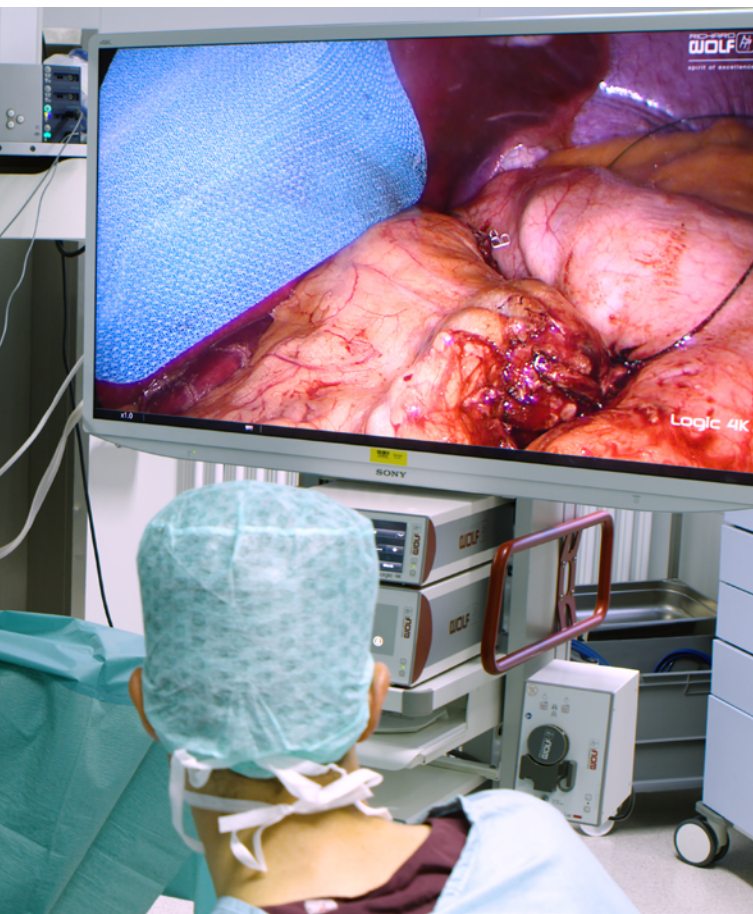




4K technology –
the new standard in endoscopy?

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Challenges in endoscopic imaging

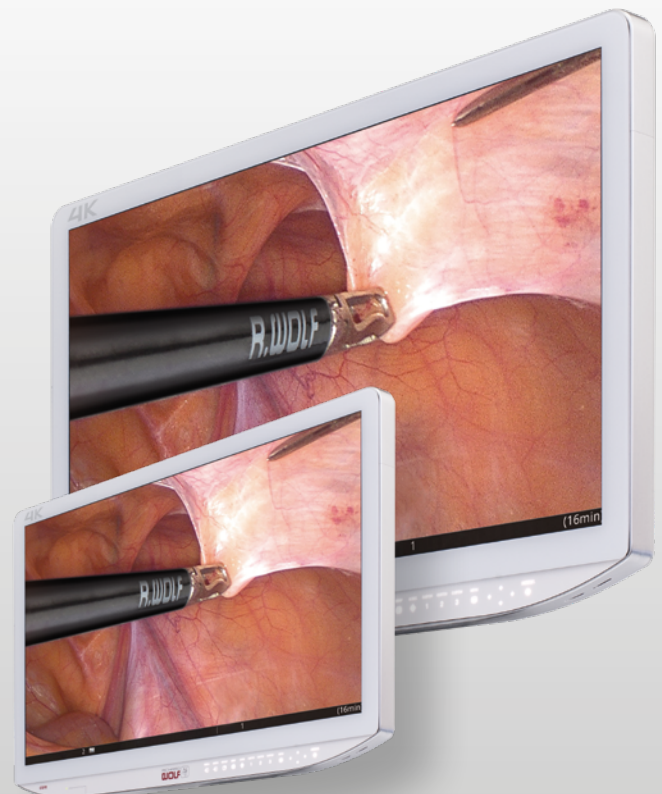
The intraoperative differentiation of tissue structures and the reliable identification of pathological changes are decisive for the success of endoscopic procedures. This implies big technical challenges for precise imaging.

Limited visibility, cramped spatial structures as well as the multi-dimensional, often complex layering and storage of tissue and organs make a clear orientation difficult. Clouding due to liquids or bleeding also make a safe assessment of the surgical site difficult.

A high image quality is therefore a prerequisite for the most realistic visualization possible in endoscopic operations. The key factors here are the illumination, contrast and accuracy of the color reproduction - but above all, an optimal image resolution with the aim of reproducing even the finest structures in a detailed and realistic way.

4K technology in endoscopy

Visualization in HD format with a resolution of 1920 x 1080 pixels was the benchmark for the highest image quality for a long time. With the advent of 4K technology in medical technology, a resolution of at least 3840 x 2160 pixels is four times higher than with standard HD. This results in almost pixel-free images with a high level of detail and image sharpness, even at magnifications, which also reveal very fine structures. The richness of detail leads to an almost three-dimensional visual impression with high depth perception. Bright-edged, homogeneously illuminated images with realistic coloration reveal all key anatomical and pathological structures and their boundaries in the entire field of vision.



4K systems - Status quo and outlook

Up to four times the data volume of the 4K UHD resolution provides detailed clinically-relevant information, for example to visually assess pathological tissue changes or to exactly localize the causes of bleeding. In this way, especially in the case of complex surgical interventions, it allows for more sophisticated diagnostic and therapeutic decision-making processes, which positively effects efficiency, the quality of the results and ultimately also patient care. The 4K technology sets new standards and has all the prerequisites for becoming a new benchmark in endoscopy.

The first clinical studies on 4K imaging techniques are available and show promising results.

The transition from HD to 4K technology can be gradual for coordinated and compatible systems. However, the entire imaging chain should be matched to 4K to ensure an optimal image. Correspondingly bright endoscopes designed for 4K compensate for the reduced depth of field and provide a

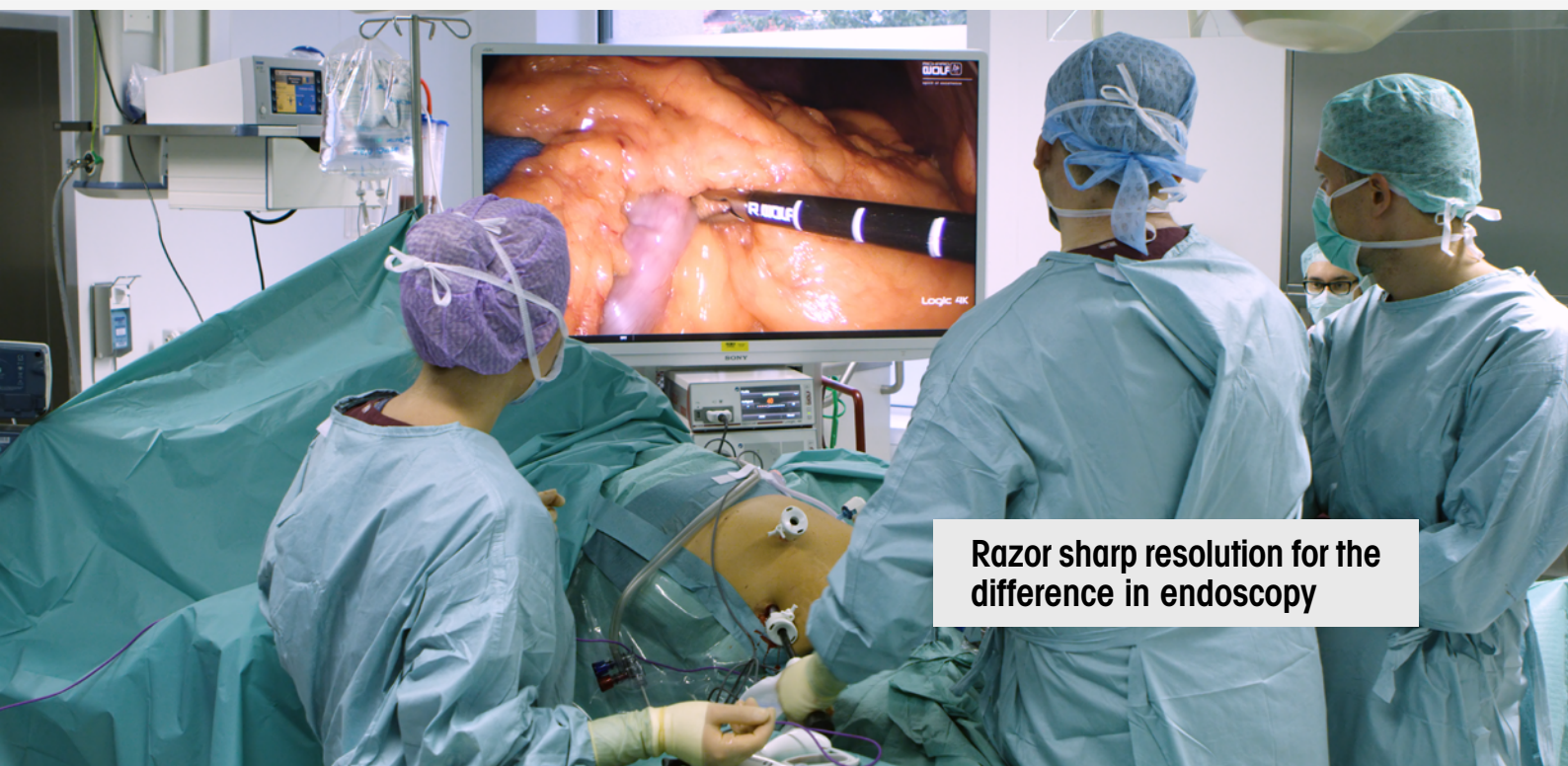
comfortable working area. For the user, the direct comparison of several systems is recommended in order to clarify the differences.

This high quality endoscopic visualization can potentially save clinics and organizations time and money. For example,

„High quality endoscopic visualization through 4K“

the higher image quality can increase the reliability of decision-making processes during surgery. The personnel involved

are therefore enabled to work more relaxed. In addition, associated quality assurance costs can be saved in terms of surgery times and patient residence time.



Razor sharp resolution for the difference in endoscopy

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spirit of excellence

Conclusion

Modern image technologies and optimized visualization systems are an important factor in the quality of results in clinical endoscopic procedures. 4K technology allows for extremely detailed and authentic images compared to previous HD systems. The high image quality of the 4K resolution supports physicians who use en-

doscopy and their teams and increases the efficiency of the interventions and the reliability of the diagnostic assessment. This will eventually lead to better clinical results after diagnostic and therapeutic minimally invasive procedures.



Richard Wolf GmbH - Pioneer in 4K endoscopy

Richard Wolf GmbH is a leader in terms of expertise and the transfer of medical-technological knowledge in exchange with medical experts and scientists. With more than 1,500 employees, fifteen subsidiaries worldwide and 130 foreign agencies, Richard Wolf operates internationally as a driver of innovation in the medical technology industry.

As a full-service provider in endoscopy, the main areas of development of the medical technology company are specific system solutions and a wide range of products for minimally invasive human medicine. Extracorporeal shockwave treatment and integrated surgical management systems complete the portfolio.

The latest product, ENDOCAM Logic 4K, takes image quality in endoscopy to a whole new level with its high 4K UHD resolution. The precisely coordinated system components deliver realistic image reproduction, while the system is energy-efficient, ergonomic and compact.

With this sophisticated 4K overall system, Richard Wolf once again proves to be a development pioneer with a high level of expertise and product quality.

You can find additional information about the ENDOCAM Logic 4K system [here](#).

