### **PHILIPS**

Ingenia Ambition S

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MR Systems

# Excel in your daily MR services helium-free

## Excel in your daily MR services, **helium-free**

Every day, healthcare moves forward with new clinical pathways, innovations and supporting technologies. In radiology, meeting the need for high productivity, an improved patient experience while ensuring excellence in imaging can be daunting. The perception is often that MR represents a trade-off between productivity and image quality. The new Philips Ingenia Ambition offers cutting-edge MR imaging techniques to help you excel clinically every day. Based on its new, revolutionary fully sealed BlueSeal magnet, the solution lets you experience more productive<sup>1</sup> helium-free MR operations.

The Ingenia Ambition delivers superb image quality even for challenging patients, and performs MRI exams up to 50% faster with Compressed SENSE acceleration for all anatomies in both 2D- and 3D scanning<sup>2</sup>. Fast overall exam-time is achieved by simplifying patient handling at the bore with guided patient setup. Furthermore, the Ingenia Ambition offers an immersive audio-visual experience to calm patients and guide them through MR exams. In a study conducted using our in-bore solution, Herlev Gentofte University Hospital in Denmark managed to reduce the number of rescans by up to 70%<sup>3</sup>, allowing radiologists to review more patients per day.

1 Compared to the Ingenia 1.5T ZBO magnet. 2 Compared to Philips scans without Compressed SENSE. 3 Compared to the average of the other 5 Philips Ingenia MR scanners without Ambient Experience and In-Bore Connect. Results from case studies are not predictive of results in other cases. Results in other cases may vary.

### **BlueSeal magnet**

Towards more

### Ingenia Ambition S

Delivers speed

A confident dia

Dramatically in

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## Transition your department **towards more productive** helium-free MR operations<sup>1</sup>

Built around the unique, fully sealed BlueSeal magnet, the Ingenia Ambition is designed to simplify your MR installation, reduce lengthy and costly disruptions in your MR services, and help your department transition to productive helium-free operations. Based on a decade of innovation, this revolutionary magnet operates with only seven liters of liquid helium and is fully sealed – freeing up your mind and operations from potential helium complications.

With BlueSeal magnet, Philips aims to help MR facilities overcome potential helium-related issues of classic magnet design and eliminate radiology department's dependency on scarce helium supply. What's more, the system can achieve hours of continuous high-performance scanning and offers a leading field-of-view of 55cm for a wide bore 1.5T system.



Forget about helium Micro-cooling technology. Fully sealed.



Designed to facilitate low siting and other construction costs No vent-pipe. 900 kg lighter<sup>1</sup>.



Toward uninterrupted MR operations

Adaptive intelligence. EasySwitch solutions.



High-performance by design 55cm FOV. Hours of continuous scanning.

### Forget about helium

In contrast to classic magnet technology, which requires around 1500 liters of liquid helium for cooling during operation, Philips BlueSeal uses an highly efficient, new micro-cooling technology which requires only a negligible amount (<0.5% of today's volume<sup>1</sup>) of liquid helium for cooling. This fraction of the usual amount of liquid helium is placed in the magnet during manufacturing and then fully sealed, enclosing the precious gas for the rest of its life. Due to the magnet being sealed, no helium can escape<sup>2</sup>, either suddenly during a loss of helium or gradually. This reduces long interruptions to MR services that can result from helium issues. Moreover, it means that the magnet does not have to be refilled with liquid helium during its lifetime.

### Designed to **facilitate** low siting and other construction costs

BlueSeal magnet is designed as a solution, which could dramatically reduce installation costs. On a classic magnet, long vent pipes must be installed to meet safety requirements and direct helium to an outside vent in case of a magnet quench. Because no helium can escape<sup>1</sup> due to the magnet being sealed, BlueSeal does not need a vent pipe, significantly reducing construction costs. Philips BlueSeal is also lightweight with a minimum siting limitation of 3,700 kg. This is around 900 kg lighter than its predecessor<sup>2</sup>, a decrease in weight that can potentially facilitate easier siting, reduce floor adaptations and further lower construction costs.

### **Classic magnet**

With a classic magnet, vent pipes and additional safety requirement are needed to direct helium to an outside vent in case of a magnet guench.



### **BlueSeal magnet**

With the BlueSeal magnet, no vent pipe is needed and due to it being around 900kg lighter<sup>2</sup>, siting can potentially be easier.



1 Even in the rare case of the magnet becoming unsealed, the negligible amount of helium escaping would not materially affect the oxygen level within the room. 2 Compared to the Ingenia 1.5T ZBO magnet.



### Toward uninterrupted MR operations

With classic MR systems, irrespective of the extreme caution exercised by all MR users, if a metallic item becomes stuck in the magnet<sup>1</sup> requiring a voluntary quench or if the magnet undergoes a sudden involuntary loss of field, this can disrupt a facility's MR services for weeks causing massive revenue loss.

The BlueSeal magnet takes the next step toward uninterrupted, more productive<sup>2</sup> daily MR operations. Relying on unique digital controllers and 24/7 e-Alerts connectivity<sup>3</sup>, Philips BlueSeal qualifies as the first magnet driven by adaptive intelligence to support a set of unique service functionalities called EasySwitch.

The EasySwitch solutions aim to minimize unexpected downtime in case of MR operational issue. The BlueSeal's magnetic field can for instance be easily turned off if an item becomes stuck in the bore. Once the problem is resolved, a hospital or Philips personal<sup>4</sup> can initiate an automated ramp-up and bring the magnet back to field, minimizing operational downtime.

1 Marketech June 2017 study (across vendors) showed that 69% of U.S respondents and 93% of German respondents experienced at least

one event where an item became stuck in the magnet within the last 3 years.

2 Compared to the Ingenia 1.5T ZBO magnet.

3 Requires remote connectivity.

4 Requires appropriate service contract.

### Achieve hours of continuous high-performance scanning

BlueSeal magnet would not be such a game-changer if it only revolutionized MR operations. In parallel, Philips placed a great deal of emphasis on creating a magnet design that delivers exceptional clinical performance. Thanks to highly efficient cooling properties from its micro-cooling system, Ingenia Ambition can achieve hours of highperformance scanning with zero homogeneity change.

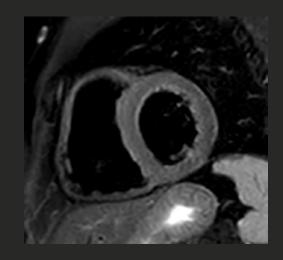
Furthermore, the magnet offers a leading homogeneous field-of-view of 55cm and highly linear gradients. The results? A wealth of new clinical capabilities that help you answer the most challenging demands and become the preferred partner within your referral network.

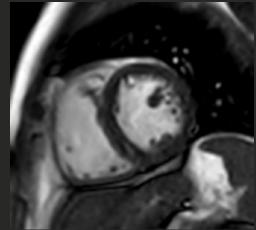


Homogeneous field-of-view of 55cm Tiw FFE mDIXON XD (Water only) 12 x 1.8 x 2.5 mm, **11.7 sec** 



Highly linear gradients





Answer challenging demands Black Blood T2w SPIR (top) 1.8 x 2.1 x 8.0 mm, **30 sec** 

## Delivers speed without sacrifice - **every time**

- ► Accelerate exams by **up to 50%**
- Guidance at your fingertips
- Designed for single-operator workflow, with a smart touch
- ► Standardization and efficiency across your MR fleet

#### Based on in-house testing.

2 Compared to Philips scans without Compressed SENSE.

3 Compared to the average of the other 5 Philips MR scanners without Ambient and In-bore Experience used at Herlev hospital in Denmark. Results from case studies are not predictive of results in other cases. Results in other cases may vary.

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PHILIPS

## A **confident** diagnosis boosted by new clinical capabilities

- ► Achieve efficiency with consistent quality
- Shorten breath holds by up to 40% and increase patient compliance<sup>2</sup>
- ► Fast, simple and non-invasive methods for fat liver quantification
- Expand your imaging capabilities in oncology

## Dramatically improves **patient experience**

- ▶ Reduce acoustic noise for your patient
- Guide your patients through the examination
- ▶ Reduce the number of rescans by **Up to 70%**<sup>3</sup>
- ► Increase patient comfort



# Delivers speed without sacrifice - **every time**

- The Philips Compressed SENSE unique acceleration technique allows you to speed up the entire MRI examination without compromise, every time.
- Thanks to innovative in-room guidance, Ingenia Ambition delivers new workflow capabilities to minimize interactions with the system, freeing you up to care for your patient and drives fast exams.
- The system is designed to be less dependent on user expertise and can be handled by a single operator more efficiently<sup>1</sup>, helping you address your staffing challenges. With Ingenia Ambition, we aim to help you scan more patients per hour

### Accelerate exams by **up to 50%**

Leveraging our long-standing leadership in scanning speed (i.e. SENSE), Philips now presents a breakthrough in productivity: Compressed SENSE accelerates 2D- and 3D scans by up to 50% with virtually equivalent image quality<sup>1</sup>. As a result, Ingenia Ambition does not only accelerates sequences, but the entire patient exam. You can now consider adding patient slots to your daily schedule, and your staff has more time to focus on what matters most: enhancing patient care. This new paradigm in productivity applies to all anatomies and anatomical contrasts in both 3D and 2D scans. It's speed done right, every time.

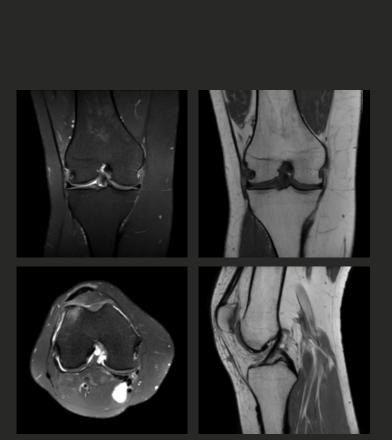
## <sup>66</sup>Our goal is to reduce scan time, but we want the same image quality as before,,

Sabine Sartoretti, MD, Head of Neuroradiology, Institute of Radiology and Nuclear Medicine, Kantonsspital Winterthur, Switzerland

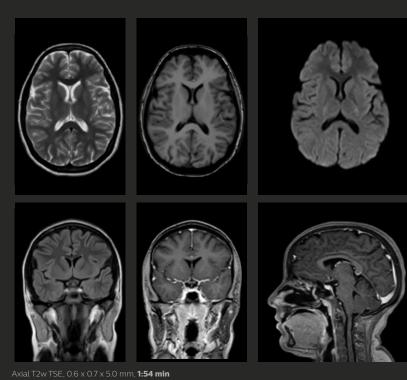
<sup>66</sup> Compressed SENSE increases the examination efficiency thanks to a shorter scan time with no change in image quality,,

Sachi Fukushima, RT, Kurashiki Central Hospital, Japan





Coronal PDw SPAIR, 0.4 x 0.7 x 3.0 mm, **2:26 min** Coronal T1w TSE, 0.4 x 0.5 x 3.0 mm, **1:16 min** Axial PDw SPAIR, 0.5 x 0.6 x 3.0 mm, **2:36 min** Sagittal PDw TSE, 0.4 x 0.6 x 2.0 mm, **3:16 min** 



Axial T1w TSE, 0.6 x 0.7 x 5.0 mm, **1:27 min** Axial DWI (b1000), 1.6 x 2.0 x 5.0 mm, **0:40 min** Coronal T2w FLAIR, 0.9 x 0.9 x 4.0 mm, **2:34 min** Coronal T1w FFE, 0.9 x 0.9 x 5.0 mm, **0:41 min** Sagittal 3D T1w FFE, 1.0 x 1.0 x 1.0 mm, **2:53 min** 

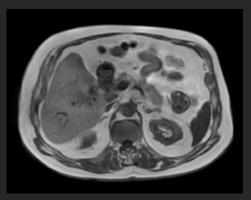




1 Compared to examinations without Compressed SENSE. Results from case studies are not predictive of results in other cases. Results in other cases may vary.



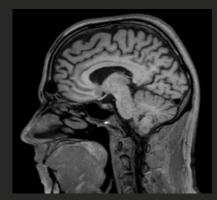
Sagittal T2w TSE 0.7 x 0.9 x 3.0 mm, **2:38 min** 



1.2 x 1.6 x 6.0 mm, **16.5 sec** 

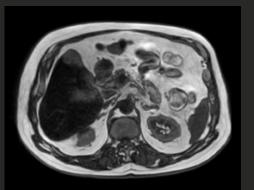


0.3 x 0.5 x 2.0 mm, **1:30 min** 

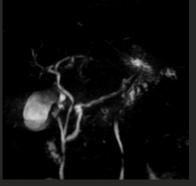


1.0 x 1.0 x 1.0 mm, **3:25 min** 

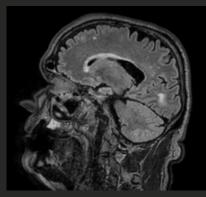
0.7 x 0.9 x 3.0 mm, 2:02 min



1.2 x 1.6 x 6.0 mm, **16.5 sec** 



1.2 x 1.7 x 1.3 mm, **14 sec** 



1.2 x 1.2 x 1.2 mm**, 3:07 min** 

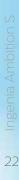


### Guidance at your fingertips

VitalScreen offers guidance and insights on the details of the current patient study. These two 12-inch interactive touchscreens provide information on exam duration, which coil to use, patient positioning, physiology signal captors (VCG & respiratory) and – if applicable – contrast usage and breath-hold guidance.

Because every patient is different, an exam strategy sometimes needs to be changed on the spot. With only one click, the position of the patient can be switched from head-first to feet-first or vice versa. In case of upper extremity studies the hand and arm positions can be adjusted just as easily.







### **Designed** for single-operator workflow, with a smart touch

Running an efficient MR department means constant multi-tasking by the technologists. To organize the schedule and provide excellent patient care, technologists must do a whole lot more than 'just' scanning. For instance, they have to juggle positioning the current patient, debriefing the previous patient and instructing the next patient. And they need to prepare contrast, refill supplies, perform administrative tasks, consult with the radiologist, and much more besides.

The Ingenia Ambition is designed to make system operation by a single person more time efficient<sup>1</sup>, reducing superfluous activities and allowing the operator to focus where it matters. From the moment your patient is set up through to the time the images are ready for reading, the Ingenia Ambition offers the opportunity to run your examinations in one smart touch. With the new VitalScreen, you can easily adjust your imaging strategies and start your exam from the patient side with a single touch. When you close the door of the exam room, Ingenia Ambition starts to scan instantaneously using SmartStart. From there, SmartExam<sup>2</sup> adaptive intelligence is planning and running the ExamCard protocol in the background. Finally, SmartLine automatically post-processes your images and can transfer them to the PACS, ready-for-reading. This is how simple an exam can be on Ingenia Ambition.

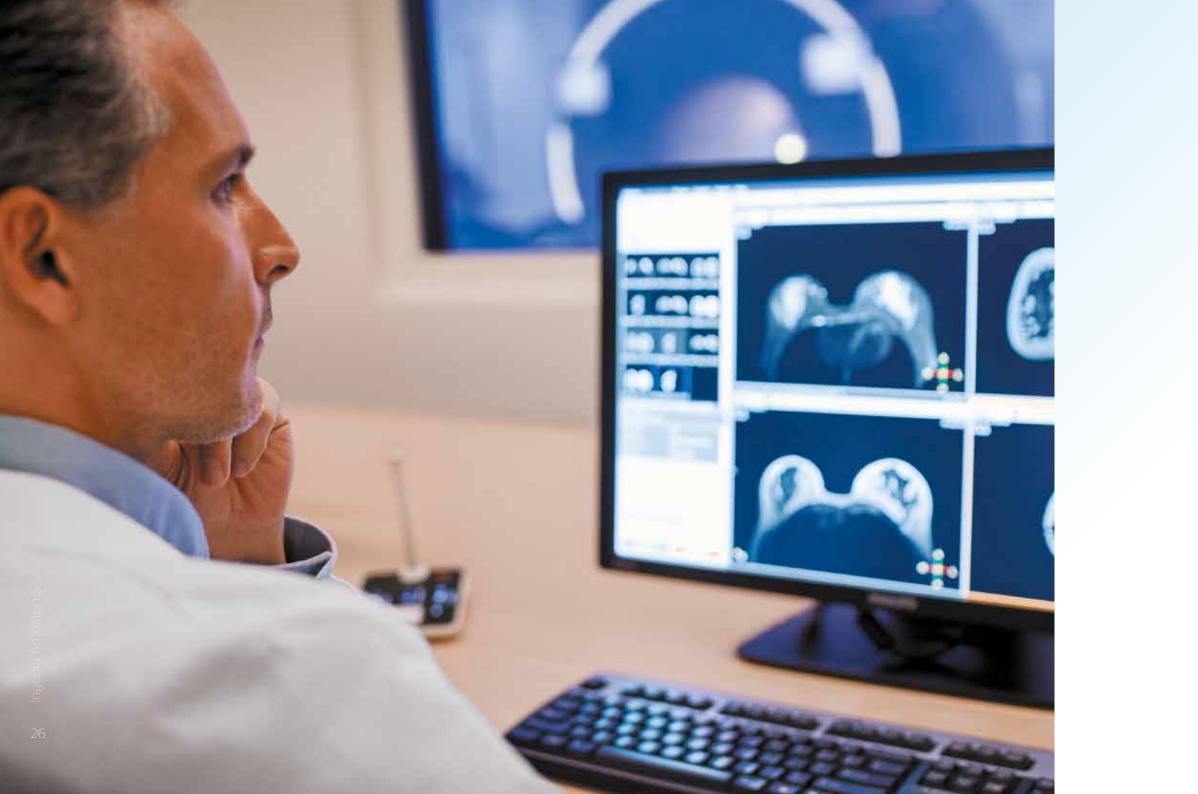


### Standardization and efficiency across your MR fleet

As the number of MRI systems in radiology departments is increasing, you need a range of different tools to reduce waste, enhance efficiency and experience the economies of scale you expect. The PerformanceBridge Discovery Applications<sup>1</sup> rapidly provides visibility to departmental metrics, individual scanner utilization and historical reports, allowing imaging leaders to make real-time and longer-term strategic planning decisions that can drive efficiencies and enhance staff and patient experiences.

In today's imaging departments, patient scheduling can also become complex and lead to inefficiencies as clinical capabilities vary from system to system. The MR AppLicense solutions<sup>1</sup> standardize and simplify the availability of software applications so they can be shared and managed across the fleet.





## A **confident** diagnosis boosted by new clinical capabilities

We have equipped the Ingenia Ambition with a wealth of new clinical capabilities – with the aim of helping you deliver consistently high-quality diagnostic outcomes, even for complex cases, while maintaining short and more predictable time slots. We foresee this as a path to confident diagnosis, letting you tackle existing, new and future clinical demands, while addressing the current upswing in patient volume experienced by radiology departments. Ingenia Ambition is designed to help you become the preferred partner within your referral network.

### Achieve efficiency with consistent quality

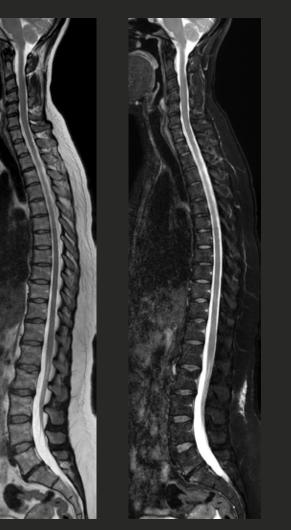
Repeating even one scan can put you behind schedule, increasing patient waiting times and staff overtime. The Ingenia Ambition offers a series of fast, robust scanning methods specially designed for challenging anatomies – with the consistent quality you need to achieve efficiency.

mDIXON XD TSE delivers uniform, complete and consistent fat-free imaging, even over larger fields of view – making it practical for areas such as the spine. For subtle lesions, the new IRIS ZOOM provides high-resolution spine diffusion imaging on small FOV, with lower distortion and improved fat suppression<sup>1</sup>.

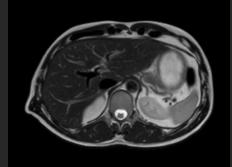
Abdominal imaging can also be challenging, particularly if motion occurs. MultiVane XD delivers highresolution motion-free imaging with a short scan time. Meanwhile, for patients who cannot hold their breath, 3D VANE XD supports free-breathing imaging of the abdomen.

For exploration of the brachial and lumbar plexus, 3D NerveVIEW improves nerve visualization by delivering spectacular high-resolution T2-weighted acquisitions with a reduced signal from fat and vessels – in a short scan time.

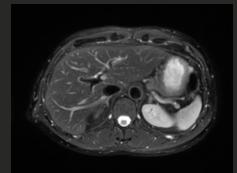




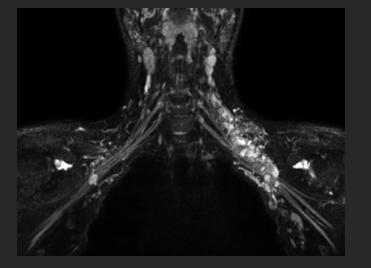
0.8 x 1.1 x 4.0 mm, **2:34 min /station** 



1.0 x 1.0 x 5.0 mm, **3:00 min** 



1.3 x 1.3 x 5.0 mm, **3:24 min** 



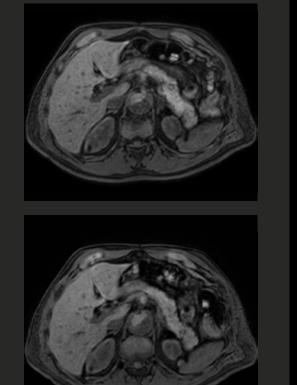
1.2 x 1.2 x 1.2 mm, **4:17 min** 



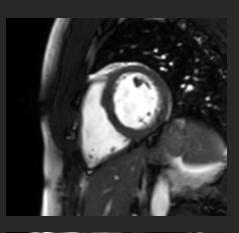
Sagittal IRIS Zoom b800 2.5 x 2.6 x 3.0 mm, **3:45 min** 

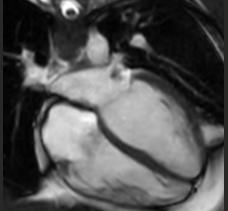


Coronal T1w FFE mDIXON XD – Water only 2.0 x 2.0 x 2.0 mm, **13.8 sec** Courtesy: Spital Uster, Switzerland



Axial eTHRIVE Without Compressed SENSE (top) With Compressed SENSE (bottom) 2.0 x 2.0 x 2.0 mm, **15.1 sec / 7.2 sec** 





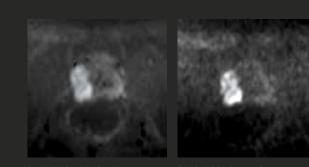
bTFE 2 chamber (top), 4 chamber (bottom) 1.7 x 2.1 x 8.0 mm, **5.0 sec** 

### Shorten breath holds by up to 40% and increase patient compliance

Abdominal and cardiac imaging can be challenging for patients with respiratory conditions or pediatric patients, because of the multiple and sometimes lengthy breath holds. Philips Compressed SENSE enables up to 40% faster scan time, resulting in breath holds down to just 5s, with virtually equivalent image quality for cardiac and abdominal imaging<sup>1</sup>.

Combined with the visual and auditory breath hold guidance available on our In-bore experience, Ingenia Ambition offers a unique solution to support comfortable abdominal and cardiac imaging for all your patients, especially pediatrics and geriatrics. This has potential to enhance the patient experience and compliance throughout the whole MR examination.



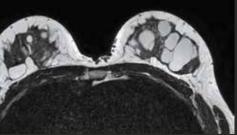


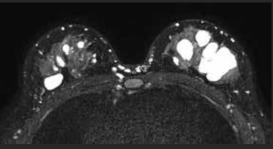
Enhance clinical confidence in breast and pelvic imaging - up to 25% higher resolution in the same scan time<sup>1</sup>

After lung cancer, breast and prostate cancers have the second largest incidence in women and men respectively. With the aging population, their incidence is expected to grow even further. Ingenia Ambition can enhance your confidence, offering exceptional MR imaging for characterization, staging and therapy monitoring in breast and prostate cancer patients.

With Compressed SENSE, you can obtain up to 25% higher resolution in similar scan time in breast and pelvic imaging, which can potentially help detect smaller lesions and enable better delineation of lesions<sup>1</sup>. The MR Advanced Diffusion Analysis solution brings the information you extract from your diffusion scans to the next level. In addition to generating computed high b-value DWI images without extra scans, it also opens the possibility to extract information on tissue perfusion with IVIM analysis and tissue microstructural complexity with Kurtosis analysis. Moreover, the IntelliSpace Portal enables you to standardize your prostate and breast reporting, respectively with PI-RADS v2 and BI-RADS.

### Up to 25% higher resolution<sup>1</sup>



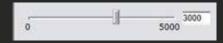


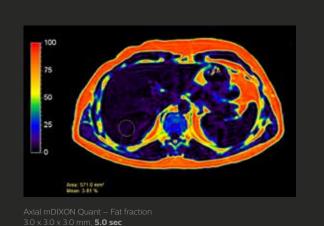


### Generate additional high b-value cDWI images without extra scans











### Expand your liver imaging services with **fast, simple and non-invasive methods** for liver fat quantification

Non-alcoholic fatty liver disease (NAFLD) affects up to a third of the population in many developed countries. Between 10% and 30% of patients with NAFLD have non-alcoholic steatohepatitis (NASH) that can progress to cirrhosis<sup>1</sup>. The Ingenia Ambition offers a range of fast, simple and non-invasive methods for liver fat quantification.

mDIXON Quant – a five-second single-breath-hold 3D procedure – provides high-quality 3D fat fraction maps of the whole liver, with high accuracy and reproducibility<sup>2</sup>. MR Liver Health (on the IntelliSpace Portal) leverages mDIXON Quant data to provide fat fraction and iron information averaged over the whole liver volume. The application segments the liver, and provides a volume which can be used in follow-ups to understand morphological changes in the liver. 'Non-liver' tissues (vessels and lesions) can easily be masked out based on thresholds applied to the T2\* map.

### Expand your imaging capabilities in oncology with whole-body MRI **under 30 minutes**

Clinical demand for whole-body MRI in myeloma patients is continuously growing, supported for instance by the recent guidance from the National Institute for Health and Care Excellence (NICE)<sup>1</sup>. Breast and prostate cancers are other important indications where staging and therapy monitoring with whole-body MR makes sense. This creates a new opportunity for you to expand your imaging services for your referrals. The Ingenia Ambition provides high-quality whole-body ExamCard protocols under 30 minutes, drawing on our unique Compressed SENSE, mDIXON XD, and DWIBS whole-body diffusion techniques.

The BlueSeal magnet's large field-of-view and highly linear gradients support switching to fast, high-quality coronal whole-body DWIBS, a game changer for increasing referrals. Compressed SENSE enables up to 50% acceleration with virtually equivalent image quality<sup>2</sup>, completed by other workflow simplification tools for easy multi-station pasting like MobiView and MobiFlex.

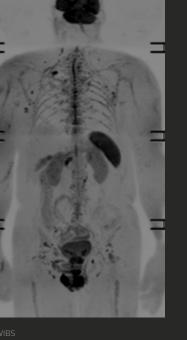
T1w FFI



TIw FFE mDIXON XD - Water only (left) and In Phase (right) 2.0 x 2.0 x 5.0 mm, **0:18 min /station** 

STIR TSE 1.2 x 1.8 x 5.0 mm, **1:18 min /station** 

MR Angio 1.0 x 1.0 x 1.0 mm, **17 sec /station** 



DWIBS 3.7 x 3.9 x 6.0 mm, **1:27 min /station** 

### Say yes to patients with MR conditional implants

Patients with MR conditional implants are often denied MRI exams. This is because it is not always easy for clinicians to implement the implant limits on the MR scanner. This can reduce diagnostic options for this growing population of patients and cut off a stream of potential referrals to your institution. To simplify your scanning process for patients with MR conditional implants, ScanWise Implant<sup>2</sup> software provides step-by-step guidance to enter the condition values of the implant manufacturer. Your MR system then automatically applies these values for the entire examination. ScanWise Implant

<sup>66</sup> From a technologist's perspective, we're excited about the prospect of shortening exam times and broadening the diagnostic modalities available for those patients with MR Conditional implants. Philips understands the needs of radiologists and brings the expertise needed to create a smart solution to help guide operators to meet the specific criteria for each implant.,

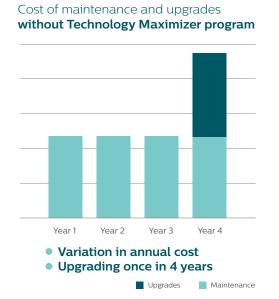
Scott Hipko, Chief MRI Research Technologist, The University of Vermont, College of Medicine.



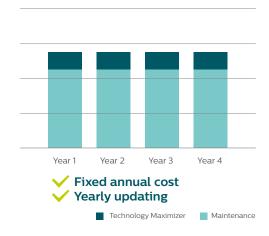


### Boost your clinical capabilities with proactive upgrades

To maintain your Ingenia Ambition, keep it up-to-date and protected from obsolescence, opt for our Technology Maximizer program. This is designed to maximize the performance of your imaging equipment throughout its lifetime through proactive upgrades, keeping your MRI up to date.



### Cost of maintenance and upgrades with **Technology Maximizer program**





# Dramatically improves patient experience

Your patients are at the heart of Ingenia Ambition – which includes an MR experience that enhances comfort and compliance. With up to 80% acoustic noise reduction<sup>1</sup>, voice guidance, immersive in-bore visuals and a comfortable table, your patients are made to feel at ease, resulting in smooth, fast exams.

### Reduce acoustic noise for your patient

The Philips unique ComforTone solution draws on our extensive experience to achieve up to 80% reduction in acoustic noise<sup>1</sup> with similar image quality and contrast within the same time slot. You can use ComforTone in routine exams such as brain, spine and MSK but can also apply it with high gradient settings. Thanks to our ready-to-use ExamCard protocols, ComforTone is simple to implement and use, requiring just a few clicks to get started.

### Guide your patients through the examination

AutoVoice is a fully integrated and automated solution that guides your patients through the MR examination. It indicates scan duration, announces table movements and offers breath hold guidance, helping you enhance patient comfort. The automated breath hold commands are synchronized with the patient's respiratory cycle and can be selected to fit patient conditions, such as expiration versus inspiration. AutoVoice is available in several languages and customizable for local pronunciation or for a staff member's voice if desired. You can also adapt texts and settings to meet individual operator needs and export your customized preferences to other Philips MR scanners.

## Provide an **immersive** visual experience

Philips takes a patient-centric approach to MRI exams. Designed to offer a relaxing sensory experience, our unique Ambient Experience provides positive distractions for patients by incorporating dynamic lighting, projection and sound, contributing to a positive, engaging environment to benefit quality of care.

From the moment a patient is moved into the scanner (the point at which people report the most stress), through completion of the scan, the Philips In-Bore Connect solution can help patients to relax, follow directions and minimize motion. In a study, conducted using our in-bore solution, Herlev Gentofte University Hospital in Denmark managed to reduce the number of rescans by up to 70%<sup>2</sup>. A case study at Radiologisches Zentrum am Kaufhof, Lübeck, Germany showed that the number of patients needing sedation was reduced by 80%<sup>3</sup>.

2 Compared to the average of the other 5 Philips Ingenia MR scanners without Ambient Experience and In-Bore Connect.

3 Based on a customer case study performed at Lubeck, Germany. The tranquilizer referred to is a valium-based derivative called "Diazepam". Results from case studies are not predictive of results in other cases. Results in other cases may vary.

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### Increase **patient comfort**

Ingenia Ambition offers a comfortable table experience thanks to the ComfortPlus mattress. On average, 90% of patients in severe discomfort find it easy to lie still on the ComfortPlus mattress. Overall comfort for this group of patients can increase by up to 36%<sup>1</sup>. The clinical images obtained using the comfort mattress are of a similarly high quality to those acquired with a standard table mattress.

### Protect patient-data from cyber-attacks

Philips recognizes the importance of securing your medical devices and protecting your patient data.
With Ingenia Ambition, Philips has applied the principle of the defense-in-depth strategy to its
MR Release 5 systems, implementing a security strategy that comprises multiple layers: Firewall, operating system (OS) and application hardening, malware protection, authorization user management
and authentication, audit logging and patient data encryption. To underline the security concept
on the Philips Ingenia Ambition, it received an Authority to Operate (ATO) from the U.S. Defense Health
Agency (DHA) based on the compliance requirements and risk assessments as required through
the Risk Management Framework (RMF) process.



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