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OVAL ECHELON

The human shape

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ECHELON OVAL
The human shape

ECHELON OVAL is designed around the shape of the human body, allowing for an optimal patient experience with outstanding comfort, space, and efficiency.
The game-changing 74cm oval bore is the widest 1.5T MR system available. Enhanced patient accessibility combined with Hitachi's Workflow Integrated Technology (WIT) and advanced imaging capabilities make ECHELON OVAL an ideal solution for improved workflow, greater diagnostic confidence, and increased cost-efficiencies.

Hitachi Medical Corporation Japan is an integrated medical systems manufacturer, owned by the Japanese Hitachi Ltd. Group, a leading international electronics company with a history of more than 100 years. Our broad experience and expertise in magnet, gradient and RF technology makes us a recognised leader in open MRI. We meet the latest in design and quality standards with truly comprehensive, patient-friendly systems that combine outstanding image quality with advanced clinical applications and unbeatable economical performance.

ECHELON OVAL – the innovation that changes the shape of MR

ECHELON OVAL features cost-effective, extremely accurate 1.5T diagnostic head-to-toe imaging capabilities in combination with exceptionally comfortable patient experiences for every stature.

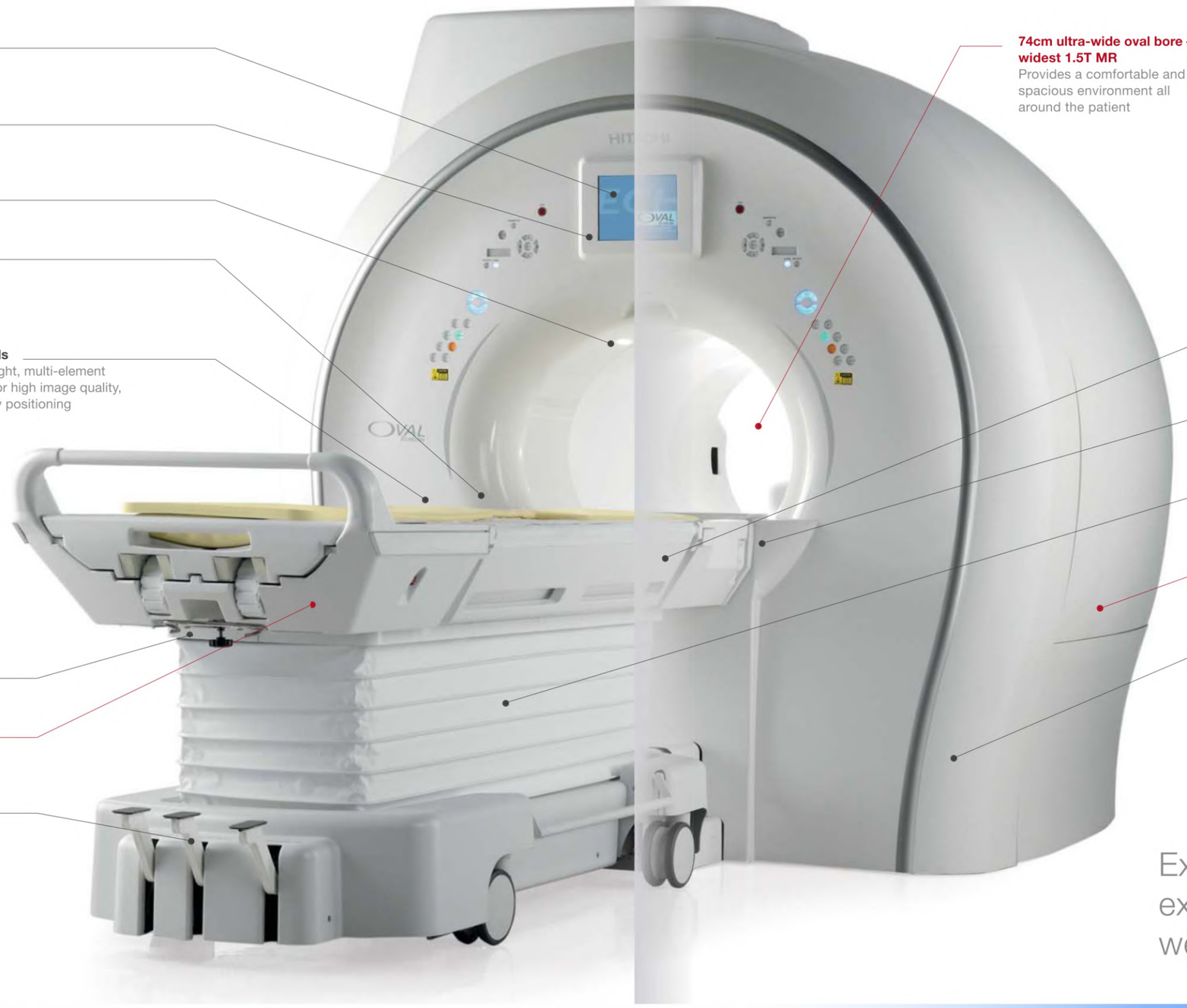
WIT Monitor
Allows technologist to review and update patient information with ease

Wireless Gating
Fast and simple connection verified with WIT monitor

In Bore Lighting and Ventilation
Enhances patient experience

7 Coil Plug-in Ports
Supports head-first or feet-first positioning for all imaging

WIT Coils
Lightweight, multi-element design for high image quality, and easy positioning



IV Pole
Deploys effortlessly when needed

Widest 1.5T Patient Table (63cm)
Better patient accommodation and decreases anxiety for all patient types

3 Modes of Steering
Provides easy maneuverability and docking

74cm ultra-wide oval bore – widest 1.5T MR
Provides a comfortable and spacious environment all around the patient

3 Position Armboards
Provides patient comfort and safety

A/D Conversion at Gantry
Reduces signal loss and maximizes SNR

WIT Mobile Table
Minimizes moves for non-ambulatory and infirm patients

Oval Drive RF transmit
Independent control of RF transmit improves image uniformity

Optical RF Transmission
Reduces noise and maximizes SNR

Exceeding performance expectations and patient well-being.

ECHELON OVAL – shaped for you

This patient-focused 1.5T MR system features high homogeneity, ultimate stability and a full 50cm FOV in all directions. It includes High Order Active Shim Technology to assure exceptional magnetic field uniformity and offers a compact footprint with virtually zero helium boil off.

ECHELON OVAL – much more than a bore

- 1.5T Magnet with the game-changing 74cm oval bore
- Extra-wide 63cm mobile patient table with 250kg weight capacity
- HOSS – High Order Shim System
- PACT – Patient Active Comfort Technology
- 16-Channel RF system using optical technology
- WIT Integrated RF coil system
- High-output gradient system
- Vertex II computer system
- Origin MR operating system
- Clinical imaging suites
- Excellent image processing tools
- Designed for every possible human shape
- High throughput and profitability results

The ideal solution for patient accessibility, workflow and clinical capacity.

ECHELON OVAL – shaped for your patient

Hitachi has a long history of delivering patient-friendly systems that allow imaging practices to serve the broadest spectrum of patients. ECHELON OVAL carries on this Hitachi system tradition.

The 74cm oval bore is designed around the shape of the body, providing a comfortable and spacious environment for an optimal imaging experience. ECHELON OVAL is the widest 1.5T system available and delivers the most lateral freedom. Your anxious, claustrophobic, broad-shouldered, and bariatric patients will experience greater comfort and peace-of-mind. In turn, your imaging practice will decrease sedation costs, reduce rescans and improve throughput. The unique oval bore design produces winning results for both patient and hospital.

Every patient type will benefit from ECHELON OVAL's vast array of patient amenities.

- Critical Care – Patients can more easily be visually observed and monitored by personnel with the oval bore.
- Sports Medicine – More comfortable positioning options for extremity imaging. Lateral anatomy can be positioned closer to the iso-centre.
- Anxious – Feet-first positioning puts the patient at ease, while the oval bore means the patients have more room on the sides so they do not feel restricted.
- Oncology – The oval bore and wide patient table provide needed comfort, while the vertical table motion makes accessibility easy.

Geriatric
Table lowers to 50cm for easy accessibility for elderly or infirm patients.

Paediatric
Ample space allows for constant visual and physical contact with a loved one.

Bariatric
More space on the sides means larger patients are afforded greater comfort and accommodation.

Breast
Roomier where it matters most for greater comfort and less anxiety.

ECHELON OVAL – Workflow Efficiency with WIT shaping our lives

Hitachi is committed not only to patient comfort and outstanding clinical capabilities, but also to improving the overall performance of your imaging hospital. ECHELON OVAL meets this commitment through a comprehensive suite of features known as WIT, or Workflow Integrated Technology.

Hitachi's WIT system optimizes the entire imaging process. From patient setup and positioning through scanning and image processing, WIT delivers the highest level of patient comfort and operator productivity.

WIT Mobile Table

The WIT Mobile Table delivers outstanding benefits to both patient and hospital. Technologists can easily move the table to the patient rather than moving the patient to the table. This minimizes transfers for non-ambulatory and infirm patients. The table measures 63cm, providing comfort, capacity, and safety for large patients, and simplified patient positioning. The table mobility and extra width promote patient acclimation to alleviate anxiety. The large vertical range of motion provides easy patient accessibility, and the feet-first imaging capability further reduces patient anxiety.

The WIT Mobile Table provides a wide range of workflow and safety features.

Increase your overall performance.

WIT Monitor

The WIT Monitor is located at the top of the gantry, allowing the technologist to review and adjust patient information with ease and efficiency, without leaving the patient.
The operator can verify gating function right at the gantry. This is another way ECHELON OVAL improves workflow while decreasing patient anxiety.

Technologists can review and update patient information at the gantry.

WIT Integrated RF Coil System

The WIT integrated coil system is a Hitachi technological advancement that improves all three elements of MR imaging: patient comfort, throughput, and clinical results. The integrated body/spine coil system resides within the table itself, delivering quick setup and optimized workflow. Anterior coils are immediately accessible, light-weight, and easy to position. And intelligent element selection chooses optimum coil elements, which not only aids in improving workflow, but also works to consistently produce the best image quality.
The signal from the coils is digitized (A/D conversion) right at the gantry to prevent signal loss, and is digitally transmitted via fiber optics to minimize noise. The result is the highest possible SNR.

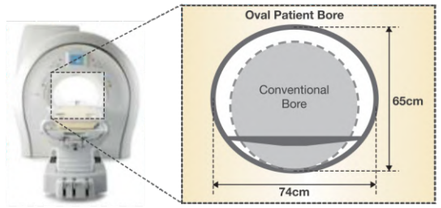
Technologists can easily change WIT coils' position for head-first or feet-first positioning.

Wide-Bore MRI with Uncompromised Image Quality

Wide-Bore MRI can suffer from the inflexibility of the laws of physics. In simple terms, a bigger bore means poorer magnetic field homogeneity. Not a particularly desirable trade-off.

The inspired engineers at Hitachi, drawing on their extensive experience in the field of nuclear fusion technology and magnetic field simulation, chose to take a different path. Instead of increasing the bare magnet bore they changed the size and shape of the gradient coils and the RF coil that have to be positioned inside the bare bore. The Oval Drive gradient and RF coils are both extremely thin as well as being oval in cross-section resulting in a human-shaped patient aperture with an industry-leading 74cm wide bore that does not compromise magnetic field homogeneity.

Narrow-Bore Image Quality and Field of View with the widest Wide-Bore patient aperture.



Oval Drive GC

In combination with technologies to control the magnetic field precisely, the Oval Drive GC produces a very powerful and uniform magnetic field.

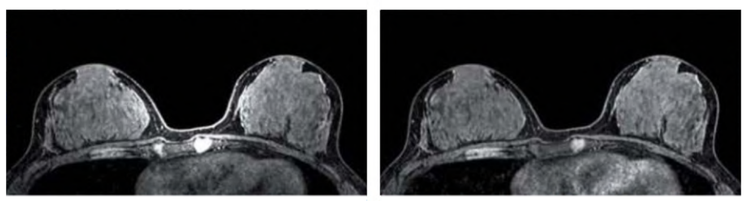
Nuclear fusion system technology from Hitachi.

Hitachi's gradient coil development is nurtured by the nuclear fusion know-how.

Oval Drive RF – delivering high homogeneity for reliable diagnoses

Conventional method.

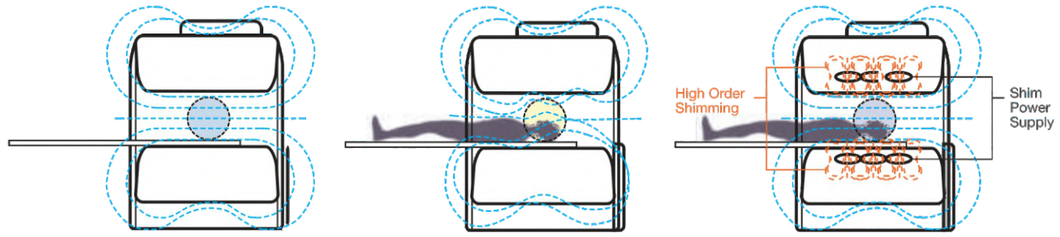
Hitachi method resulting in improved B1 uniformity (RF transmission uniformity shown on the example of breast imaging).



Oval Drive RF incorporates two independent high power RF amplifiers, each of them enabling individual phase and power control for excellent RF transmission uniformity. This Oval Drive RF transmission system represents an important feature for the attainability of superb image quality in combination with excellent fat suppression techniques.

HOSS (High Order Shim System) – outstanding homogeneity in multifold clinical situations

Uniform RF saturation and large FOV capabilities are critical in diagnostic imaging. Hitachi's HOSS delivers uniform static magnetic field in any application and maximizes image quality to provide you high diagnostic confidence.



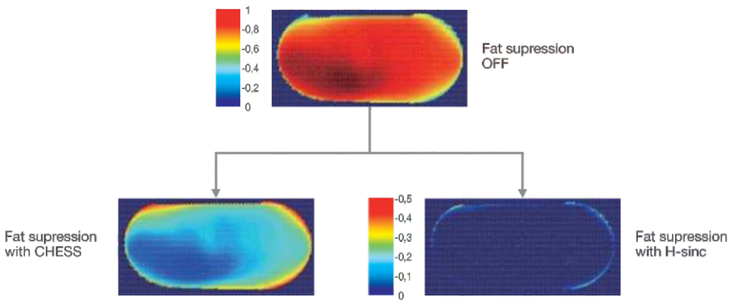
In a uniform (homogeneous) magnetic field, fat and water peaks have a constant frequency separation.

Without **HOSS**, the patient's body makes the magnetic field non-uniform, making fat saturation inconsistent.

With **HOSS**, the effect of the patient's body is reduced, promoting consistant fat saturation even across large FOV's.

H-sinc – revolutionary fat suppression technology that mitigates B1 non-uniformity

Fat suppression is critical for accurate MR diagnoses. To obtain sufficient effect of fat suppression, the homogeneity of the magnetic field and the uniformity of RF transmission are essential. With Hitachi's unique fat suppression technology "H-sinc", very effective fat suppression is performed free of B1 non-conformity for improved image quality. Moreover, the technology can be applied to a wide variety of sequences and CE scans and ensures highly uniform RF fat saturation for confident diagnoses.



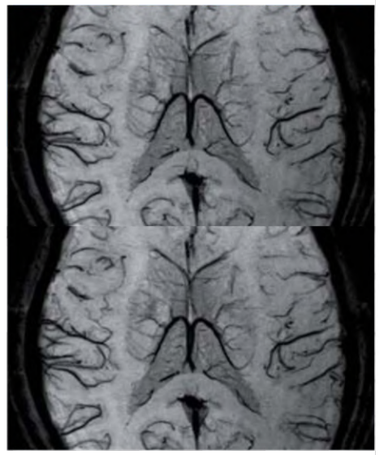
Comparison of Fat suppression effects.

ECHELON OVAL – diagnosis in perfect shape

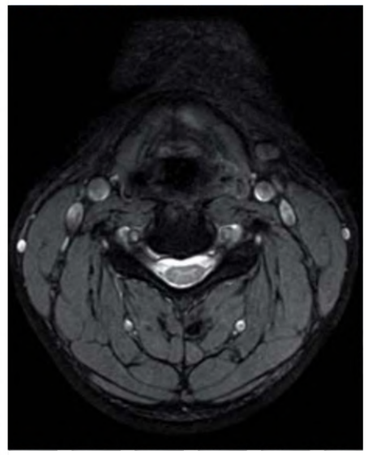
ECHELON OVAL features a 1.5T imaging system that delivers the full spectrum of clinical capabilities, acquisition features, and post processing tools providing high quality, high-field whole-body imaging.

Neuro Imaging

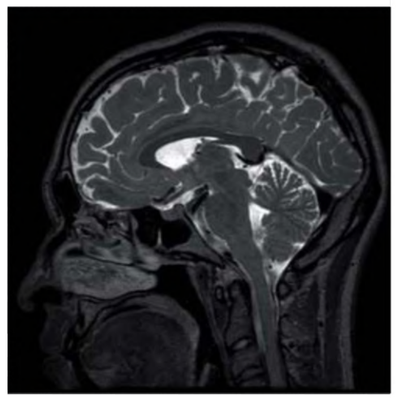
The powerful gradient system, sensitive RF coils, and comprehensive imaging features drive short scan times and high resolution for brain, head/neck, and spine imaging.



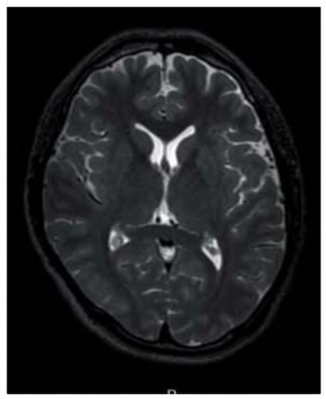
Using EPI based technique, BSI (Blood Sensitive Imaging) depicts micro-bleeds and medullary vein much faster than conventional techniques.



ADAGE (ADditive Arrangement Gradient Echo) helps observe spinal nervous system with high CNR typical of MRI among imaging modalities.



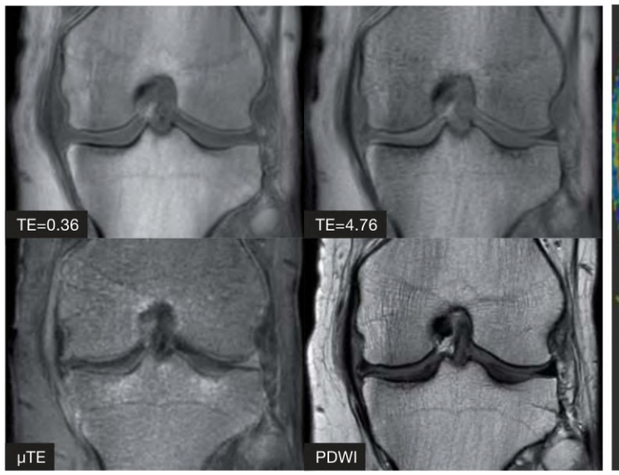
IsoFSE provides optimized T2WI, FLAIR and PD contrast for the entire volume with high spatial, isotropic resolution.



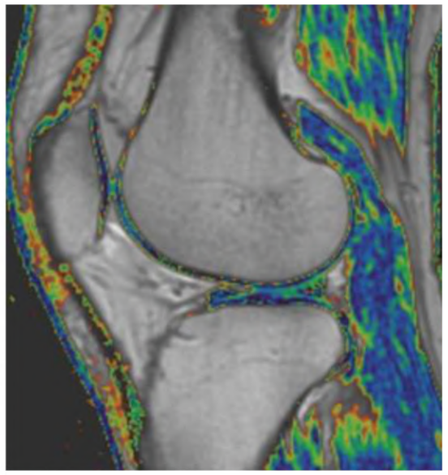
From a single acquisition any view, plane or slice can be reconstructed with the same high resolution as the native plane.

Orthopaedic Imaging

Highly sensitive multi-channel coils promote high spatial resolution critical for orthopedic imaging, and the HOSS with Regional Shim feature for off-isocenter imaging delivers remarkable RF fat saturation.

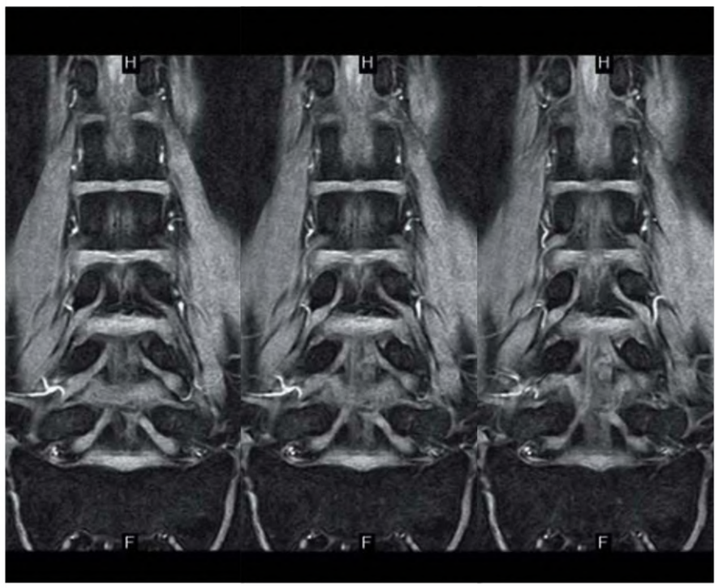


Depiction of collateral ligament by μTE. Micro TE is used to analyze cortical bone, tendon, and ligament using 2D radial gradient echo to provide high contrast imaging of tissue with very short T2 values.



T2 RelaxMap provides quantitative imaging for cartilage assessment with actual T2 values displayed in a color overlay within a morphological image which can depict subtle tissue properties and anomalies.

Clear depiction of the shoulder joint in ABER position possible thanks to oval shape of the gantry.

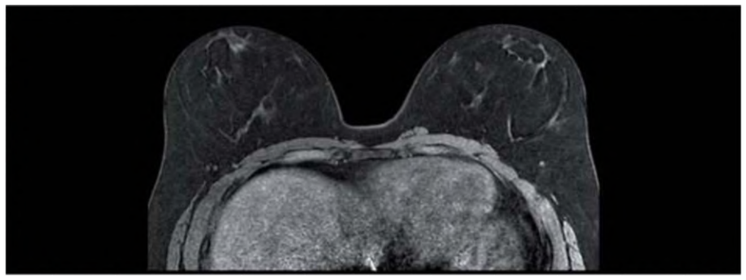


Combined use of ADAGE (ADditive Arrangement Gradient Echo) and fat-suppression by WE (Water Excitation). Increased contrast of spinal fluid helps show nerve roots clearly.

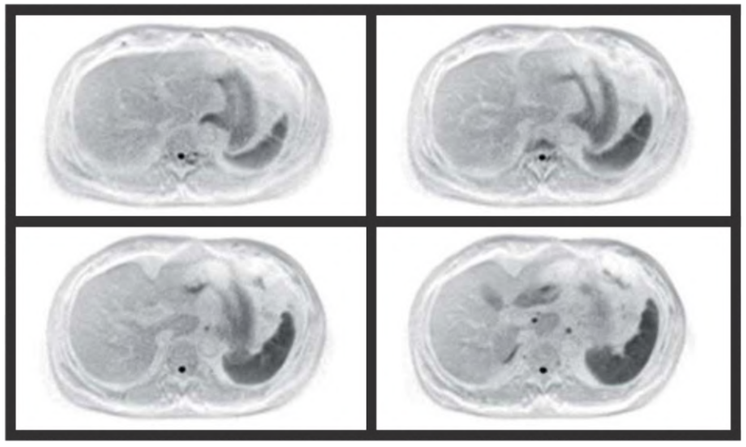
Body and Breast Imaging

High SNR from the highly sensitive WIT coil technology is complemented by the fast, fat suppressed imaging sequences and Hitachi's all coil/all plane motion compensating RADAR technique. Hitachi's standard and user-customized 2D and 3D protocols for abdomen, pelvis, MRCP, and dynamic liver and breast imaging are ready for your Body MRI challenges.

TIGRE (T1 weighted GRadient Echo nature of the sequence) and TIGRE C provide for dynamic liver and breast Imaging using 3D T1W GE with segmented RF fat saturation and RAPID parallel imaging.



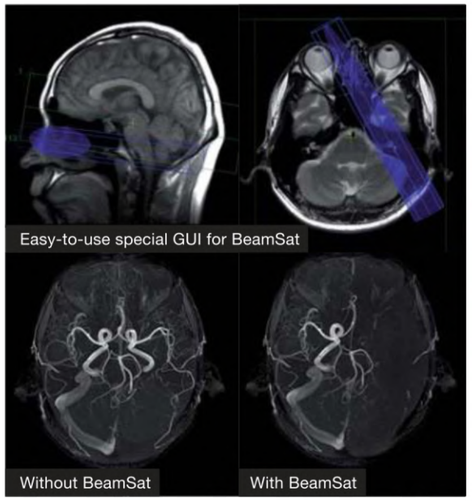
Abdominal Diffusion Weighted Imaging (DWI) with user selectable b-value for enhanced lesion detection.



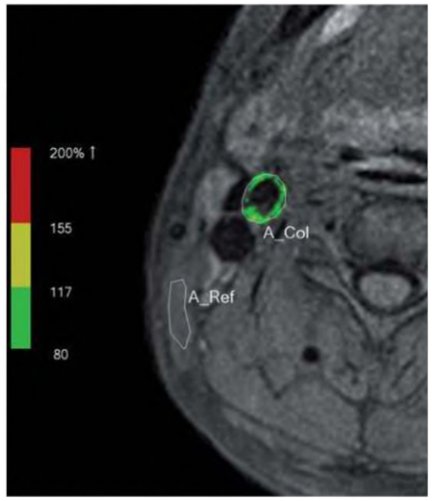
FatSep (Water Fat Separation) provides high SNR fat suppressed imaging with in phase and out of phase images in one sequence. FatSep can reduce the metal artifact than the other fat suppression technique.

Vascular Imaging

Contrast Enhanced Angiography techniques like Fluoro Triggered MRA (FLUTE) and Time Resolved MRA (TRAQ) complemented by the whole family of non-contrast angiography from conventional 2D and 3D TOF and PC to VASC-ASL (Veins and Arteries Scans Contrast – Arterial Spine Labeling) and VASC-FSE (Veins and Arteries Scans Contrast – Fast Spine Echo) provide the tools for Head-to-Toe vascular imaging. Advanced and unique Hitachi techniques such as BeamSat TOF and SIR Map enable analysies of artery stenosis and qualitative assessment of plaque allowing full diagnosis in vascular imaging.

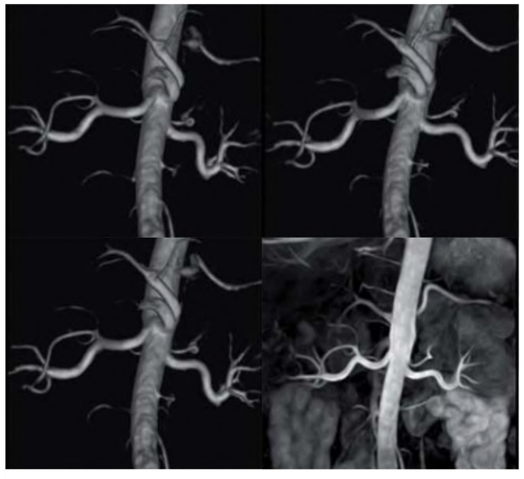


BeamSat TOF allows users to selectively isolate flow signal with a cylindrical beam saturation pulse, which can localize sources of blood flow when depicting vascular anomalies.



SIR Map (Signal Intensity Ratio Map) used with RADAR T1WI SE sequence to evaluate the components of arterial plaque and therefore influence diagnosis and treatment monitoring of stenosis. The result is displayed as a color overlay on the anatomic image.

VASC-FSE non contrast alternative technique for peripheral vessel depiction.



VASC-ASL non contrast MRA used in cases of renal insufficiency employing Hitachi's VASC sequence and netting excellent renal vessel image quality without a bolus.

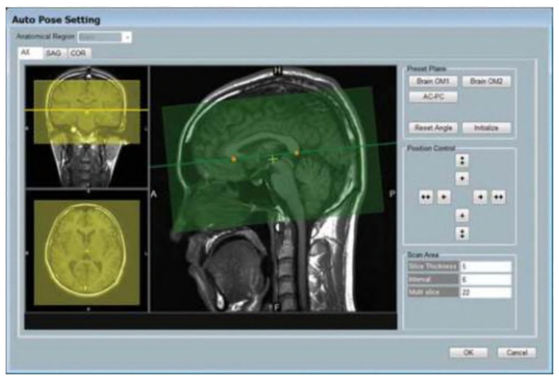
ECHELON OVAL – shape your workflow

ECHELON OVAL offers significant bottom line benefits through optimized workflow and increased throughput.

ORIGIN MR Operating Software with AutoPose

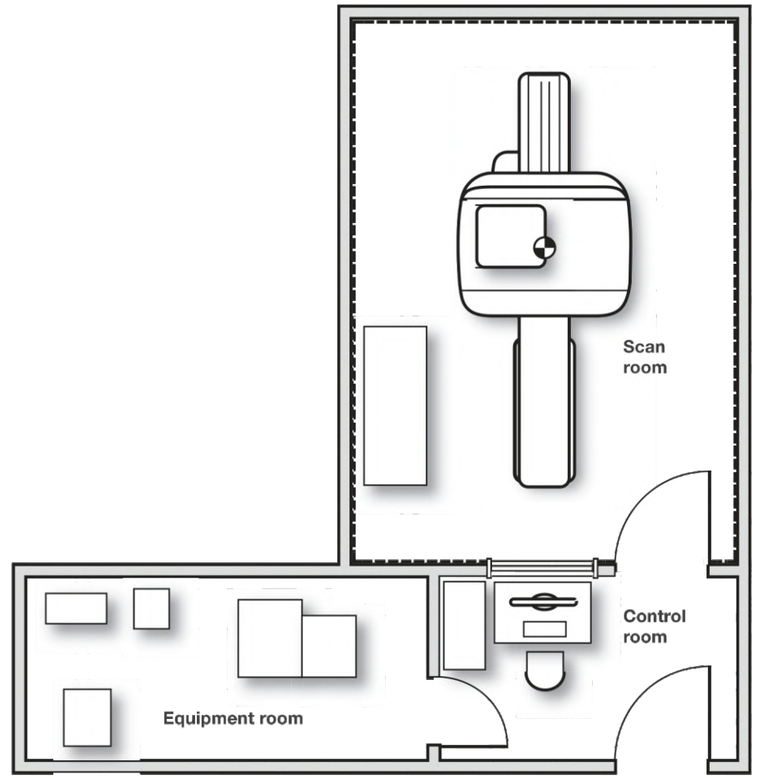
Origin MR Operating Software optimizes every facet of imaging workflow with features including simultaneous scan/recon, ultra-fast acquisitions, motion compensation techniques, scan parameter guidance, interoperability, and specifically AutoPose.
AutoPose moves workflow forward by automatically determining and placing optimal scan slice locations based on the initial scanogram, saving the operator time and improving consistency of routine brain scans.

AutoPose saves time and provides consistent results.



ECHELON OVAL – cost-effective siting for shaping your figures

ECHELON OVAL continues the Hitachi tradition of advancing MR systems beyond the technology you expect with cost-effective siting and operation. ECHELON OVAL's remarkable design attributes make it accommodating to existing facilities and easily planned into new construction. As an acknowledged leader in imaging installations, Hitachi offers a wealth of site planning experience and a proven system for efficient siting, installation, and start-up.



A remarkable design easily fitting into existing facilities and new constructions.

ECHELON OVAL

The human shape