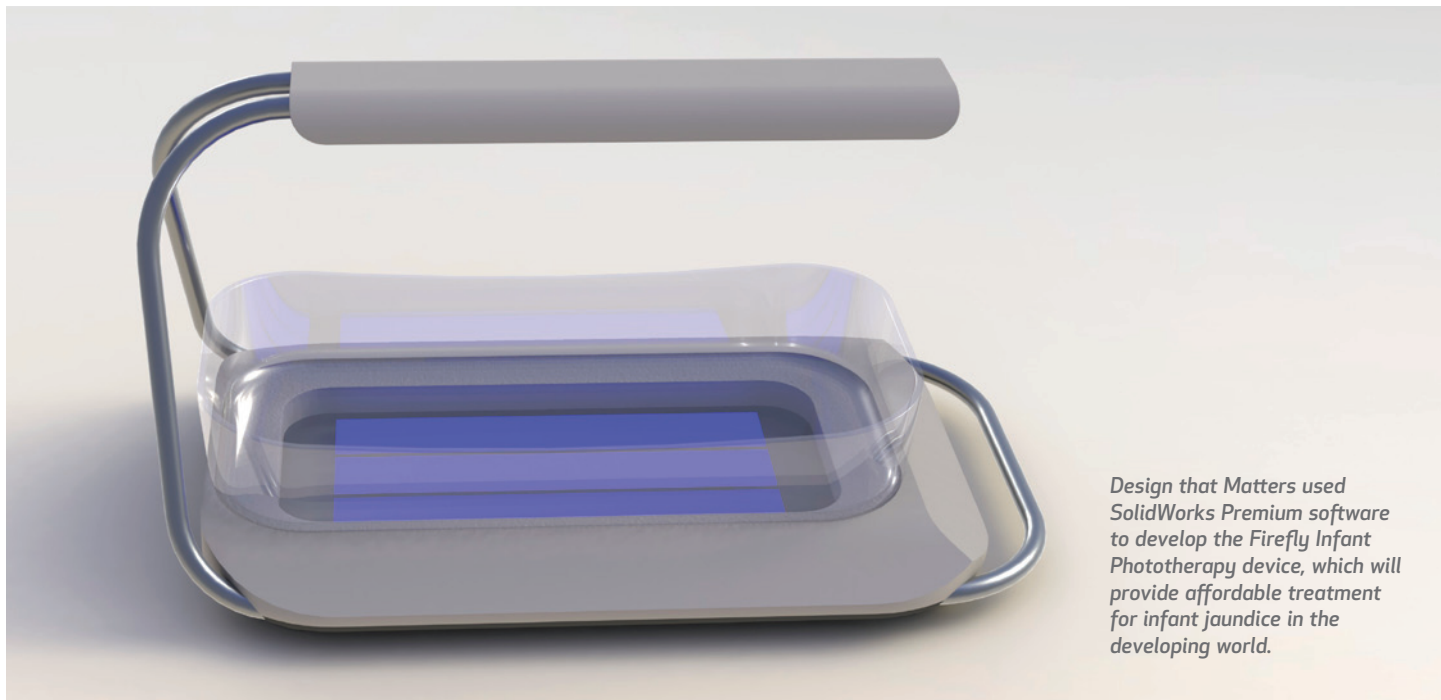


DESIGN THAT MATTERS, INC.

Helping doctors work to save infant lives in the developing world with SolidWorks



Design that Matters used SolidWorks Premium software to develop the Firefly Infant Phototherapy device, which will provide affordable treatment for infant jaundice in the developing world.

More than four million babies in the developing world die within a month of birth every year. Many other newborns suffering from jaundice caused by hyperbilirubinemia will develop permanent, long-term disabilities because the condition goes untreated. Providing access to effective, affordable treatments could save many infant lives and prevent countless medical problems for people in poor, rural communities.

Addressing these issues is the mission of Design that Matters, Inc., a nonprofit corporation founded by graduate students at the Massachusetts Institute of Technology (MIT). The founders believe that leveraging design innovation and technology to provide breakthrough solutions to social needs in the developing world produces a *design that matters*.

This design studio of socially conscious engineers strives to serve as a catalyst for the creation of new tools and concepts to better meet basic needs in developing countries. Working with partners, volunteers, and academia, Design that Matters brings the talents of student designers together with professional volunteers to develop innovative product concepts. Having access to advanced 3D design tools is vital for the organization's success, according to Designer Will Harris, IDSA.

"Recognizing where the problems are is only the beginning," Harris explains. "Coming up with breakthrough solutions that not only address a problem, but also account for the economic and manufacturing realities in developing countries, is the challenge. As a nonprofit organization, we have limited resources and need a 3D design solution that allows us to quickly design, simulate, render, and prototype new solutions to unique problems."

Design that Matters chose SolidWorks® Premium 3D design and simulation software to support its development efforts because it is easy to use; is very popular with the group's student contributors; and provides a complete range of design, simulation, and rendering tools. The group also uses 3DVIA Composer™ technical communications software—in concert with the 3DVIA Composer Player—to demonstrate design concepts to advisors, such as doctors, in developing countries.

Challenge:

Develop innovative products that improve social services in developing countries quickly and cost-effectively.

Solution:

Implement SolidWorks Premium and 3DVIA Composer software to accelerate design and improve concept visualization.

Results:

- Accelerated concept development
- Improved ability to communicate design concepts visually
- Cut cost of phototherapy treatment unit from \$7,000 to \$350
- Helped doctors work to save infant lives in the developing world

"With SolidWorks, we have a single, efficient tool for both creating innovative industrial designs and evaluating the practical, engineering aspects of new concepts," Harris says.

An incubator made from car parts

SolidWorks helped Design that Matters accelerate the development of the NeoNurture incubator, which is manufactured from locally available automobile replacement parts. With access to a warm, clean, affordable environment, half of the four million infants in the developing world who die within a month of birth would survive. *Time* magazine selected the NeoNurture incubator as one of the "Top 50 Inventions of 2010."

"Using SolidWorks, we were able to realize our goals of creating an affordable newborn incubator for the developing world that takes advantage of locally available replacement parts, the familiar mechanical language of automobile design, and the globe-spanning auto industry supply chain," Harris notes.

Affordable treatment for jaundiced babies

The Firefly Infant Phototherapy device will soon provide an affordable treatment to the 60 percent of newborns who suffer from jaundice. Phototherapy—immersion in ultraviolet light—is the most effective treatment for infant jaundice, but commercially available units cost around \$7,000, which is beyond the economic reach of most small hospitals in developing countries.

Harris used SolidWorks Premium software to accelerate development of the device, which costs about \$350 to manufacture. "SolidWorks enabled us to come out with a series of concepts for the Firefly incredibly quickly," Harris recalls. "We used the software's simulation tools for stress testing and to analyze heat distribution, which are important factors because of the large number of LEDs involved. We're about to begin production, with assembly taking place in Vietnam, and will soon provide an affordable solution to a pressing need."

Seeing is believing

By using SolidWorks solutions, Design that Matters was able to develop photorealistic renderings with the PhotoView 360 rendering tool and exploded view assembly instructions with 3DVIA Composer software. The ability to provide high-quality visuals of the concept was vital for soliciting feedback from and acceptance by physicians in Vietnam.

"We are dealing with a different language, culture, and financial understanding," Harris stresses. "The only way to overcome these barriers is visually. A photorealistic rendering is the next best thing to putting the device in their hands, and with PhotoView 360, we are able to demonstrate the look and feel of concepts from the other side of the world. These visualization tools were critically important to the success of the project."

"WITH SOLIDWORKS, WE HAVE A SINGLE, EFFICIENT TOOL FOR BOTH CREATING INNOVATIVE INDUSTRIAL DESIGNS AND EVALUATING THE PRACTICAL, ENGINEERING ASPECTS OF NEW CONCEPTS."

Will Harris, IDSA
Designer



With SolidWorks simulation tools, Design that Matters optimized the Firefly design by analyzing stress and heat distribution related to the large number of LEDs involved.



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