

The Trackwear Sensor consists of a battery powered transmitter and a ‘wear sensing circuit’. The main component of the wear sensing circuit is a flexible strip protruding from one side of the PCB. Embedded in this flexible strip are three (3) copper traces that when broken, indicate a specific threshold of wear based on the model of link the sensor is installed in. This level of wear is then communicated in advertisement packets via Bluetooth to a receiver on the machine.

Caterpillar has spent considerable time and effort designing new track links to accommodate these integrated sensors and validating the completed design. When this program was launched, the intended application was one particular track link model. However, as the program matured, new opportunities to incorporate this technology into additional link models arose. We planned to address this by varying the length of the flexible strip and/or by varying the length of the copper traces on this flexible strip.

Due to the large number of tractor models and the fact that each model has a unique track link model, there is a need for multiple variations of the same Trackwear Sensor. Caterpillar considered applying for a Modular Certification, but it was determined that the design of our component would have to change significantly. At this stage of the program, any significant changes would invalidate years of validation/testing and quite possibly, drive the redesign of many of our track links. Caterpillar has determined that every tractor model and associated track link configuration can be captured with three (3) different configurations of the sensor itself. The extent of these different configurations would be the length of the flexible tail used to determine the level of wear. For each track link configuration, a different flexible tail length will be required. This of course will require the need for three (3) unique track link models and Caterpillar is seeking to gain a single certification that will encompass these three (3) track link models.