



NOVELIC x  firefly

CASE STUDY

Powering
seamless smart
lighting control
with **human
presence
detection** for
Firefly

THE CLIENT

Firefly is a Netherlands-based provider of smart lighting solutions for offices, warehouses and exterior installations. Their flagship product, the **Smart Fly**, was created as a fully wireless, plug and play module for both new and existing lighting systems, designed to seamlessly integrate into modern smart building environments.

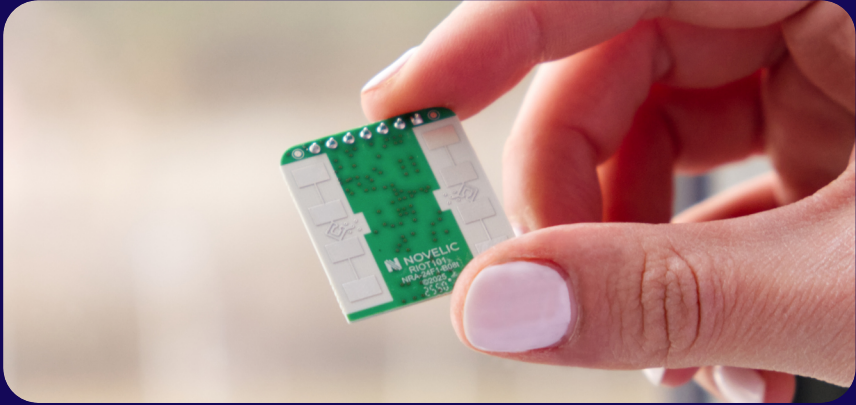
Firefly places a strong focus on **precommissioning**. Every module, including the human presence sensor, is delivered fully configured before it reaches the site. This approach bridges the gap between advanced technology being ready, customers wanting intelligent control and installers not having the time or skills to program complex smart building systems. **The result is a system that installs 4x faster and requires zero technical setup on site.**

THE CHALLENGE

In order to maximize power savings, a smart lighting system ideally needs reliable presence detection, without inconveniencing the occupants. Passive infrared, or PIR sensors, are commonly used to detect motion and presence, but their performance leaves a lot to be desired. In offices or hotel rooms equipped with PIR sensors, it is not uncommon for lights to turn off because the occupants are sitting still, and the sensors stop recognizing their presence.

In addition, PIR sensors often have issues with false positives due to AC units, temperature changes, or strong wind. Firefly wanted to create a modern, sleek and compact module that could be integrated into light fixtures and other installations, while providing the best possible presence detection.

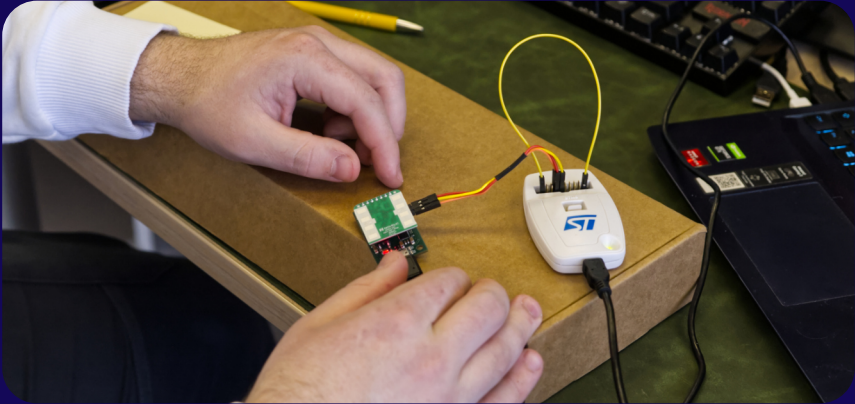
THE SOLUTION



NOVELIC's RIOT100 human presence detection sensor uses a more robust **mmWave radar technology** – being able to detect people even if they are not moving. The module houses the sensor MMIC, antenna and processing chip on a 30x30mm PCB, which is easily integrated into compact IoT modules.

Off-the-shelf radar presence sensors are usually not fit for both indoor and outdoor applications, or require a complex setup procedure for optimal performance.

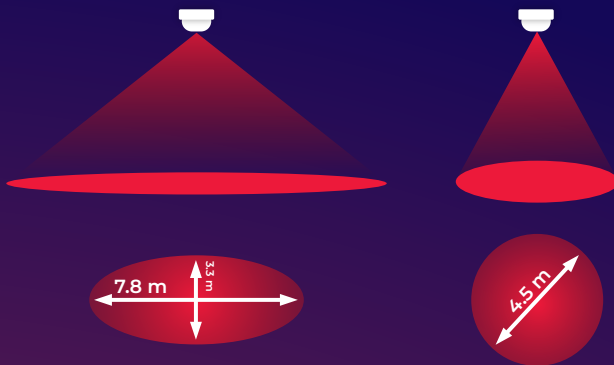
NOVELIC's engineers worked with the Firefly team to tweak the algorithms for the desired application scenarios, giving Firefly a degree of flexibility in development and integration typically not afforded by off-the-shelf sensor vendors.



“We were looking for a company that was able to supply us with a sensor component that we’d be able to combine with our own PCB, giving us extra control over what the sensor does – when it works, when it doesn’t work, when it starts, when it stops.”

Frank Visser

Founder & CEO, Firefly



NOVELIC and Firefly designed two variants for the presence-sensing module: one with an oval detection area, for spaces like office corridors or warehouse aisles, and one with a more even, circular detection area, for more open areas, such as office floors or storage spaces.

Firefly wanted Smart Fly to be as “plug-and-play” as possible, so that technicians could easily be trained to install them in large buildings and stadiums. The precommissioned modules are interconnected via a mesh and/or LTE-M network, and a mobile app is used to control building automation flows with inputs from the sensor units. NOVELIC’s sensor board performs all the necessary radar data processing, outputting a binary presence/motion indicator, as well as distance data for targets up to 20 meters.

This enables easy integration into the Smart Fly module, which handles power, connectivity, and interaction with the various building automation systems and communication protocols, as required by customers.



Firefly's Smart Fly sensor, along with their Smart BMS (building management system), has already been installed in buildings such as The Hague City Hall, the Inholland University of Applied Sciences, Nike's corporate offices in Hilversum, North Holland, and other buildings across Europe. Sensor-driven automation enables all these spaces to have energy-efficient and low-maintenance lighting systems that will provide savings and convenience for the owners and occupants for years to come.



“The team from NOVELIC was extremely helpful. We needed to fine-tune the algorithms together, and immediately, when we ran into some issues, they flew in their people, and together with our hardware engineers, resolved them quite quickly.”

Frank Visser

Founder & CEO, Firefly

RESULTS



RELIABLE,
PLUG-AND-PLAY
PRESENCE
DETECTION



4X FASTER
INSTALLATION
TIMES



A CUSTOMIZED
INDUSTRY
SOLUTION

