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The Future of Hypertension Treatment: Simple, Fast, and Beautiful

Karten Design designs a bold face for a revolutionary medical treatment

Los Angeles, Calif. — Vessix Vascular, a pre-revenue stage medical technology company, and product innovation consultancy Karten Design introduce the V² Renal Denervation System™ — a new device treatment for high blood pressure.

In as little as 30 seconds per artery, the Vessix V² System performs a one-time minimally invasive catheter-based percutaneous procedure shown to significantly reduce blood pressure.

This new technology has the potential to help the one in three adults in the United States who suffer from hypertensionⁱ — a condition more common than cancer, diabetes, and coronary artery disease combined. Today, anti-hypertensive drugs are the primary treatment for hypertension. But despite the widespread use of drugs, only about half of hypertensive patients around the world are well controlled, even when multiple medications are taken at optimal dosages. A change is now underway.

The V² System performs a new procedural treatment called renal denervation, which Dr. Mehmet Oz has called “a profound game changer.”ⁱⁱ It uses a short blast of radiofrequency (RF) energy to disable the nerves surrounding the arteries leading to the kidneys, treating one of the key physiological contributors to hypertension.

Vessix’s patented V² Catheter, a balloon catheter with a unique configuration of RF electrodes mounted on its exterior, makes this procedure faster and safer. It delivers precise temperature-controlled RF energy from the V² RF Generator to both renal arteries in 60 seconds, while the only other competitively marketed Renal Denervation system takes 50-60 minutes. The rapidity of the V²’s treatment promises to reduce patient discomfort as well as exposure to radiation for both the patient and the interventional cardiologist performing the procedure.

PRODUCT INNOVATION

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Vessix Vascular chose Karten Design, an award-winning product innovation consultancy with a 28-year history of commercializing new medical devices, to give physical form to its technology. Karten Design was tasked with creating a strong visual identity for the new company's products as it sought funding to test and commercialize its system.

"I wanted a design that immediately communicates that there's something new and exciting going on — even before I explain how the product works," said Vessix CEO Raymond Cohen. "The goal was to have the product look faster, sexier, and more advanced than any other piece of equipment found in the hospital."

Karten Design expressed all of the Vessix technology's advantages — its speed, its simplicity, as well as its benefits for the patient — in a beautiful design for the V² RF Generator that advances this future-forward technology toward commercialization.

"Our design effort was all about simplifying complexity," says Karten Design Principal Stuart Karten. "By expressing Vessix's technology in an elegant, easy-to-use product, we're making it relatable and giving it an identity that people can connect with. This is just as important with medical devices as it is with consumer technology, if not more so because the stakes are so high."

Design Innovation

To ensure the system's design supports the physician's natural workflow in the catheterization lab, Karten Design worked with Vessix during the early phases of product definition, visiting hospital cath labs and interviewing doctors to determine the system's ideal usage. Karten Design researchers and designers learned about the human factors surrounding a catheter-based procedure, including visibility, access, and sterility. Resulting design innovations include:

- **Flexible Configuration:** Designers considered a configuration that would support the broadest range of cath labs in the US and the rest of the world. To allow doctors the flexibility to move the V² Generator from room to room, Karten Design designed the generator head to mount on a wheeled cart. Locking wheels keep the machine in place once treatment has begun.
- **Form:** Because the generator would never have to sit on a table, it didn't need a flat bottom. The sweeping, parabolic enclosure, without back or bottom, is designed to be beautiful at every angle; all 360 degrees of the product reflect the same high-quality finish and attention to detail. Cantilevered beyond the cart pole, the RF Generator appears to be hovering—an effect that adds to the device's intrigue.

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- **Materials:** A new palette of materials suggests consumer electronics more than hospital equipment. Made from CNC-machined aluminum, the generator is designed to take advantage of the manufacturing process to achieve stunning details, such as the interlocking diamond texture of the device's side housings.
- **Graphic User Interface:** To gain traction with busy physicians, the system needed to be easy to learn and use. Karten Design built a custom graphic user interface from the ground-up to reinforce the simplicity of the 30-second procedure. The user interface is minimal, consisting of one control button. The brilliant, full-color, iPad-inspired display screen visualizes what's happening during the procedure. It displays only critical, actionable information. Before the treatment is initiated, it confirms when catheter electrodes are optimally positioned and prompts the user to deliver therapy. After the therapy is performed the display summarizes relevant information for reporting.

Vessix made its first public presentation of the new V² Renal Denervation System at LINC 2012 in Leipzig, Germany on January 26, 2012. Vessix has already begun a 64-patient human clinical in February in Europe.

About Vessix Vascular, Inc.

Vessix, founded in 2003, is a privately held pre-revenue stage company developing novel radiofrequency balloon catheter technology. The Company is backed by world-class venture capital investors including NeoMed Management, Edmond de Rothschild, OrbiMed Advisors and Fjord Ventures. For more information on Vessix Vascular, please visit the Company's website at www.vessixvascular.com.

About Karten Design

Karten Design is an award-winning product innovation consultancy that believes in creating positive experiences between people and products. Inspired by consumers' needs and desires, Karten Design works with leading companies to create differentiated products that build strong brands. The firm has been Connecting Creativity with Commerce™ for more than 28 years with a collaborative approach to innovation that integrates Design Strategy and Research, Industrial Design and Mechanical Engineering.

ⁱ U.S. Center for Disease Control and Prevention, 2007-2008

ⁱⁱ Oz, M. (2012, January 9). Pressure relief. *Time*, 179(1).