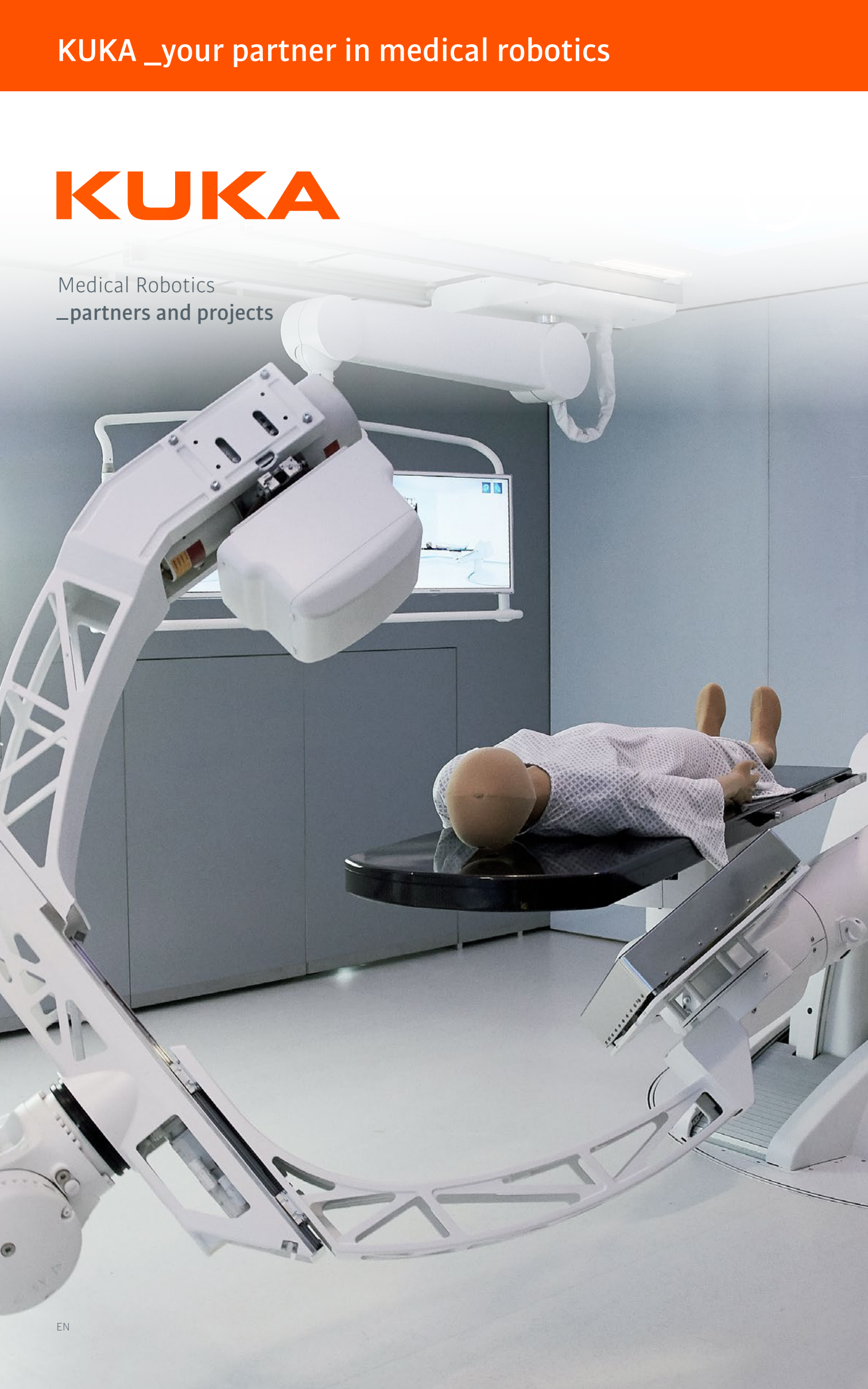
KUKA _your partner in medical robotics

KUKA

Medical Robotics
_partners and projects



EN

Partners and projects of KUKA Medical Robotics

ARTIS pheno

Siemens Healthcare: Medical robots for revolutionary X-ray imagery

ARTIS pheno is a new robot-supported angiography system which has enabled Siemens Healthcare to open up a new dimension in the fields of minimally-invasive surgery, interventional radiology and cardiology.

With the ARTIS pheno, X-ray examinations of blood vessels can be carried out far more quickly and accurately because a C-arm X-ray unit moves around the patient automatically and in an exceptionally flexible manner. As such, the region of the body on which the system is focusing can be imaged from virtually all directions without having to relocate the patient.

In the event of any interruptions, the memory function enables the system to resume the examination at a later time from the very same position it left off.

The outstanding imaging quality means results can be checked even during an ongoing intervention. The robotic heart of the X-ray system is a KUKA QUANTEC robot with its KR C4 technology. The KUKA medical robotics team has spent the last few years optimizing the robot and they are continually expanding the scope of its functionality. Therefore it is easier for our partners to use it for a wide range of clinical applications.

KUKA technology opens up a new dimension in X-ray imagery: the Siemens ARTIS pheno (© Siemens Healthcare GmbH)

exacure

BEC: Patient positioning using KUKA robots

Radiation therapy patients can be positioned accurately using robots and components made by KUKA. To this end, system partners develop customized applications in collaboration with KUKA. For example, Buck Engineering Consulting (BEC) has presented a patient positioning solution for the MedAustron Center for Ion Therapy and Research in Vienna, Austria. A KUKA robot is the cornerstone of this product. In this application, the high-energy beam remains stationary and the bed carrying the patient is moved, allowing the beam to be aimed with the utmost accuracy.

BEC uses KUKA robots for precise positioning of the patient during particle-based radiation therapy (© Thomas Kästenbauer)

CyberKnife

Accuray:
Robot-guided radiation therapy

Leading radiation therapy centers around the globe use the CyberKnife system from Accuray for high-precision tumor treatment.

Instead of a scalpel, the surgeon uses a bundled, high-energy X-ray beam. The CyberKnife hits tumors with pinpoint accuracy leaving the surrounding healthy tissue undamaged, irrespective of where in the body the tumor is located. As the patient lies on the operating table the CyberKnife is guided around him by a robot arm. This ensures that the dose is concentrated in the tumor. An imaging system stereotactically records the position of the tumor and simultaneously signals any movements the patient makes – such as motion due to breathing – to the robot. The robot then compensates for these motions immediately.

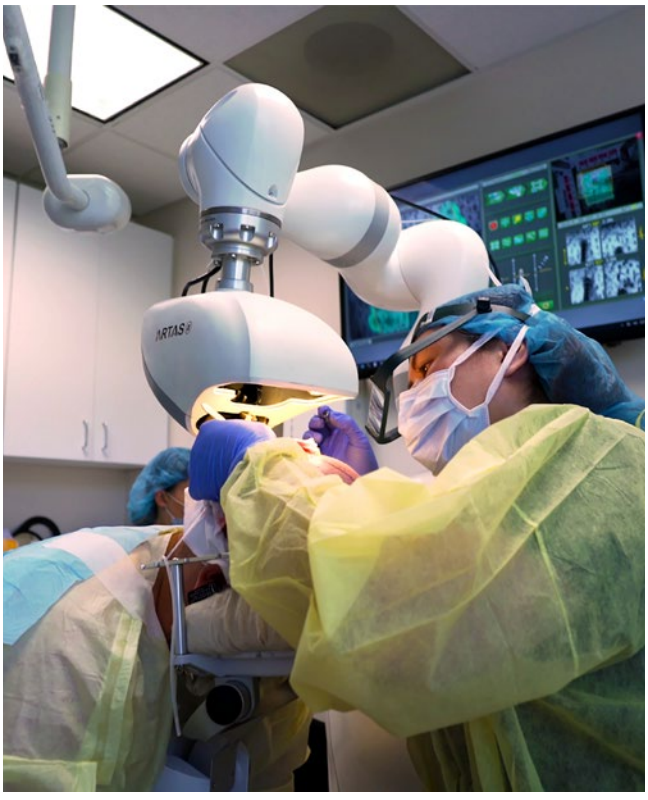
The treatment table that the patient lies on is also robotically controlled. This combination results in extremely high precision and quality of therapy and allows patients to undergo operations as out-patients.

Accuray has been working in partnership with KUKA since 2000. This pioneering work culminated in the first commercially available robot-guided radiosurgery system.

The patient lies freely positioned on the robotically controlled treatment table while the CyberKnife treats the tumor.

ARTAS iX

Intelligent hair restoration that delivers natural looking hair



Restoration Robotics' ARTAS iX™ is the world's first intelligent hair restoration solution. Utilizing an advanced vision system in conjunction with the collaborative KUKA robot for integration into medical products, LBR Med, and proprietary algorithms, the system delivers precise and consistent harvesting with simultaneous recipient site-making and implantation functionality in one compact platform.

The ARTAS iX™ intelligently harvests individual hair follicles from the back and sides of the head, careful not to overharvest areas or damage surrounding tissue during graft dissection. The system then uses artificial intelligence (AI) technology to strategically distribute and implant the follicles for an even density and natural appearance. The KUKA LBR Med supports the physician throughout the procedure, constantly carrying out repetitive tasks and helping provide consistent extractions and implantations from the first graft through to the two thousandth.

ARTAS iX™ makes hair restoration extremely precise and effective.

CARLO

The laser head – held by a KUKA LBR Med – enables bone surgery to be performed with unprecedented precision. (© AO Davos/AOT)

Cutting bones without any contact

Surgeons still regard the saw as the tool of choice when it comes to cutting bones. However, this method causes loose bone material to end up in the cut surfaces and often slows down the healing process. CARLO®, which is an acronym for Cold Ablation Robot-guided Laser Osteotomy, is a product run by the Swiss company AOT that provides assistance in this respect. Integrated into the medical product, the precise and safe KUKA robot LBR Med guides a laser head which uses cold laser technology and cuts bones without making any contact. In addition to straight cuts, crescent-shaped and even puzzle-shaped cuts are possible. By using this method the surface of the bone remains intact and the cut can be accurately reassembled. This significantly reduces the patient's healing time following the operation.

Sculptura

Sensus Healthcare's Groundbreaking, Directional Beam Image-Guided Radiotherapy Platform.

Sculptura™ is a mobile platform focusing on intraoperative radiation therapy. This treatment method is characterized by the application of therapeutic levels of radiation to the tumor bed while the area is exposed during surgery. The medical product utilizes state-of-the-art, patented technology with advanced features that set it apart from any other system in the oncology discipline. The Sculptura™ was designed with a strong focus on patient quality of life, while optimizing clinical innovation and efficacy.
With the integrated sensitive KUKA robot LBR Med, this mobile Directional Beam Image-Guided Radiotherapy platform

Sculptura™ is robotically-guided for optimal treatment delivery.
© Sensus Healthcare

is robotically-guided for optimal treatment delivery. It allows for precise, fast, and localized dose delivery to the target. Sculptura™'s industry-first 3D Beam Sculpting™ provides clinicians the ability to become the artist in creating a unique beam shape to precisely and safely treat their patients.

ROBERT® can improve the lives of millions of bedridden patients
© Life Science Robotics

ROBERT

Assisted Early Mobilization

ROBERT® is an innovative medical product by Life Science Robotics focusing on bringing mobilization of bedridden patients to a new level. With its integrated sensitive and 7-axis KUKA robot LBR Med, the user-friendly product helps bedridden patients with early and efficient mobilization and relieves the healthcare professionals for heavy lifting and inconvenient working postures. Within early mobilization, ROBERT® is ready to make a difference worldwide. Physicians and therapists are given more time to take care of the personal needs of the patients while the robot will do exercises on the patient.

www.contact.kuka-robotics.com

www.facebook.com/KUKAGlobal

www.youtube.com/kukarobotgroup

Twitter: @KUKAGlobal

www.kuka.com/healthcare

PB|Medical Partners|EN|02|1019