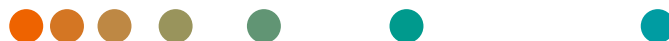


Success Story

Higher device availability for optimal patient care

TubeGuard safeguards the availability of diagnostic and therapeutic devices in one of Europe's most advanced cardiac catheterization labs

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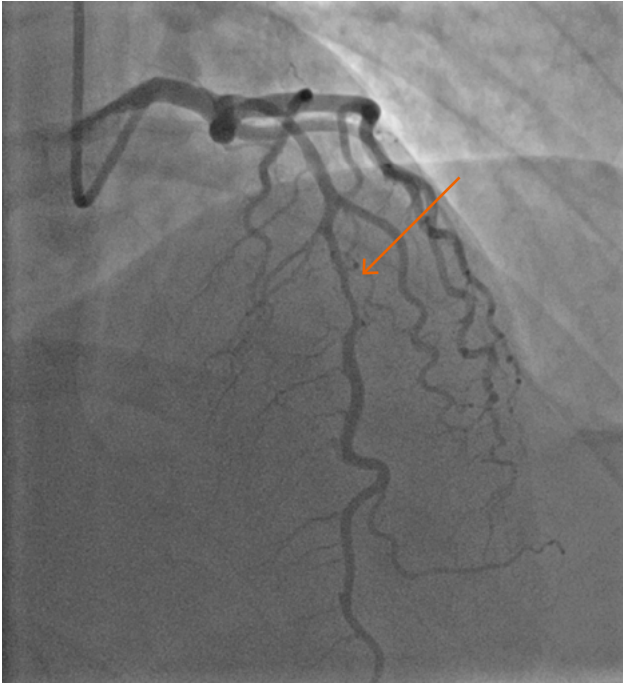




Higher device availability for optimal patient care

TubeGuard safeguards the availability of diagnostic and therapeutic devices in one of Europe's most advanced cardiac catheterization labs¹

Physicians and nurses at Universitätsklinikum Erlangen have their hands full. In their work, they rely on the up-to-date insights from medical research and on state-of-the-art devices for diagnostics and therapy. A case in point is the hospital's cardiac catheterization lab, which performs over 3,000 interventions each year. Around 600 of those concern acute myocardial infarction, a condition that requires immediate treatment. The technology needed for this must therefore be reliably available 24 hours a day, seven days a week. A special service from Siemens Healthineers helps to make this possible – it's called TubeGuard.



Left coronary artery with long stenosis (arrow) around the left anterior descending artery, which supplies the front wall of the heart
(Source: Universitätsklinikum Erlangen, Germany)

The work isn't going to run out any time soon: Coronary artery disease remains one of the most common cardiovascular diseases in western industrialized nations. The health consequences, such as acute myocardial infarction, are therefore among the leading causes of death in Germany.

Fast, safe patient care is of the utmost importance

Medical staff across all Erlangen hospital departments are committed to providing the best patient care possible, and they make no compromises when it comes to therapy and diagnostics. This is also true for the staff working in the Department of Medicine 2, which has embraced innovation in multiple ways. For instance, it has a variety of systems available

for interventional angiography that cover all clinical cardiology requirements. One such system is Artis Q.zen,² which provides enhanced visualization to see small devices for better performance and image quality. It offers high-contrast resolution even at steep angulations. And it enables sharp images of moving objects such as coronary arteries, while the optimized X-ray pulse helps to reduce radiation by up to 60%. In 2019, the cardiac catheterization lab also took delivery of an ARTIS icono floor³ angiography system from Siemens Healthineers.

Unavoidable, but predictable: System failures

In addition to these mainly technical benefits, one particular aspect is essential for day-to-day work: equipment reliability. Universitätsklinikum Erlangen and its patients are hugely reliant on system downtime (to address things like wear and tear or maintenance) being kept to a minimum; and if downtime is necessary, it should ideally be predictable and therefore plannable. This can be supported through a full-service contract⁴ with Siemens Healthineers and its exclusive TubeGuard service option.

"Our equipment has to consistently perform at a high level and operate reliably," says Luise Gaede, MD, head of the cardiac catheterization lab in the Department of Medicine 2 at Universitätsklinikum Erlangen. "We perform an average of eight to ten examinations per day on each angiography system. So during normal working hours, all cath lab rooms are in constant operation. If a system fails, we can't compensate for it just by moving the examinations into the other rooms."

To maintain patient wellbeing and avoid a backlog of examinations, the department therefore needs prompt and comprehensive solutions that will allow its staff to resume work as quickly

as possible in the event of a tube failure. As well as planned examinations during normal working hours, treating emergencies at any time of the day or night is an essential component of patient care in Erlangen. "There's no time to lose in these situations. The worst case would be a failure in the middle of an emergency exam, or if we had an emergency exam coming in and the system was down," says Gaede. "In an ideal world, the system would never fail. But since this can occasionally happen, we want a high level of certainty to protect us against the risks of a failure – both in terms of providing patient care and from a financial perspective."

Minimizing risks to both humans and the machines

The reason why Universitätsklinikum Erlangen decided to use TubeGuard is therefore obvious: The worst-case scenario – an unplanned total failure of the cardiac catheterization equipment – would have serious consequences.

It could result in an intervention being aborted at a critical moment, or in the system not being available for an emergency patient with myocardial infarction or cardiac arrest – even though it is crucial that these critically ill patients receive immediate medical treatment. Then there is the emotional burden experienced by patients whose examinations have to be canceled at short notice, the logistical effort involved in rescheduling the examinations, and of course the financial consequences. Even a partial failure can be problematic because it might mean that additional integrated diagnostics, such as intravascular imaging, isn't available. TubeGuard supports keeping failures to a minimum.

Safeguarding availability, performance, and productivity

With TubeGuard, potential disruptions can be identified early. In most cases it's also possible to predict an X-ray tube failure or upcoming repairs, and to quickly make an appointment to replace the tube. "TubeGuard uses Smart Remote Services (SRS)⁵ from Siemens Healthineers to remotely monitor and analyze various parameters related to the X-ray tube, such as aging of the emitter, the status of the cooling system, and the rotational speed of the anode. If anything deviates from the norm, we're notified roughly a week in advance," says Gaede, who has already received the proactive notifications. "It means we can schedule repairs with the service technicians from Siemens Healthineers in such a way that our patients and workflows are almost unaffected. We really can't put a price on that!"





What does TubeGuard do?

TubeGuard provides a combination of proactive tube monitoring, AI-based error prediction, and fast, proactive scheduling of service activities, such as tube repair or tube exchange, when malfunctions are detected.

How exactly does this benefit users?

TubeGuard helps to increase your equipment uptime by monitoring and addressing predictable and detectable X-ray tube failures for selected computed tomography, molecular imaging, and interventional radiography equipment.

Every engine needs maintenance

A heart beats three billion times over the course of a life, moving roughly 250 million liters of blood through the body in the process. It's essentially an engine with an almost inexhaustible capacity for running at high power. Many people take this ability for granted – yet a bit of care and maintenance never hurts. “And exactly the same thing applies to our medical equipment,” says Gaede. “With our state-of-the-art technology and smart additional services like TubeGuard, we’re in excellent position to perform even complex cardiac interventions at any time – in the knowledge that our skills and the technology are working together like clockwork.”

¹ <https://www.med.fau.de/2019/05/10/uk-erlangen-eroeffnet-modernstes-herzkatheterlabor-europas>; last accessed on June 01, 2021.

² https://www.siemens-healthineers.com/angio/artis-interventional-angiography-systems/artis-q-zen#FEATURES_BENEFITS; last accessed on June 01, 2021.

³ <https://www.siemens-healthineers.com/angio/artis-interventional-angiography-systems/artis-iconto>; last accessed on June 01, 2021.

⁴ <https://www.siemens-healthineers.com/services/customer-services/service-plans/performance-plans>; last accessed on June 01, 2021.

⁵ <https://www.siemens-healthineers.com/services/customer-services/connect-platforms-and-smart-enablers/smart-remote-services>; last accessed on June 01, 2021.



“A new and really helpful feature is the early, proactive alerts if anything in the measured data is unusual. The information allows us to work with the technicians from Siemens Healthineers to plan the tube repairs or replacement in good time. This means we can calculate downtime and keep it to a minimum. We know that our planned examinations will run smoothly and we’ve got the confidence we need for emergency procedures.”


Luise Gaede, MD



The cardiac catheterization laboratory at Universitätsklinikum Erlangen

Every year, the cardiac catheterization lab at Universitätsklinikum Erlangen performs around 2,400 coronary angiographies and over 350 minimally invasive heart valve procedures. These include transcatheter aortic valve implantation (TAVI), as well as interventional therapy for the mitral and tricuspid valves. The lab also performs electrophysiological examinations and implants pacemakers and

defibrillators. By working closely with the departments of cardiac surgery, pediatric cardiac surgery, and pediatric cardiology, the lab can provide patients of any age with optimal care for even the most complex cardiac defects and diseases.

 <https://www.medizin2.uk-erlangen.de/>

Siemens Healthineers

At Siemens Healthineers, our mission is to enable healthcare providers to increase value by empowering them on their journey toward expanding precision medicine, transforming care delivery, and improving the patient experience, all enabled by digitalizing healthcare.

An estimated five million patients worldwide everyday benefit from our innovative technologies and services in the areas of diagnostic

and therapeutic imaging, laboratory diagnostics and molecular medicine as well as digital health and enterprise services.

We're a leading medical technology company with over 120 years of experience and 18,500 patents globally. With over 50,000 employees in more than 70 countries, we'll continue to innovate and shape the future of healthcare.

The products/features and/or service offerings (here mentioned) are not commercially available in all countries and/or for all modalities. If the services are not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

The statements by Siemens Healthineers' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

TubeGuard is available for select CT, MI PET/CT, and interventional imaging equipment.

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