

# OPMI<sup>®</sup> Pentero<sup>™</sup> - The Surgical Microscope of the Future

Fig. 1:  
AutoBalance.

Fig. 2 (center):  
OPMI Pentero  
surgical microscope.

Fig. 3:  
Balanced at the push  
of a button (touchscreen).

Fig. 4:  
User-friendly solutions  
for OR personnel.

Surgeons around the world have been using surgical microscopes from Carl Zeiss for more than half a century. The demands placed on a surgical microscope by neurosurgeons have evolved over time – from a traditional magnification aid to an information and communication center. The new *OPMI Pentero* for neurosurgery and spine surgery uniquely combines solutions for basic requirements with a variety of additional benefits: intra-operative diagnostics, integration of an entire video chain, integration of the surgical microscope into the hospital's information and communication infrastructure and user-friendly solutions for OR staff. Users can best describe just how good this design really is.



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### The best of the basics

*Daniel L. Barrow M.D., Atlanta, Georgia, USA*

“The basic functions of any operating microscope include optics, magnification and illumination. The Pentero enhances and combines these basic functions into an innovative and creative design that is very user-friendly not only for the surgeon but for the entire operating room team.”

*Dr. Andreas Raabe, Frankfurt, Germany*

“The Pentero is another major step forward for the neurosurgeon. It is the unique combination of features which makes this microscope so valuable for any microsurgical operation. It is very compact, it has a great reach, and it has a great overhead clearance. I like the high-speed autofocus, the laser focusing aid for the manual focusing and robotic movements, which allows fine and precise adjustment during surgery without releasing the brakes.”

### Simply unique, uniquely simple

During a procedure, OPMI Pentero must meet various demands, i.e. quickly and precisely fulfill the task at hand.

*Prof. Dr. Volker Seifert, Frankfurt, Germany*

“Historically, balancing of the microscope has always been a little bit time-consuming. And now, the new auto balance system of the ZEISS microscope really speeds up the preparation time and it is a considerable help, especially for the assistant who usually has the task of balancing the microscope.”

*Robert F. Spetzler, M.D., Phoenix, Arizona, USA*

“When the scope is draped, instead of having a bulky drape that constantly gets in the way of the nurse and the surgeon, there is a vacuum system attached to the drape so that it snugly hugs the contour of the scope itself.”



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**Fig. 5:**  
Intraoperative diagnostics – first surgical microscope to offer completely integrated support for fluorescence-based angiography and tumor resection.

**Fig. 6:**  
Integration of the surgical microscope into the hospital's information and communication infrastructure.

**Figs 7 and 8:**  
A completely integrated digital video chain in a surgical microscope.

## Integrated digital visualization

The digital age has entered the operating room. Electronically archiving patient data and videos for presentations is becoming ever more important to surgeons.

*Robert F. Spetzler, M.D., Phoenix, Arizona, USA*

“As a surgeon that spends a lot of time talking to other surgeons, being able to record operations and techniques is a critical component. This new digital interface really allows this to be done at a new level. It can be integrated with the hospital system so that I can actually observe the digital images in my office. I have the ability to edit them online and therefore the recording and the distribution of this information is made very easy.”

## Hospital workflow integration

Integration of the OPMI Pentero into the hospital's information and communication infrastructure is becoming ever more important. This includes a request for pre-op findings, storing important data from the



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operation or exchanging information during the operation with colleagues at other locations. The communication interfaces on **OPMI Pentero** enable complete management of this data.

*Prof. Dr. Volker Seifert, Frankfurt, Germany*

“Neuronavigation has become an absolutely indispensable tool in neurosurgery. In this regard, the new ZEISS microscope has made a big step forward in allowing the integration of all sorts of neuro-navigational data in the colored fashion in both eyepieces of the neurosurgeon.”

### **Intraoperative diagnostic solutions**

**OPMI Pentero** offers the possibility of an innovative fluorescence procedure with which tumors and vessel diseases can be displayed and recorded during an operation.

*Prof. Dr. Volker Seifert, Frankfurt, Germany*

“Radicality of tumor resection, especially in patients with glioblastoma, clearly defines the outcome of this patient group. In this regard, the new integrated support of fluorescence-based tumor resection is a unique and very helpful tool of the neuro ZEISS microscope.”

*Robert F. Spetzler, M.D., Phoenix, Arizona, USA*

“The opportunity of easily performing an angiogram allows you to manipulate the vessels or the aneurysm while you are performing it, is something that is incredibly exciting to neurosurgeons.”

### **Conclusion**

*Daniel L. Barrow M.D., Atlanta, Georgia, USA*

“The Pentero is an operating microscope designed by surgeons for surgeons. It incorporates cutting edge technology in a compact, innovative and brilliant design. Carl Zeiss has combined efficiency, efficacy and ergonomics to create a microscope that brings neurosurgery and spinal surgery to an exciting new level.”



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