Electrogenics Labs improves *patient care* in radiation therapy with MOSkin™

Capgemini supports the development of the MOSkin™ integrated system to ensure accurate radiation dose verification

In a bid to assist cancer treatment around the world, Electrogenics Labs and Capgemini developed the MOSkin™ integrated system, which helps medical specialists accurately manage dosage delivery without the drawbacks of other common approaches.

Client: Electrogenics Labs

Region: Australia

Industry: Life Sciences

Client challenge:

Recognizing that accurate radiotherapy dosage is critical to effective cancer treatment, Electrogenics Labs wanted to develop an intelligent measurement system that would be faster and more comfortable for patients.

Solution:

In coordination with Capgemini, the organization developed the MOSkin™ Radiation Dosimetry System, which consists of a Sensor, Hub reader , and iPad, to simplify measurements for accurate and safe real-time in-vivo dosimetry.

Benefits:

- Real-time in-vivo dosimetry
- Simple and intuitive UX for clinicians
- Increased comfort for patients
- Compatible with hospital systems

A pressing need for better radiotherapy dosimetry

Worldwide, 20 million patients are diagnosed with cancer every year. Over half are recommended radiotherapy, which is administered in most cases by Linear Accelerators (LINACs). Given the volume of cases needing support, ensuring the LINAC's output accuracy is paramount. This involves complex quality assurance procedures, typically through in-vivo dosimetry, using tools like Thermoluminescent Dosimeters (TLDs) or diodes.

But despite their common use, these tools carry significant drawbacks.

TLDs are robust but slow, requiring up to 24 hours for result processing and complex processing equipment and methods that make them prone to human error and costly for healthcare providers. Meanwhile, diodes provide immediate results but pose their own problems: they require a patient to wear uncomfortable cables during treatment, lack accuracy in skin dose measurements, and are incompatible with specific immobilization devices. Each of these tools requires regular quality assurance checks and adds to operational expenses.

For radiation therapy to be both effective and safe, clinicians must ensure accurate dosage delivery to the correct location for each patient, every time. Underdosing can lead to reduced tumor control and recurrence while overdosing can result in radiation toxicity and skin burns that require skin grafts.

This means that patients and healthcare professionals need a precise, easy-to-use method to measure dosing. And, in light of the global scale of radiation treatment, it's a challenge that cannot wait.

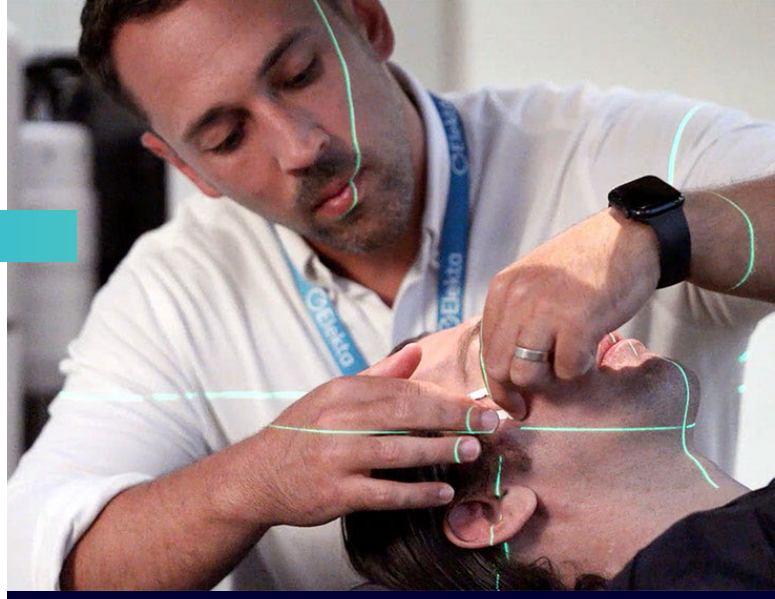
A cohesive solution

Recognizing this need, Electrogenics Labs set out to transform medical radiation therapy on a global scale. This would require multiple components that needed to be intelligently linked together. Acknowledging the technical expertise needed for such an initiative, Electrogenics Labs engaged Capgemini to lead the development of a suitable solution.

The project team began the development process with in-depth research to define the system's conceptual direction. The first goal was to create a consistent design language - a set of principles, guidelines, and visual elements to define the overall look, feel, and UX of the solution. This ensured consistency across different platform elements and the overall experience.

With an eye on both quality and affordability, Capgemini focused on making the system easy to use and operate. The project team also optimized the design for manufacturing, ensuring simple assembly and cost efficiency for large-scale production, which were key to making the solution scalable.

The result is an integrated system consisting of the MOSkin™ Sensor, Hub, and Reader, which together deliver unparalleled quality assurance.



Safe, effective, and efficient radiation treatment

MOSkin™ Sensor is a single-use device adhered to the patient's skin, where it captures the cumulative radiation skin dose over the duration of the treatment. Embedded within a polyamide medium, this sensor is robust, environment-protected, and capable of real-time in-vivo dosimetry without interfering with the treatment process.

Sensors connect to MOSkin™ Hub, a self-powered, wireless device capable of activating and syncing up to four sensors simultaneously. It reads collected information and relays it to the MOSkin™ Reader, an iPad application that displays the patients' radiation measurements, for clinical review. The Reader also assigns unique identifiers and placement locations to every sensor for each patient. This application also offers seamless navigation through setup, patient management, and data capture sequences.

The collective functionality of these elements ensures an effective and efficient radiation treatment process. Altogether, the MOSkin™ integrated system increases patients' safety and comfort, integrates fully with hospital systems, and enables clinicians to effectively monitor and manage radiation dosage, ensuring optimal patient outcomes.

The system has since received FDA 510(k) clearance. Electrogenics Labs can now work to distribute MOSkin™ throughout the USA, where it will make cancer treatment easier and more reliable.

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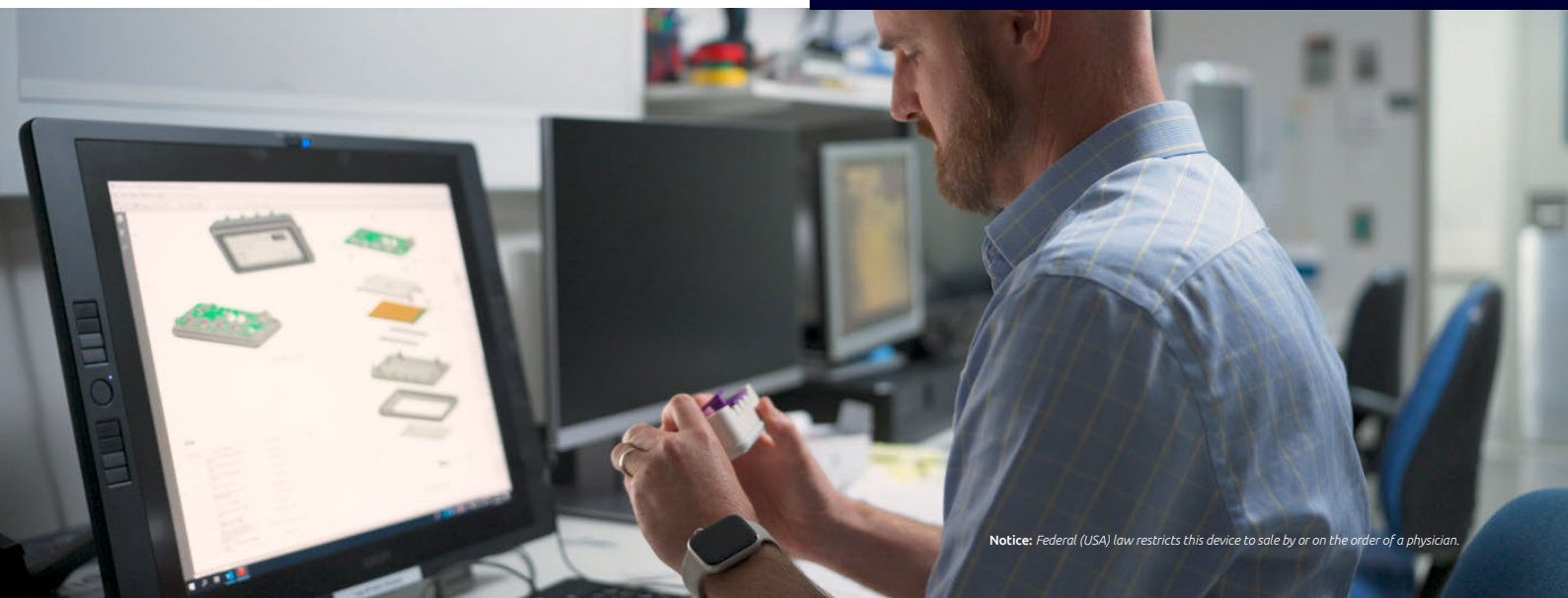
– David Jones, Vice President
Head of Product & Systems Engineering
Capgemini Engineering Australia



Notice: *Federal (USA) law restricts this device to sale by or on the order of a physician.*

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