Our Company and Our Products

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In 1973, Dr. Paul Blachly at Oregon Health Sciences University produced the first monitored (EEG/ECG), brief pulse ECT devices - MECTA C and D, which captured the market for 13 years without a peer.

In 1985, research at Columbia University was implemented into the third generation MECTA SR and JR, the first digital devices that utilized the first Right Unilateral ECT, multiple dosing schemes and titration.

In 1998, controlled research from Duke University was integrated into the current MECTA spECTrum 5000 and 4000 devices, the first EEG Data Analysis* feature.

In 2003 the spECTrum ULTRABRIEF© ECT was developed from research at Columbia University and implemented into the spECTrum devices. This feature dramatically reduces cognitive effects.

*Duke US Patent #5,626,627
*Duke UK Patent #2 304 196 B
• The spECTrum 5000 and 4000 were introduced in 1997 and are currently the top-selling ECT devices worldwide, with sales to leading research universities, government health agencies, and public and private hospitals.

• In 2011, Optimized ECT©2011 was introduced based on research from Columbia University, ensuring robust efficacy and lower amnestic effects. MECTA also released the Optimized Titration Tables©2011 based on age, sex and gender for further optimization.

• The spECTrum was and continues to be the only digital ECT device with five processors providing data, monitoring and database capabilities. This technology has eclipsed all other ECT devices worldwide.
International Market

- The MECTA spECTrum is the only ECT device with 21 regulatory agency approvals worldwide.
- MECTA is the largest ECT device manufacturer with a global market of over 100 countries.
- MECTA provides the most advanced Electroconvulsive Therapy Devices to Mental Health Care providers worldwide.
- MECTA conducts research with the most respected universities in the area of Brain Stimulation in order to consistently implement upgrades to MECTA devices as required to meet current and future clinical recommendations.

**MECTA’s Worldwide Markets:**

- USA, Canada and Mexico
- Western Europe (25 countries)
- Eastern Europe (7 countries)
- Middle East (14 countries)
- Africa (10 countries)
- Australia, Fiji, New Caledonia and New Zealand
- Asia (22 countries)
- South and Central America (18 countries)
spECTrum: The Newest Digital ECT Technology

• The 5000Q and 5000M model devices offer up to five channels of ECG and EEG monitoring, and one Optical Motion Sensor, (the 4000Q and 4000M devices are simply the 5000 devices without physiological monitoring capability).

• The 5000Q and 4000Q units offer the user flexibility with four stimulus parameter knobs to control Energy and Charge.

• The 5000M and 4000M units offer simplicity, with one single Stimulus Intensity knob. This varies Frequency and Duration simultaneously, to control Energy and Charge.

• Each spECTrum device is custom manufactured to user specifications according to the options selected.
Standard Evidence-Based Features

Optimized Titration©2011 and Pre-Selected Dosing Tables©2011 - MECTA introduced the first titration tables in 1983 based on research from Columbia University, and now has introduced the third generation of titration tables in 2011 for Optimized ECT©2011. They offer both Titration and Pre-Selected Dosing Tables. These are the most accurate and up to date tables, taking into account gender, age and electrode placement.

In the Full spECTrum Dosing Parameter Set, the 0.3 ms pulse width can be utilized with a range of current from 500 mA to 900 mA. Optimized Ultrabrief ECT (0.3 ms) is available as an upgrade to your current Ultrabrief ECT (0.3 ms) parameter set. Ultrabrief ECT©2003 was designed and tested at Columbia University in the late 1990s, and it was introduced as a feature into MECTA spECTrum ECT devices in July of 2003.

Existing spECTrum devices may be upgraded to include these important new clinical upgrades.
Standard Digital Features

**LCD Touchscreen** - Designed with five microcontrollers and microprocessors, this feature allows the user to easily and quickly access up to nine set-up menus to individualize each treatment. The spECTrum 5000 is the only device with this feature.

**Visual Patient Impedance Display** - Allows the user to see if they are within the range of 100 to 5,000 ohm in order to treat during the self test portion of the treatment. This virtually ensures successful treatments without missed or aborted seizures.

**EEG Leads Off Indicator** - alerts you if the monitoring leads are disconnected or if there is poor patient electrode application. The trace will disappear and a restore button appears ensuring you can make corrections before treatment.
**Menu Selections** - up to nine easy to use menu selections with optional parameter selection menus to view traces, gains, patient data and parameter selection.

**Chart Recorder** - provides you with a hard copy of the self-test and treatment results and also includes patient information and EEG Data Analysis results (optional). The printout provides your choice of two monitoring channels, showing elapsed time, timer, date, time of treatment, and patient data.
Up to six channels of monitoring – 4 EEG, 1 ECG and 1 Optical Motion Sensor – available on the spECTrum 5000 series, providing maximum monitoring capabilities for all ECT treatment requirements.
Optional Digital Features (cont’d)

**Optical Motion Sensor Channel** – Senses the motion of the motor seizure. Its benefit over EMG is that intra-muscular motor movements during a seizure can be monitored without the addition of extra electrode pads or gels. The user does not have to take considerable time to apply them to the patient. Our very simple OMS with its infrared detection is wrapped over the knuckle of a finger or toe with a Velcro closing and immediately the trace can be seen on the monitor **in real time** (saving of time & money) on the spECTrum 5000 Touch Screen.

**EEG Data Analysis*** – Provides seizure adequacy estimate helpful in improving the dosing of ECT treatments. Licensed exclusively to MECTA by Duke University.

This elegant database allows organization and analysis of ECT treatment data. It provides a platform for data to be shared in a consistent format.

- **REPLACES** RMS and RMS MANAGER and digitizes patient medical records. All saved information currently on RMS MANAGER can be imported into MECTA’s new EMR software.
- Seamlessly records and stores patient data as a .pdf file on a laptop/desktop, hospital server, or hospital Electronic Health Record.
- Utilizes automatically generated reports with templates that allow you to save up to 4000 characters.
- Saves EEG, ECG and OMS traces and exports them into a .pdf, text file, or spreadsheets for further analysis.
- Merges, imports, exports, queries, backs up, restores and prints up to 700 data points in clinicians’ offices for review.

*EMR currently only available in certain countries.*
Introduced in 2011, and based on research from Columbia University, Optimized ECT offers spECTrum users **Four New Parameter sets**. The first three Optimized Dosing menu options offer 0.3, 0.5, 1.0 millisecond pulse width dosing. These lower pulse widths result in far less cognitive effects.

In the Full spECTrum Dosing Parameter Set, the spECTrum 5000Q and 4000Q are the **only** devices with flexibility and choice of current from 500 mA to 900 mA, as there is speculation that titration in the current domain may refine stimulus properties.
On all MECTA spECTrum models and in all Optimized and Full spECTrum Dosing Parameter Sets, the range of train duration is now less than 0.5 and up to 8 seconds, resulting in greater efficacy. At longer pulse widths (0.5 ms and 1.0 ms), maximum device output is achieved at lower pulse frequencies.

Current is fixed at 800 mA in the Optimized Dosing Parameter Sets reflecting the vast body of clinical research on the efficacy of 800 mA.

Treating with Ultrabrief Right Unilateral ECT (UB RUL) achieves cognitive effects that are dramatically minimized while maximizing efficacy. Can be utilized with any forms of ECT: Ultrabrief, Near Ultrabrief, or Brief Pulse.
Duke University EEG Data Analysis

- Developed by Duke University and licensed exclusively to MECTA, the EEG Data Analysis has the only clinically-studied seizure quality index for assisting the doctor in dosing and seizure quality determination. Seizure adequacy provides an estimation of likelihood that the ECT stimulation was sufficiently intense for efficacy.

- EEG Data Analysis performed best against expert EEG raters than other seizure quality measures on competitive systems (Krystal, Weiner. ECT Seizure Duration: Reliability of Manual and Computer-Automated Determinations, 1995).

- EEG Data Analysis is the only optimally combined and weighted multivariate combination of ictal EEG indices to identify treatment response. These include time to the onset of high amplitude slow waves, several measures of seizure amplitude, and two measures of post-ictal suppression. Age, electrodes placement and treatment number are important variables factored into the result for increased accuracy.
Third Generation 2008 spECTrum Hand-Held Electrodes With Remote

Designed with a single molded handle and flange and are light weight, waterproof and easy to clean.

*Dual Hand-Held Electrodes with Remote* deliver the ECT stimulus by pressing a button on the handle (front panel button is deactivated when using remote). They replace costly stick-on electrode pads, and are flexible for treating both unilaterally and bilaterally.

*Single Hand-Held Electrode with Remote* are used with one concave and one flat stimulus electrodes, and the clinician is able to initiate the treatment using the remote button (front panel button is deactivated when using).
Third Generation 2008 spECTrum Hand-Held Electrodes Without Remote

*Dual Hand-Held Electrodes without Remote* are for clinicians who prefer to initiate the stimulus from the button on the front of the spECTrum device.

*Single Hand-Held Electrode without Remote* offers the clinician the ability to initiate a unilateral stimulus from the button on the front of the device.
Safety and Efficacy of Treatments

- MECTA has extensive regulatory agency approvals worldwide: U.S. (UL); Canada (CSA (cUL), Health Canada-8 Approvals, #1537, #62578, #62576); European Union, TUV (EN ISO 13485:2012, EN ISO 13485:2012/AC:2012; CMDCAS ISO 13485:2003; EC 93/42/EEC Annex II, excluding Section 4); EN ISO 9001:2008; Korea (KFDA); China (SFDA); Taiwan (TFDA); Indonesia (MOH); Australia (TGA); New Zealand (WAND); Brazil (Inmetro); Mexico (Registro Sanitario); Colombia (INVIMA); Costa Rica (Registro Sanitario). The spECTrum was approved to IEC 60601-1:2012 Third Edition 60601-2-26:2012; 60601-2-27:2011; 60601-1-2:2007/AC 2010.
Safety and Efficacy of Treatments (cont’d)

- Exclusive Visual Patient Impedance Display.
- Establish a base-line recording prior to the stimulus by using the patented Timer feature.
- Latest in safe dosing parameters. High fixed doses may “aggravate cognitive side effects.” Use of age-based dosing may under or overdose patients.*" Optimized Titration Tables individualize treatment by minimizing cognitive effects while maximizing efficacy.
- High Impedance Shutdown, so there is no risk of patient burns.

Excellent Reputation and Customer Service

The spECTrum offers reliability in treating patients with higher seizure thresholds than the competition (101.4 joules / 576 mC for DOM or 202.8 joules / 1152 mC for INT).

MECTA Training and Educational Materials:

• Two Instruction Manuals (edited by researchers at Duke & Columbia Universities)
• Two Service Manuals (edited by researchers at Duke & Columbia Universities)
• One Textbook (APA Taskforce [available in Spanish] or Clinical Manual of ECT)
• One Technical DVD
Patients and Families Resources

**Electroconvulsive Therapy DVD**, produced by Dartmouth-Hitchcock Medical Center.


**Shock DVD**, Produced by AMS Production Group, Inc., 2007, is a documentary of the above book.

**Struck By Living, From Depression to Hope**, by Julie K. Hersh.

**Decidi Vivir, The Spanish Translation of Struck By Living**, by Julie K. Hersh.

**Undercurrents, A Life Beneath the Surface**, by Martha Manning.

**Will I Ever Be the Same Again? Transforming the Face of ECT**, by Carol A. Kivler.
Patients and Families Resources

Dr. Oz show about Electroconvulsive Therapy

Patients and Families Resources

Dartmouth Hitchcock video Electroconvulsive Therapy, *Treating Severe Depression*:
https://www.youtube.com/watch?v=-T0mwzXHgvl

A Light in the Darkness website:
http://ecttreatment.org/index.php

Julie Hersh’s Blog on Psychology Today:
https://www.psychologytoday.com/blog/struck-living

Carol A. Kivler’s website:
carolkivler.com
Summary: Why you should select a MECTA spECTrum ECT Device

- **The only ECT device** with a comprehensive database that automatically records the stimulus parameters and physiological traces at every treatment. **MECTA EMR®** (Electronic Medical Record) is an optional feature of the MECTA spECTrum. With minimal user input, it can save up to 700 data points at each treatment, as well as all physiological traces. Custom fields can be configured to collect information unique to each facility. The database can be searched, and the results printed or exported to common formats. **MECTA EMR®** comes with nine preconfigured reports that can be fully customized and automatically sent as PDFs to hospital medical record systems. The software also allows the LCD on the spECTrum to be mirrored on a laptop or large external displays.

- **The only ECT device** that allows a choice of current intensity (pulse amplitude). The MECTA spECTrum has the greatest range of stimulus parameters of any ECT device, allowing effective treatment of patients with low or high seizure threshold. The parameter ranges are: current (500-900 mA), pulse width (0.3-1.0 ms), frequency (20-120 Hz), and duration (0.5-8.0 s).
Summary: Why you should select a MECTA spECTrum ECT Device (cont’d)

- **The only ECT device** with the highest stimulus output. The MECTA spECTrum delivers up to 576 mC for domestic devices (U.S. and Canada) and 1,152 mC for international devices (all other countries). The competitor’s device has a maximum output of 504 mC (domestic) and 1,008 mC (international).

- **The only ECT device** with Optimized ECT© Settings. Using easy to use menu selections, practitioners can choose to treat with an ultrabrief pulse (0.3 ms), minimally brief pulse (0.5 ms), or full brief pulse (1.0 ms), all at 800 mA. These are the most common pulse widths used in ECT. Additionally, another menu option of Full spECTrum Dosing Parameters gives the experienced user total flexibility in selecting across the range of all 4 stimulus parameters, as long as the total charge does not exceed device maximum.

- **The only ECT device** with Optimized Titration and Dosing Tables for empirical determination of seizure threshold or formula-based dosing. Empirical titration is widely considered the optimal method for determining seizure threshold and subsequent dosing. Titration was introduced and validated at Columbia University with MECTA devices. For those who do not titrate, the competitor recommends setting the stimulus intensity relative to the age of the patient. MECTA offers a predetermined dosing method that accounts for age, gender and electrode placement, a more accurate method.
The only ECT device with automatic and continuous static impedance display. The MECTA spECTrum continuously displays the impedance of the ECT circuit. The competitor provides a one-time reading that requires a button press. This is a key clinical issue, as impedance can change drastically between a button press and stimulus delivery. Excess impedance can present a safety risk or result in ineffective treatment.

The only ECT device with an automatic safety impedance shutdown feature to ensure safety. If impedance is excessive during stimulation, the MECTA spECTrum automatically terminates the stimulus and alerts the user. The competitor’s device will not terminate and as a result the current intensity will be reduced to unknown, non-prescribed levels, potentially compromising treatment.

The only ECT device with Hand-Held Remote-Treat Electrodes. MECTA’s hand-held electrodes are robust, ergonomic, and reliable. They allow triggering the ECT stimulus from a button on an electrode, so that visual contact is maintained with the patient at all times. They can be used with any electrode placement and are especially useful with right unilateral ECT, which requires an electrode placement over hair. They are far more cost effective than the competitor’s disposable ECT electrodes, which may raise patient impedance.
Summary: Why you should select a MECTA spECTrum ECT Device (cont’d)

- **The only ECT device** with up to six channels of monitoring, including four EEG (or EMG), one ECG, one OMS (optical motion sensor for motor seizure duration).

- **The only ECT device** with physiological monitoring in real time on the LCD, external monitor display, and/or chart recorder.

- **The only ECT device** with 21 regulatory agency approvals worldwide.

- **The largest ECT device manufacturer** with a global market of over 100 countries. Our customer service support is available from 7 am – 4 pm Pacific Standard Time.
• For over forty years, **MECTA ECT** has advanced the highest standard of excellence in the area of Brain Stimulation.

• ECT continues to be the only neuromodulation modality providing up to an 80% response rate for endogenous depression.

• MECTA’s innovative device designs, which have been utilized worldwide, have resulted in optimized patient outcomes through **four generations of MECTA ECT devices**.

• MECTA is committed to minimizing all cognitive side effects to achieve focality in brain stimulation with the newest form of ECT, FEAST©2005*. FEAST is undergoing clinical trials at both MUSC in Charleston SC and AUB in Beirut, Lebanon. Other ongoing studies investigate the role of current intensity (pulse amplitude) to maximize patient outcomes.**

* FEAST US Patent #14/262,234
** Patent pending on electrical dose titration in the current domain
Contact us for more information, and to join our many satisfied customers around the world.

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