Dr. Martin Goldberg and Christine Richardson, University of Durham, U.K.)

**Wall Cress (*Arabidopsis thaliana*), stigma**

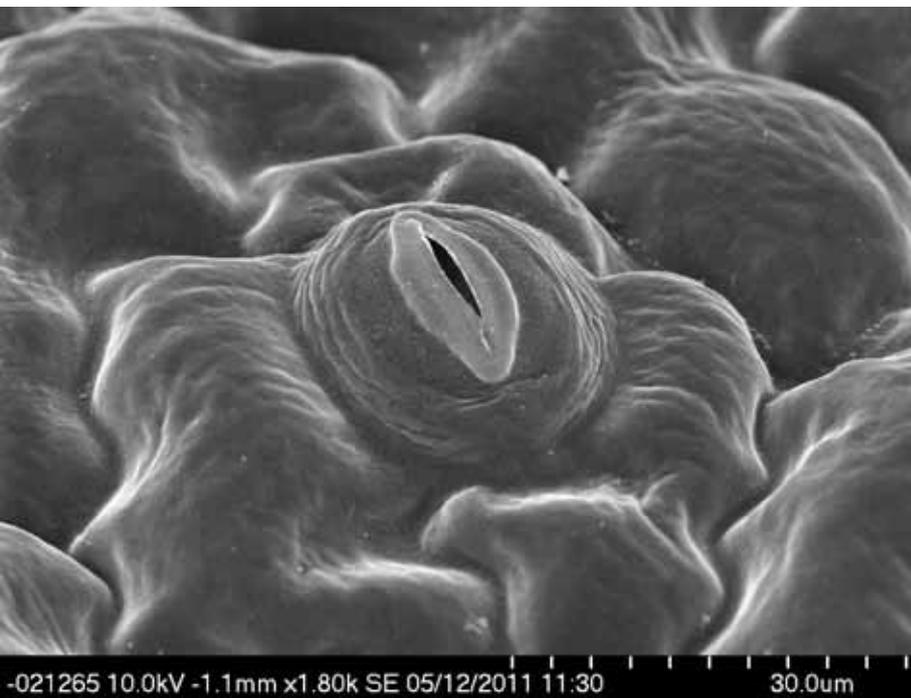
(Courtesy of Dr. Kim Rensing, Applications Specialist Leica Microsystems, University of British Columbia, Canada)





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Clawed frog (*Xenopus laevis*), nuclear pores  
(Courtesy of Dr. Martin Goldberg and Christine Richardson, University of Durham, U.K.)



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Tobacco leaf (*Nicotiana tabacum*), stoma  
(Courtesy of Dr. Martin Goldberg and Christine Richardson, University of Durham, U.K.)



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Black mold (*Aspergillus niger*), conidiospores  
(Courtesy of Dr. Wally Müller, University of Utrecht, The Netherlands)

**WITH THE USER, FOR THE USER**

Leica Microsystems operates globally in four divisions, where we rank with the market leaders:

**Life Science Division**

The Leica Microsystems Life Science Division supports the imaging needs of the scientific community with advanced innovation and technical expertise for the visualization, measurement, and analysis of microstructures. Our strong focus on understanding scientific applications puts Leica Microsystems' customers at the leading edge of science.

**Industry Division**

The Leica Microsystems Industry Division's focus is to support customers' pursuit of the highest quality end result. Leica Microsystems provide the best and most innovative imaging systems to see, measure, and analyze the microstructures in routine and research industrial applications, materials science, quality control, forensic science investigation, and educational applications.

**Biosystems Division**

The Leica Microsystems Biosystems Division brings histopathology labs and researchers the highest-quality, most comprehensive product range. From patient to pathologist, the range includes the ideal product for each histology step and high-productivity workflow solutions for the entire lab. With complete histology systems featuring innovative automation and Novocastra™ reagents, Leica Microsystems creates better patient care through rapid turnaround, diagnostic confidence, and close customer collaboration.

**Medical Division**

The Leica Microsystems Medical Division's focus is to partner with and support surgeons and their care of patients with the highest-quality, most innovative surgical microscope technology today and into the future.

The statement by Ernst Leitz in 1907, "with the user, for the user," describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: **Living up to Life.**

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**and representatives in more than 100 countries**