



*Opening **NEW FRONTIERS**
in clinical and research MEG*

Innovative Functional Advantages

LifeSpan functional imaging from pediatric to adults

- Patented two MEG-in-one system with dual-helmet dewar
- Dual helmet simultaneous data acquisition fully implemented
- Dual adult or pediatric helmet options available

Zero-loss Helium recycling

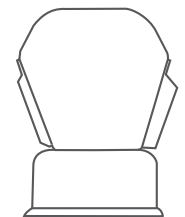
- 24/7 operation with no down time
- Minimized operating costs

Interference-free high-density EEG up to 256 channels

Powered by CURRY neuroimaging platform, the world's standard software for MEG /EEG analysis

Real-time video archiving

Full cloud-integration



DUAL DEWAR MEG



CURRY is the European Epilepsy consortium's standard analysis platform

Pending FDA clearance

ORION LIFESPAN™ MEG

Our unique sensing system advantage

- The Compumedics NeuroScan Orion LifeSpan™ MEG system uses new generation high-sensitivity, axial gradiometers with increased SNR for superficial and deep sources
- Patented SQUID sensor type: double relaxation oscillation SQUID (DROS)
- Average sensitivity: better than $3 \text{ fTrms}/\sqrt{\text{Hz}}$ (@ 100 Hz)
- Sampling rate : 10 kHz max option, resolution: 24 bits
- 32-256 channels of integrated simultaneous EEG, plus 4-16 bipolar/auxiliary analog channels

Our hardware advantage

- The unique Orion LifeSpan™ is comprised of a patented rotating dual-helmet dewar for adult and pediatric patients (adult/adult, pediatric/pediatric options available)
- Up to 320 axial gradiometers option, 183/135 adult/pediatric standard (each with 9 additional reference channels for noise reduction)
- Specially designed adjustable bed system for adult and pediatric patients optimized for comfort
- Continuous helium-recycling minimizes operating costs & maintenance requirements
- Lighter-weight, active magnetically shielded room (MSR)
- Smaller electronics footprint for reduced lab space & power use

NeXus 360 full cloud-integration enabled

Access and store your data in a proven secure and scalable cloud solution. Features collaborative research and clinical HIPPA (patient data security compliance).

50%+

Better spatial resolution & sensitivity than traditional market leader

4-5 ORDERS OF MAGNITUDE FASTER

MEG provides vastly greater temporal resolution than traditional functional MRI PET or other structural brain imaging systems

320+ MEG CHANNELS

UP TO 256 FULLY SYNCHRONIZED EEG CHANNELS

320 AXIAL GRADIOMETER ON DEMAND

183 Adult standard
135 Pediatric standard
(9 reference coils each)

Orion LifeSpan™ key advantages

Patented dual helmet rotating adult/pediatric dewar



Pediatric dewar view

Integrated zero-loss Helium recycling

Vibration-free continuous operation
Helium reliquification system integrated into the Orion LifeSpan™ MEG system for reduced running costs

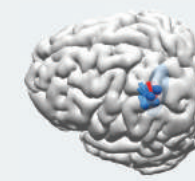
Patented sensing system

CURRY™ acquisition and analytics software platform advantage

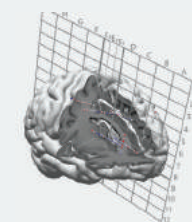
- Simplified user interface
- Co-registration of EEG & MEG, with MRI, fMRI, CT, SPECT, PET, DTI
- CURRY integrated with STIM2, including eloquent cortex evaluation
- Integrated synchronized video
- Individualized head models for MEG, EEG and combined analysis including both individualized BEM and FEM
- Complete dipole, CDR, statistics modules
- User-friendly pre-surgical planning module
- Maximum memory access for rapid processing of large data files (64 bit native application)
- Suitable for all applications (research, clinical)
- Enhanced connectivity with other hardware and software (e.g. Free Surfer, Matlab™)
- sEEG analysis module



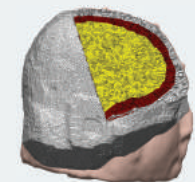
High tesla image intensity correction



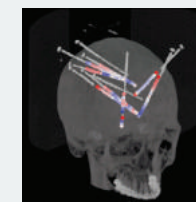
Dipole/spike clustering/averaging



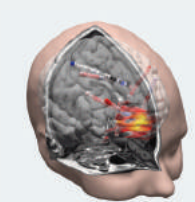
Talaraich grid surgical planning



Individualized finite element model



Rotatable maximum intensity proj.



CDR for sEEG

Magnetoencephalography (MEG) and CURRY - A long history together

The CURRY NeuroImaging platform and MEG have a history stretching back over 25 years. CURRY was first conceived as a product in the late 1980's when Philips Electronics investigated the feasibility of developing its own MEG hardware platform. Ultimately, the hardware platform was not released commercially, but the software development, along with its core engineering architects, Dr. Manfred Fuchs and Dr. Michael Wagner, continued. When Philips exited the MEG business, CURRY and the development team were purchased by Neuroscan. At that time, the UNIX-based CURRY platform appealed more to the research community than to the clinical market. By 1999, studies were published describing the application of CURRY for cortical localization of auditory, visual, and tactile stimulation, based on evoked EEG and MEG activity.

Importantly, "novel developments" and "new approaches to detailed localization of specific epileptic discharges" as well as identification of functionally critical areas of the brain controlling language and memory using CURRY, were also described in the clinical literature. Processing algorithms have also been validated for evaluation of mild to severe traumatic brain injury.

The migration of CURRY from the UNIX to Windows platform in 2003 facilitated a rapid expansion of the use of CURRY in both the research and clinical communities.

The benefits associated with CURRY's ability to integrate MEG with EEG and co-register these high temporal resolution functional imaging data with structural neuroimaging data including MRI, CT, DTI, PET, SPECT and fMRI accelerated the adoption of the software for both research and clinical applications. Early clinical adopters, such as Dr. John Ebersole, supported and championed the benefits of source localization tools such as CURRY, contributing to the development of specific source analysis billing codes for EEG and MEG.

For a long time, CURRY has been the de-facto software platform for clinical MEG community, particularly for those assessing epilepsy. This has culminated in the adoption of CURRY as the standard analysis platform by the European Epilepsy Consortium.

For the CURRY team, integrating CURRY with the KRIS MEG hardware represents a full circle of development. With long-term future development plans for both hardware and software, CURRY MEG will offer a continuous growth of benefits facilitated by the first fully integrated platform supporting multi-modal neuroimaging of EEG, MEG, including co-registration and source reconstruction from a single provider.

Orion LifeSpan specifications*

SQUID gradiometer

| | |
|----------------------|--|
| SQUID sensor type: | Double relaxation oscillation SQUID (DROS) with largest voltage output |
| Material: | Based on reliable Nb/AlOx/Nb junction technology |
| Feedback: | External feedback to eliminate inter-channel crosstalk |
| Heater: | Integrated Pd thin-film heater to remove trapped flux, in any |
| Pickup coil: | High-balancing first-order axial gradiometer with 50 mm baseline |
| Average sensitivity: | Better than 3.0 fTrms/√Hz (@ 100 Hz) |

Insert

| | |
|----------------------|--|
| Standard coverage: | 183 channels for adults 135 channels for pediatrics |
| Reference channels: | 9 channels per each helmet |
| Max sensor coverage: | 320 channels for adults 240 channels for pediatrics |
| Reference channels: | 9 channels per each helmet |
| Coil-in-vacuum: | Direct mounting of gradiometer array onto helmet dewar for vibration suppression |
| Field component: | Measurement of dBr/dr (r-axis is normal to local head surface) |

Dewar

| | |
|--------------------|--|
| Dewar structure: | Horizontal dewar with two helmets for adult and pediatric |
| Dewar positioning: | 180 degree rotation to switch between adult and pediatric position |
| Tail thermal gap: | < 20 mm |

SQUID electronics

| | |
|-------------------|--|
| Flux-locked loop: | DC bias, direct readout (no modulation) |
| Control: | Automatic control of SQUID operation using Interference-free optical fiber-based control |
| Bandwidth: | DC to nyquist based on sampling rate |

Data acquisition workstation (1) / data processing workstations (2)

| | |
|--------------------|--|
| A/D conversion: | Max 10 kHz/channel, 24 bit resolution Synchronized EEG acquisition, 32-256 channels |
| Computer: | Workstation computers/32-inch color LCD monitor Nvidia graphics card (3D Vision)# |
| CPU: | 3 GHz, Intel i7 or Zeon, Windows-based, 16 GB RAM |
| Mass data storage: | 1 terabyte SSD main drive & secondary drive # |

Real-time archivable synchronized MEG/EEG and video

Software function (CURRY NEUROIMAGING SUITE)

- System control of SQUID operation, FLL (offset voltage, integrator)
- Real-time display of MEG signals /EEG Signals
- Signal processing of baseline correction, digital filtering, artifact suppression, manual/automated event marking
- Dipole and CDR source modeling
- Pre-surgical planning
- Stimulus delivery**
- STIM2 with auditory, visual, tactile stimulation
- Sensor digitization**
- NDI KRIOS camera-based digitization

Measurement accessories

| | |
|------------------------|---|
| Head position monitor: | 5 circular coils integrated with EEG Cap |
| Patient monitor: | 1 CCD camera and 1 LCD monitor |
| Communication: | Voice communication using a noise-free microphone and speaker |

Magnetically shielded room

| | |
|--------------------|--|
| Structure: | 2-layer mumetal and 1-layer aluminum |
| Inner dimensions: | 4 m (L) x 3 m (W) x 2.4 m (H), may be modified upon site evaluation. Wall thickness of 200-250 mm. |
| Door: | No door threshold (equal height with measurement room) |
| Shielding factors: | 40 dB @ 0.1 Hz, 70 dB @ 10 Hz |
| Illumination: | Low-noise DC lighting |

Delivered systems will have equal or better specifications



Australia • USA • Germany • France

* Specifications subject to change without notice.
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www.compumedicsneuroscan.com
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