BUILD A BETTER PATIENT EXPERIENCE INTO YOUR IMAGING DEVICE

KOLLMORGEN

Every radiology department wants to deliver the highest-quality diagnoses to support the highest-quality patient care.

Treatment outcomes are obviously the most important consideration, but the patient experience encompasses far more than that. Patients are people first—and keeping them as comfortable and safe as possible should be a goal second only to diagnosing and treating their disease. It's all part of total patient wellness.

Hospitals and imaging centers have an ethical duty to protect their patients against excessive radiation exposure. They can further improve the experience and satisfaction of their patients by taking measures to reduce the audible noise of CT scanning equipment, and to minimize the amount of time patients must spend motionless in the machine. And with today's rapidly growing scan volumes and complex workflows, quieter, more efficient scanning can also reduce the burden on radiology staff—further improving the experience for caregivers and patients alike.

The key to improving the patient experience is precise motion under perfect control. That's Kollmorgen's specialty.

Less Radiation Exposure

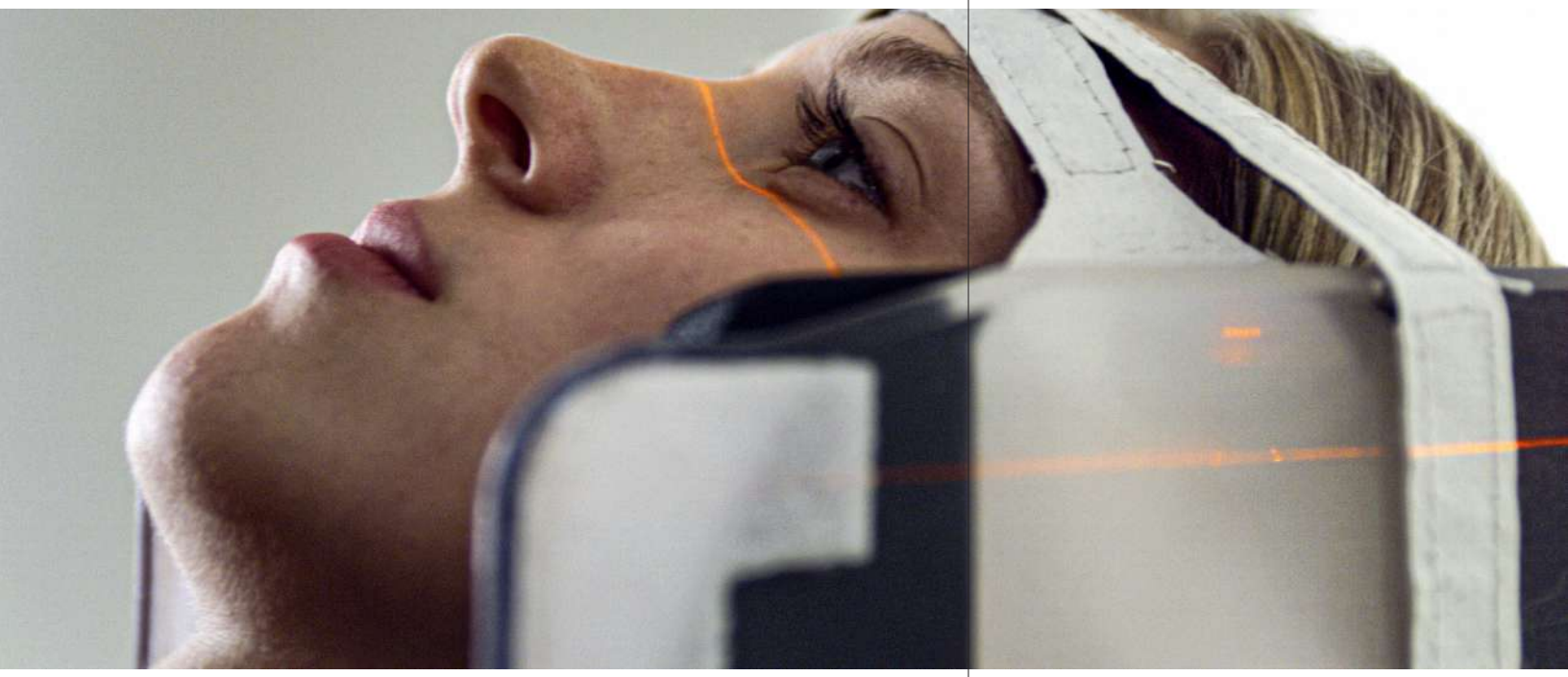
The fewer times an X-ray tube and receiver must transit the patient's body to capture the full region of interest, the less radiation exposure. As modern CT machines have increased the number of slices that can be captured per rotation, radiation doses have dropped dramatically. By one estimate, moving from a 64- to a 256-slice machine reduces the dose by 80%.* Today's most advanced machines are capable of 640 slices.

However, increasing the slice count requires increasing control over velocity and position in order to avoid image blurring and the potential need for a retake—not a good outcome for radiation exposure or patient comfort. Precisely controlling the imaging gantry is a unique challenge in motion engineering—a challenge that Kollmorgen is uniquely qualified to solve.

Our motor and drive systems give machine designers the ability to finely tune motion control to deliver higher quality imaging in smaller slices and fewer scan rotations. **Our direct drive technology eliminates motion system backlash and compliance, ensuring that the X-ray tube and patient table are perfectly positioned and coordinated throughout the procedure.**

And as machines are designed for higher performance—with growing trends toward hybrid modalities—Kollmorgen can provide extensive mechanical, electrical, magnetic and software customizations to tailor motion to meet specific diagnostic requirements while minimizing radiation exposure.

* Source: Imaging Technology News, www.itnonline.com/article/new-ct technology-lowers-dose



Less Time in the Scanner Bore

Anxiety is a normal reaction for patients subjected to the claustrophobic environment of a CT scanner and asked to hold perfectly still. Knowing that they'll spend less time in the bore of the scanner can relieve their anxiety. And the less time spent there reduces the risk of patient motion that could require a repeat of the procedure.

Precise control over the constantly changing relationship between the imager, receiver and patient table is critical to the speed of the procedure and accuracy of images. An imaging gantry is a massive structure. Conventional wisdom holds that difficulties controlling the load can occur with inertia ratios greater than 5:1, yet a CT scanner gantry may present a ratio up to 100 times that figure.

It's common for the gantry to overshoot or resonate out of its position and velocity control limits. It can take five time constants for the system to settle to the correct position/velocity. For such a massive system, that can mean several seconds. And because the motion of overshoot and correction is not smooth, jerk forces can threaten to damage the image tube, sensors or other sensitive equipment.

The motion of the gantry must also be coordinated with that of the patient table. Once the imager makes a full rotation, the patient must be moved into position for the next set of slices. This movement needs to be fast and accurate—yet at a smooth rate calculated to prevent unwanted patient movement or motion sickness.

Kollmorgen systems provide industry-leading motion control and coordination to solve these challenges. **The AKD family of drives close the position loop in as little as 62 microseconds. Closing this loop around the velocity loop—integrated within the same drive—virtually eliminates overshoot or undershoot due to system tolerance or compliance issues.** Additionally, our most advanced drive, the AKD2G, provides unique digital filters that can be precisely tuned to minimize settling time even at an extreme inertia ratio mismatch.

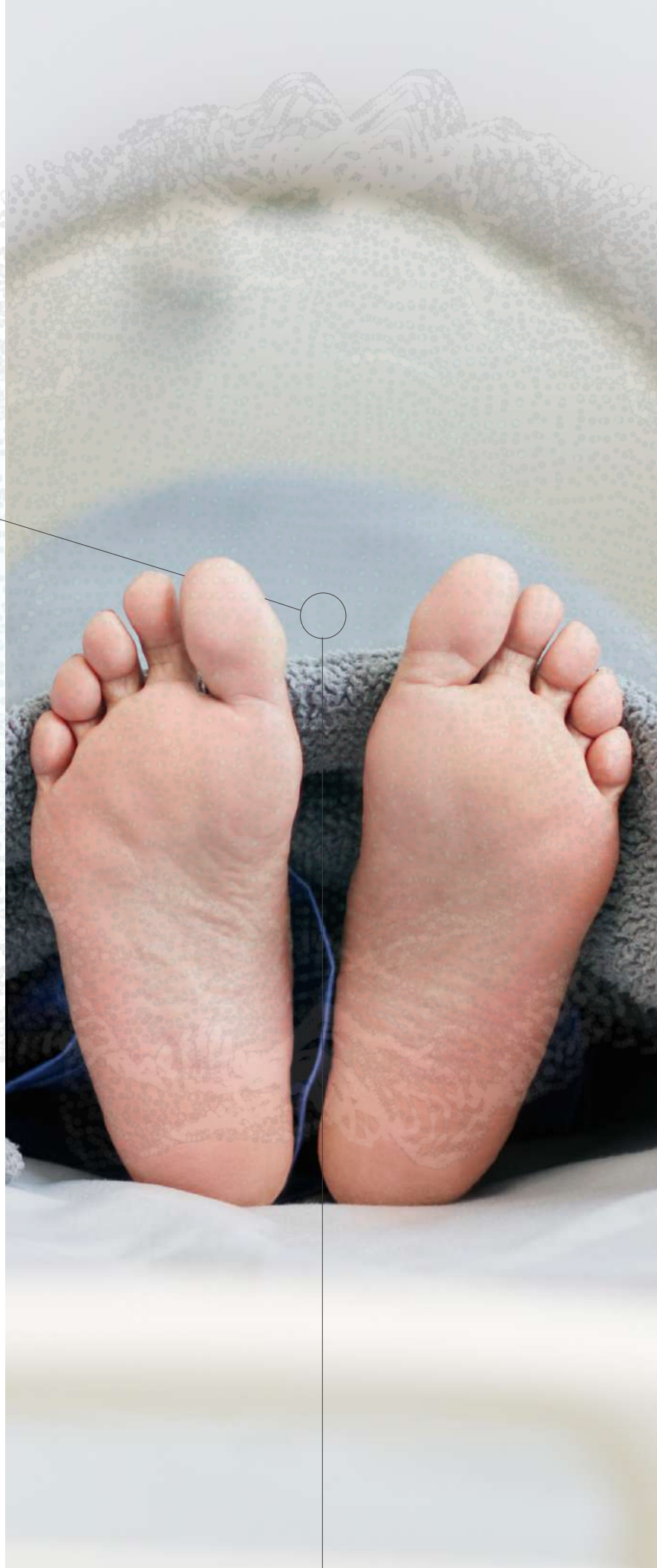
With Kollmorgen motion, CT machines can achieve the clearest high-resolution images in a faster procedure, with less risk that a retake will be needed due to unwanted machine or patient movement.

Lower Audible Noise

Many patients find the noise they experience during a CT scan to be stressful. Historically, transmission components such as belts, pulleys and gears may have introduced unwanted compliance to the system, and could also add unnecessary noise that increased with the velocity of moving components such as the gantry. Machine designers often incorporated noise-abatement measures, but these added to system size and complexity.

Kollmorgen's direct drive technology eliminates the need for transmission components to enable a machine that's more precise, reliable and compact—while minimizing noise to help keep patients more comfortable during their procedure.

And Kollmorgen engineers can help the CT design team tune the motion system to optimize operating frequencies while minimizing noise—and can also assist with machine-specific noise abatement measures as needed.



READY TO DISCOVER ALL YOUR IMAGING MACHINE IS CAPABLE OF?

The patient experience you deliver is integral to the quality of care. And it helps define the quality of your brand as an imaging system OEM.

With Kollmorgen, you have a motion partner who can help you improve imaging resolution and speed while providing the best possible patient experience. A partner that can help you achieve a perfect fit with standard, modified and customized products for any application requirement. And a partner you can count on for local co-engineering assistance and reliable supply—no matter where in the world you operate.

Our experts have decades of experience in optimizing motion for medical imaging. We're ready to help you take your designs into a future of greater diagnostic precision and patient comfort.

So let's get started. Engineer the exceptional with Kollmorgen. Visit Kollmorgen.com/imaging to learn more.

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