



## Case Study | Denmark

# Renewal signalling FAdC<sup>®</sup> and RSR123

### Requirements

Banedanmark's total renewal strategy will introduce the newest proven signalling technology, based on standard industrial hardware components and redundant system configurations. This would enable the implementation of uniform system interfaces whilst reducing signalling failures, thus achieving better reliability and punctuality.

### Solution

Banedanmark, the Danish railway infrastructure owner, has awarded Alstom a contract to replace the existing signalling system in the Eastern region of Denmark with Alstom's proven Atlas solution, comprising Automatic Train Protection (ATP) and Smartlock computer based interlocking system. Frauscher will deliver the Frauscher Advanced Counter FAdC and the Frauscher Wheel Sensor RSR123.

### Benefits

Thanks to the software interface the FAdC system can be fully integrated into Alstom's Smartlock interlocking. This communication interface offers a range of benefits: extended functionality, reduced need of hardware components and space, cost savings and lower operating costs.

### Project details

To ensure that the design and configuration of Frauscher Advanced Counter is fully integrated into the design of the interlocking system, Frauscher implements Alstom's interface protocol FSFB2 into FAdC. All information, such as the configuration files and design documentation, will be generated automatically. This not only reduces the configuration and test outlay considerably, but allows further changes to be made in the course of the project without incurring high additional cost.



Frauscher Diagnostics System FDS

## Frauscher Diagnostics System FDS

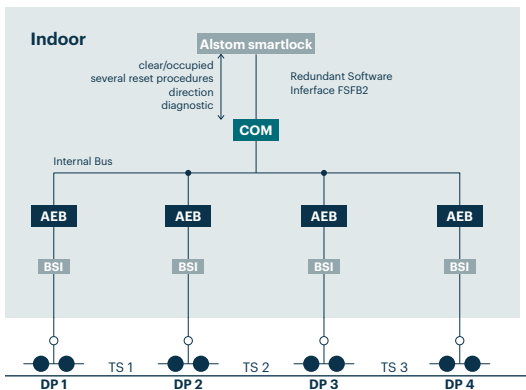
The preventative maintenance, the optimisation of fault rectification, unrestricted online access to the axle counting system data and the minimisation of maintenance work lead to a reduction in life cycle costs. Frauscher Diagnostic System FDS features the possibility for a software interface to higher ranking diagnostic systems to allow total integration of FAdC diagnostics into operator's overall diagnostic and maintenance system.



Frauscher Advanced Counter FAdC

## Highly interference tolerant wheel detection

The advanced features of the RSR123 mark it as the state of the art in wheel detection, especially thanks to its ability to work reliably in the conditions of strong electromagnetic interference. Due to the fact that no active electronic components are used trackside, the availability of this Frauscher wheel detection system is very high. The automatic calibration process, triggered remotely, guarantees that users spend as little time as possible in the track and helps to avoid calibration errors.



Frauscher Wheel Sensor RSR123

## Key Facts

<b>Operator</b>	BaneDanemark	<b>Wheel Sensor</b>	RSR123 with rail claw
<b>Partner</b>	Alstom	<b>Country</b>	Denmark
<b>Scope of supply</b>	Trials, delivery of components, implementation of FSFB2 software protocol	<b>Segment</b>	Main Line
<b>Scope of project</b>	Approx. 2500 track sections, 3000 counting heads	<b>Application</b>	Track vacancy detection
<b>Axle Counting System</b>	FAdC with FSFB2 interface	<b>Project start</b>	2009