

# MR-GUIDED HYPERTHERMIA THE NEXT STANDARD



REAL-TIME NON-INVASIVE THERMOMETRY  
INTEGRATED WITH 1.5 TESLA MR SYSTEM

## BSD-2000 3D / MRI



### EASY PATIENT ACCESS

- ▶ **Applicator opens from the side for simple patient access. Modular padding allows customized patient-support configuration.**

### COMFORT CONTROLLED

- ▶ **Water bolus provides connection between patient and antenna array. Circulated water is temperature controlled for patient comfort.**

### REMOVABLE APPLICATOR

- ▶ **Sigma Eye / MR Applicator uses a MR table, which can be removed and stored when not needed so the system can be used for general MR imaging.**

## PATIENT FIRST



## MAXIMUM PRECISION IN HYPERTHERMIA TREATMENT

### ASSURED QUALITY

Maintaining target temperature during patient treatment is essential for quality-controlled therapy. Traditionally, temperature probes are placed in natural body orifices near the tumor site, or invasively into the tumor. The addition of thermal mapping (scanning the temperature probes along the catheter tracks) provides much more information about the temperature in the tumor and normal tissue. Adding the MRI platform to the treatment now allows the physician to obtain detailed, three-dimensional information about temperature and perfusion during the hyperthermia treatment – in near real time.

### REAL-TIME HEAT ZONE STEERING

A great benefit of image-guided thermal therapy is the ability to validate and electronically steer the heat zone to ensure the correct treatment position and target temperature.



## A REAL BREAKTHROUGH IN HYPERTHERMIC ONCOLOGY

### UNIVERSAL APPLICATION

Employing the latest non-invasive thermometry, our SigmaVision® Advanced software package translates the MR images to map and visualize temperature, resulting in precise placement of the hyperthermic heating zone.

The combined systems meet the demand for a new universal connecting module that allows cancer centers to operate their pre-existing MRI devices with hyperthermia systems. The patient applicator fits most 1.5 Tesla MRI systems with 60 cm bore diameter and larger.



## COMBINED EFFICIENCY

### ► For the physician

Detailed, 3D information on temperature is displayed during hyperthermia treatment, with color-coded images available for review in real time.

### ► For the operator

The operator can steer the heat zone in the X, Y and Z axis by adjusting the frequency, phase and amplitude from multiple power sources. Energy can be focused electronically to the tumor region, thus providing dynamic control of the heating without repositioning the patient.

### ► For the patient

Patients benefit from safer and more convenient treatment, since hot spots are detected at a very early stage, as well as from the absence of invasive catheters.

### ► Increased workflow

The treatment lasts approximately 60 minutes inside the MR system. Temperature images are taken without interrupting the treatment.



## BSD-2000 3D / MRI

The BSD-2000 3D / MR system runs at 100 MHz providing deep regional hyperthermia to any depth in the body. The applicator is capable of treating up to 95 percentile patient size based on available world data. The complete Sigma Eye / MR package includes a Dodek RF amplifier positioned in the equipment room, the Sigma Eye / MR applicator, a water circulation system, a motor-controlled temperature box to verify thermal accuracy during treatment, and a computer system with control software.

- Integration with 1.5 Tesla, 60 cm bore (or greater) MRI systems
- Thermometry: Eight (8) ports for thermistor type sensors, motorized thermal mapping, sensor simulator and thermal probe calibration well
- Annular Array 12 channel Universal applicator with 24 dipole antenna (8 dipoles per annular ring x 3 rings) to provide 3D electronic focus steering
- Generator: 100 MHz / 0–150 Watts per channel / 12 Channels (RF shielding required).
- External Water Heating / Chilling / Circulation System
- Treatment Planning & Control Software



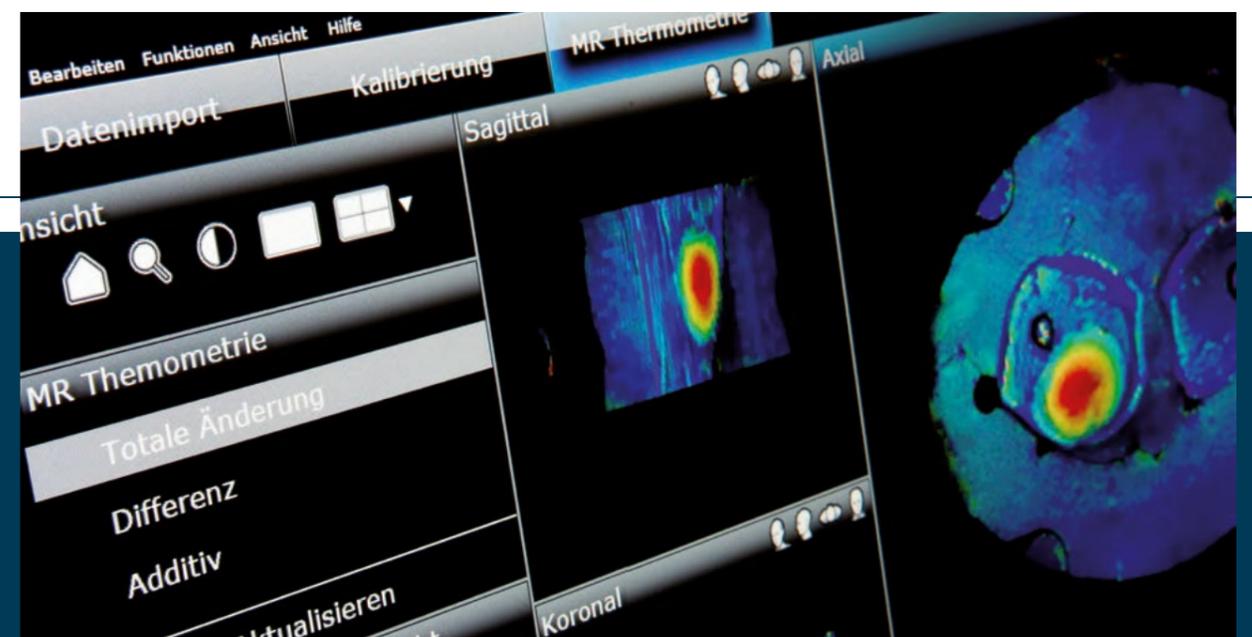
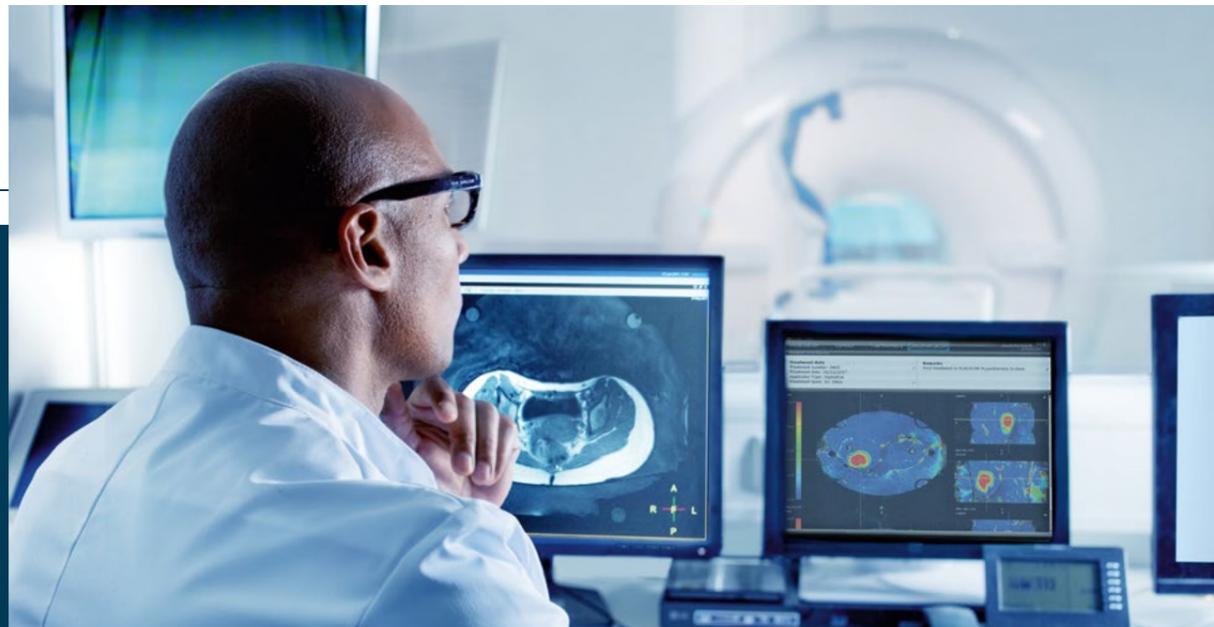
## THE SOFTWARE FOR IMAGE-GUIDED HYBRID HYPERTHERMIA

MRI SigmaVision® Advanced creates a visual image of the hybrid hyperthermia: the combination of hyperthermia and the MRI system provides a non-invasive, three-dimensional temperature image throughout the course of the treatment, leading to optimized therapeutic results. The software offers ergonomic, intuitive operating control with comprehensive, tried-and-tested plausibility checks.

The functional structure of SigmaVision® Advanced results from long-standing, interdisciplinary research findings, as well as clinical studies and user surveys.

## FEATURES AT A GLANCE

- ▶ **Non-invasive thermometry**
- ▶ **3D temperature monitoring in real time**
- ▶ **Advanced documentation features**
- ▶ **Treatment recall at a fingertip**



## DR. SENNEWALD MEDIZINTECHNIK GMBH

Dr. Sennewald Medizintechnik was founded with the aim of discovering innovative and beneficial cancer therapies and we have since amassed over 30 years of experience in regional and local hyperthermia. Our aim is to help improve the range of products on offer, to support the growth of this proven technology and so increase the survival rate among cancer patients.

To help us achieve this goal, we have entered into a long-term partnership with the pioneers and world leaders, Pyrexar Medical, to further develop the manufacture of hyperthermia systems. These high-quality medical devices are designed for maximum efficacy combined with minimum risk for greater patient comfort and are installed in oncology departments, research organizations and leading universities throughout Europe.

Our unrivaled links to the scientific community have led to the acceptance of hyperthermia, the development of dedicated software, reimbursement of hyperthermia and its use in the treatment of children. Strategic partnerships with medical centers have resulted in phase III clinical studies demonstrating that Pyrexar systems offer a significant increase in cancer response rates, and are the only ones to have received FDA approval.

The success of Dr. Sennewald Medizintechnik GmbH is a result of continuity. We are able to draw on our many years of experience for our in-depth knowledge of customers' clinical requirements and of the precise technical specifications for all the hyperthermia systems we offer. In addition, our teams of engineers, technicians and software developers remain as close to customers as possible, offering support in the planning, installation and set-up of the systems, as well as after-sales service.

One example of this is Ludwig-Maximilians University (LMU) of Munich, Germany, which has installed a new image-guided hyperthermia system at Großhadern University Hospital. A pioneer in cancer treatment with hyperthermia, the hospital has carried out over 15,000 patient treatments using this method, many of whom had soft tissue sarcoma tumors.

The facility was leading a phase III clinical study which illuminated the long-term survival benefits of adding hyperthermia to chemotherapy and LMU is also at the center of the HEAT (Hyperthermia European Adjuvant Trial) study, a randomized, dual-arm trial for pancreatic cancer using chemotherapy plus hyperthermia.



### ► INTERNATIONAL SALES:

Martin Wadepohl  
Phone: +49 89 542143-10  
martin.wadepohl@sennewald.de

### ► SALES:

Dirk Lutter  
Phone: +49 89 542143-0  
dirk.lutter@sennewald.de

### ► MARKETING DIRECTOR:

Monica Sennewald  
Phone: +49 89 542143-0  
monica.sennewald@sennewald.de

### ► OUR ADDRESS:

Dr. Sennewald Medizintechnik GmbH  
Schatzbogen 86  
81829 Munich  
Germany

[www.sennewald.de](http://www.sennewald.de)

