

EXPLORE THE BRAIN

Advance your
neuroscience
research with TMS



MagVenture TMS Research
Making impossible possible.

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Making impossible possible

Enabling researchers to gain an even deeper understanding of the human brain is just as important now as it was when MagVenture introduced our first TMS device back in 1992. MagVenture has, since the very beginning, engaged in long-term, close collaborations with numerous high-ranking neuroscience research institutions, universities, and facilities worldwide, allowing scientists to continuously challenge and push the limits of TMS.

Our stimulators, specialized coils, and advanced accessories are all developed at the MagVenture headquarters near Copenhagen, Denmark. Here, a team of engineers within mechanics, power electronics, design, and software, as well as medical advisors and researchers join forces to offer TMS professionals the best TMS equipment in the market.

MagVenture provides complete research system solutions for all your neuromodulation needs. Our ever-expanding fleet of products - 35 different magnetic coils and 7 different magnetic stimulators so far, along with a wide range of accessories – will let you configure a TMS system that meets your specific requirements.



When I first started the company in the early 90's, it appeared to me there were a lot of unused opportunities in using TMS. I therefore decided to develop the most advanced, powerful solutions to brain researchers.

- Stig Wanding Andersen, founder and CEO, MagVenture

Take TMS research to a new level

From a turn-key solution for interleaved TMS-fMRI to applying TMS on rodents, and conducting true double-blinded trials, MagVenture is fully capable of meeting even the most demanding needs from researchers around the world.

Interleaved TMS-fMRI: Complete turn-key package

See exactly what happens in the brain during TMS with this unique solution which lets you safely induce neural activity into targeted cortical regions directly in the MRI scanner:

- **Special cooled coils for use inside MRI scanners**
- **Reduced RF noise**
- **High quality imaging**



Our group pioneered the development of simultaneously implemented TMS-fMRI-EEG during cognitive behaviour. This means we can now apply brain-stimulation while recording the individual brain network (fMRI) and oscillation (EEG) responses of cognitively engaged participants.

**- Professor Alexander Sack,
Maastricht Brain Imaging Centre, Maastricht University**

Push the limits of your TMS research





Our simulations showed that the Cool-40 Rat Coil achieves unprecedented high electromagnetic fields.

- Professor Steven Staelens, University of Antwerp

Animal model research: TMS coil for stimulating rodents

Perform actual repetitive TMS protocols on rodents and obtain replicable and reliable research with the Cool-40 Rat Coil:

- **High focality**
- **High intensity and high frequency**
- **Effective cooling, allowing for a large number of pulses**

Integrable solutions with our preferred partners

Need to integrate your TMS research with neuronavigation, EEG, or looking for a robotic solution? We have teamed up with some of the most prominent providers within these areas to give you the highest possible quality, every time.

Localite – navigated stimulation

Brain Products – EEG recording during TMS

Axilum Robotics – robotic solutions for TMS

Further interaction options include:

- **MATLAB**
- **Signal (Cambridge Electronic Design) interface**
- **External control by COM port communication**

Clinical Research

Conduct true double-blinded studies



Double-blinded research studies: Accurate, reliable, consistent
We offer a complete system for double-blinded clinical studies including:

- Active/sham stimulation combined in one coil
- Patient codes and operator codes ensuring true double-blinding
- Complete control by study master or principal investigator

Behind the world's largest RCT with TMS to date

Blumberger et al, 2018, The Lancet

Coil selection second to none

All shapes and sizes

Our TMS coils come in various shapes, sizes and with different attributes such as cooling, power control and triggering on the handle. With 35 different coils to choose from, the possibilities for your neuroscience research are virtually endless. We have specialized elliptic (racetrack) coils suitable for rehabilitation research, and circular “general purpose” coils suitable for stimulation of fairly large areas. Our butterfly (figure 8) coils are designed for stimulating specific, targeted areas.



MRI-B91*



Cool-D50*



Rat Coil*(not for human use)



Cool D-B80 Coil



RT-120 II



Cool-B65 A/P*

Our range of specialized coils include an asymmetrical coil for simultaneous stimulation of two centers in the brain only 2-3 cm/1 inch apart, a coil for interleaved TMS/fMRI, coils with active/placebo sides for true double-blinded studies, and a small coil specifically designed for the stimulation of mice or rats.

**Users in the USA please note: Caution - investigational device. Limited by Federal law to investigational use. In accordance with US Federal regulations, an IDE and/or IRB approval may be required.*

From no cooling to superior cooling

Worried about overheating? No need: our extremely efficient liquid cooling will let you run even the most aggressive protocols, and a higher number of repetitions without having to change coils.

Depending on the number of pulses and intensity you need, we offer different cooling solutions.

Choose the right coil

If you plan to run a limited number of stimuli, for instance for Motor Threshold determination and diagnostic purposes, our standard coils with no cooling is the suitable choice.

To run a higher number of stimuli and intensity for more aggressive protocols, our cooled coils, either static or active, offer many possibilities: With a static cooled coil, the liquid is contained within the coil with no external cooling unit. With active cooling, a liquid cooling unit is connected to the stimulator which will allow you to run very demanding, continuous protocols with up to 20,000 pulses.





**Providing advanced
neuroscience solutions
to researchers for
over 25 years**

7 different stimulators to choose from

Whether your research focus is within the translational, investigational, diagnostic, or the neurophysiological field, a stimulator from MagVenture can – easily – meet your needs, ease your workflow, and ensure accuracy and consistency with features such as:

- **User defined protocols, storage and retrieval of protocols**
- **Automatic sequence set-up**
- **Transferrable data**
- **Advanced in/out triggers for EEG, EMG, and EP equipment**

Choose the right stimulator

The “R” line is for basic to more demanding clinical practice as well as research whereas the “X” line is developed for advanced research applications. The R30 and X100 stimulators are designed with demanding repetitive protocols in mind and will deliver a high number of pulses when used with the liquid cooled coils. The R30 and the X100 also keep operators informed about important performance parameters such as number of remaining stimuli with the coil in use and the actual power being delivered to the coil.

Accessories

In addition to our large coil selection and our many different stimulators, we are also constantly working on developing and expanding our long list of research accessories to support TMS researchers the best way possible. Our accessories include a sham noise generator which sends white noise into the ears of the research subject, hiding if the stimulation is real or sham, an external control software for TMS-fMRI research, a paired pulse composer software and a MEP monitor to measure motor evoked potentials during TMS.

Coil overview

Circular Coils

A "general purpose coil" which can be positioned over many parts of the body to stimulate a fairly large area.

| Model | Shape | Cooling | Number of pulses before warm-up 1pps / 75% / 20°C |
|-----------------------|----------------------|----------------|--|
| C-100* | Circular | No cooling | 400 |
| MC-125 | Circular | No cooling | 450 |
| MMC-90 | Circular (Parabolic) | No cooling | 450 |
| MMC-140/140 II* | Circular (Parabolic) | No cooling | 650 |
| MCF-75 | Circular | Static cooling | 500 |
| MCF-125 | Circular | Static cooling | 2,000 |
| Cool-125 | Circular | Active cooling | >20,000*** |
| Cool-40 Rat Coil***** | Circular | Active cooling | 300**** |

Butterfly coils (figure 8)

The butterfly coil is useful in focused stimulation. The two windings are placed side-by-side which enables the coil to stimulate structures with focus right under its center.

| | | | |
|----------------------------------|-----------|----------------|-------------|
| MC-B35 | Butterfly | No cooling | 75 |
| C-B60* | Butterfly | No cooling | 350 |
| D-B80 | Butterfly | No cooling | 500 |
| MC-B65 HO | Butterfly | No cooling | 350 |
| MC-B70 | Butterfly | No cooling | 400 |
| MCF-B65 | Butterfly | Static cooling | 2,000 |
| MCF-B70 | Butterfly | Static cooling | 5,500 |
| Cool-B35/Cool-B35 RO/Cool-B35 HO | Butterfly | Active cooling | 300 |
| Cool-B65/Cool-B65 RO | Butterfly | Active cooling | > 20,000*** |
| Cool D-B80 | Butterfly | Active cooling | > 20,000*** |
| Cool-B70 | Butterfly | Active cooling | > 20,000*** |
| MRi-B91***** | Butterfly | No cooling | 500 |
| MRi-B91 Air Cooled***** | Butterfly | Forced air | 500 |

Racetrack and D-shaped coils

Racetrack coils are especially suitable for stimulation of wider areas. Use two D-shaped coils to simultaneously stimulate two centres in the brain only 2-3 cm / 1 inch apart.

| Model | Shape | Cooling | Number of pulses before warm-up 1pps / 75% / 20°C |
|---------------|-----------|----------------|--|
| RT-120 | Racetrack | No cooling | 1,500 |
| RT-120 II* | Racetrack | No cooling | 1,500 |
| Cool-D50***** | D-shaped | Active cooling | > 20,000***** |

Placebo coils

Coils specifically developed for placebo studies. Some are for true double-blinded research studies with both an active and a placebo side.

| | | | |
|---|---|----------------|-------------|
| MC-P-B70***** | Butterfly (Placebo) | No cooling | 400 |
| MCF-P-B65***** | Butterfly (Placebo) | Static cooling | 1,600 |
| Cool-B65 A/P***** Cool-B65 A/P RO***** | Butterfly (Active/ Placebo) | Active cooling | > 20,000*** |
| Cool D-B80 A/P***** | Butterfly (Active/ Placebo) | Active cooling | > 20,000*** |
| MMC-140 A/P***** | Circular (Parabolic, Active/Placebo) | No cooling | 1,000** |
| MCF-P-B70***** | Butterfly (Placebo) | Static cooling | 1,500 |

* With built-in power control.

** At 1 pps, 45% power, 20°C ambient temperature.

*** At 2 pps, 100% power, 20°C ambient temperature.

**** At 1 pps, 70% power, 20°C ambient temperature. Requires the High-Performance cooling system.

***** At 1 pps, 80% power, 20°C ambient temperature. Requires the High-Performance cooling system.

***** Users in the USA please note: Caution - investigational device. Limited by Federal law to investigational use. In accordance with US Federal regulations, and IDE and/or IRB approval may be required.

Stimulator overview

| | | MagPro Compact | MagPro R20 | MagPro R100 | MagPro R30 | MagPro R30 with Mag-Option | MagPro X100 | MagPro X100 with Mag-Option |
|-------------------------|------------------------------|----------------|------------|-------------|------------|----------------------------|-------------|-----------------------------|
| Maximum Repetition Rate | 5 pps | • | | | | | | |
| | 20 pps | | • | | | | | |
| | 30 pps | | | | • | • | | |
| | 60 pps | | | | •* | | | |
| | 100 pps | | | • | | | • | • |
| Pulse Mode | Standard | • | • | • | • | • | • | • |
| | Dual/Twin | | | | | • | | • |
| | Power Mode | | | | | | | • |
| Waveform | Biphasic | • | • | • | • | • | • | • |
| | Biphasic Burst (Theta Burst) | | | | •** | | • | • |
| | Monophasic | | | | | • | • | • |
| | Half-Sine | | | | | | | • |
| Current Direction | Normal and Reverse | | | | | | • | • |
| Sham noise | (Add-on) | | | • | • | • | • | • |
| MEP Monitor | (Add-on) | | | • | • | • | • | • |

* With 60 pps Option

** With Theta Burst Option



Who is MagVenture?

MagVenture is a Danish medical device company, established in 2007, specializing in non-invasive magnetic stimulation systems for the treatment of major depressive disorder.

As we are founded in research, we have collaborations with most of the leading TMS researchers in the world, in the areas of neurophysiology, neurology, cognitive neuroscience, rehabilitation and psychiatry. Our advanced series of coils and magnetic stimulators are sold on the world market through direct sales subsidiaries in Germany, the UK and the USA, and through a global network of distributors in Europe, Asia, Middle East and the Americas.

www.magventure.com

All products are developed and manufactured in accordance with the standard ISO 13485:2012, the current EU Medical Device Directive, the Canadian Medical Devices Regulation (CMDR), US 21 CFR 820 for the USA, and in accordance with a number of additional country-specific regulations. MagPro stimulators and coils are approved as medical devices in Europe, the USA, Canada, China, Japan, South Korea, Australia, Russia, and other markets worldwide.

MagPro®, MagVenture TMS Therapy® and MagVenture® are registered trademarks of MagVenture A/S. Please note that not all stimulators, coils, and accessories are cleared for sale in the USA by the Food and Drug Administration (FDA). Please also note that in the USA Transcranial Magnetic Stimulation is considered investigational - except for the cleared intended use for treatment of Major Depressive Disorder in adult patients who have failed to receive satisfactory improvement from prior antidepressant medication in the current episode.

5 reasons to choose a MagVenture TMS Research solution

- 1** With 35+ coils to choose from, MagVenture is second-to-none when it comes to coil selection
- 2** 7 different and strong stimulators allowing you to do even highly advanced research
- 3** No overheating of coils, due to our renowned liquid cooling system
- 4** Highly responsive to researchers' ideas
- 5** Dedicated team of experts on board, offering support on medical advice, study setup, application instruction / guidance

