

Interlink Electronics & Medical Device Manufacturer

INVENTIVE MEDICINE

BACKGROUND

A leading producer of oncology systems approached Interlink to produce a force-sensing system that could detect collisions between a radiotherapy machine and a patient or other equipment during treatments.

CHALLENGES

As the system was developed for medical use, it was rigorously tested by the client to ensure it would meet FDA standards. Interlink worked closely with the company's team in modifying its rugged Force Resisting Sensors to meet health and operational requirements.



EXECUTIVE SUMMARY

- A leading oncology device maker needed a collision detector for its radiotherapy machines.
- Interlink's rugged FSRs proved a good match due to their durability, resistance to radiation, and lack of influence on any other mechanism.
- The Interlink team worked closely with the client, who extensively tested the application before adoption.
- The client received the sensing solution so enthusiastically that it has continued to use our device for nearly 30 years.
- It has also been adopted by other segment leaders.

Patients undergoing radiotherapy are often treated using linear accelerators, which generate high-intensity beams of electrons (or other subatomic particles) to bombard cancer cells—destroying their genetic makeup. In order to attack the abnormal tissue from the most effective angle, the head of the machine rotates freely. However, movement introduces the risk that part of the machine will accidentally strike something—a problem especially endemic to the electron applicator subassembly that juts out from the head of the device. To avoid damaging machinery, striking the patient, or misaligning the beam if the patient moves, the device needed a custom sensor solution that would rise to medical standards.

Optical sensors could not offer a complete solution because the machine moves so much, and ultrasound could interfere with the therapy, so Interlink's team of engineers created a custom force sensor that fits within a rubber housing surrounding the end of the subassembly. When any part of the endpiece touches another object, the embedded sensor immediately stops the machine and alerts the operator. While the solution was relatively straightforward, it had to meet the rigorous requirements placed on medical devices. After all, it would be routinely exposed to radiation and could not be prone to unintended activations. Additionally, the subassembly itself had to be made from surgical-grade steel.

Since then, we have remained the company's sole supplier of these sensors, which have been used on their machines for nearly 30 years. In time, other major players in the market also adopted Interlink as a sensor supplier for their own linear accelerators.