



## Wessex Leaf-Fall Track Circuit Solution

### The Challenge

Since the roll-out of remote condition monitoring in 2016, the Wessex route had seen an increased number of Wrong Side Failures (WSF) being identified. A WSF is where the track circuit fails but incorrectly indicates the section is clear and safe to continue running trains. The team were facing a challenge with the reliability of old units and the equipment becoming obsolete.

TCAIDs are not new to the railway however, the older versions used analogue electronic components that made them prone to triggering Right Side Failures (RSF). An RSF is where the track circuit fails correctly and stops the passage of trains. So the question was raised about their reliability as they created as many RSFs as the WSFs they prevented.

Based on this information, TCAIDs had been phased out on the Wessex route, with other forms of mitigation such as vegetation management and seasonal treatments being utilised, but these methods didn't improve the situation and failures would still occur due to leaf fall.

### The Solution

Due to the old version of TCAIDs becoming obsolete, the route services team worked with Unipart Rail to re-engineer the equipment by removing the older, unreliable circuitry and replacing it with digital components that provide far greater resilience.

This updated version was trialed during the 2019/20 leaf fall season with around 40 new units being installed across the Wessex route which was a success. As a result, a full scale roll-out was planned for 2020/21 and 650 upgraded units were installed ready for autumn 2020 with a particular focus on sites that are known to be at higher risk of track circuit failures.

This roll-out proved a great success with no RSFs reported in this period on TCAID fitted track and an estimated 43 WSFs had been prevented.



Customer comments

**Ronnie Bignell, Route Asset Manager for Signalling** said,  
“This work means employees are spending less time visiting sites due to wrong side track circuit failures and there are less delay minutes as signallers aren't forced to introduce additional safety measures, which helps to put passengers first and provide a reliable service all year round.”

## The Result

The new and improved TCAIDs provide an approved tool in the signalling toolbox for helping to mitigate the effects of leaves on the line. The new units eliminate the reliability issues experienced with the old units whilst helping the track circuit continue to operate correctly during leaf fall seasons.

The overall success of the new TCAIDs has led to further developments on the Wessex route and the team are now looking at other locations that are often badly affected by leaf fall. A trial involving an additional 40 units across five track circuits is currently underway and early indications are positive with the aim to have the units approved for use by autumn this year.

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