**KKOCH**™
ENGINEERED SOLUTIONS

Improving ADMS
Distance-to-Fault Calculations

Advanced Distribution Management Systems (ADMS) combine impedance models, fault magnitude data, and sophisticated equations to determine possible fault locations. When fault detection and fault magnitude data are only available at the substation the ADMS will project multiple possible fault locations on highly branched distribution circuits, causing crews to patrol several areas to find the fault.

Sentient Energy Line Sensors
Sentient Energy's intelligent line sensors can be added to the distribution system at locations where the system branches. These sensors detect faults and wirelessly report data to the ADMS, enabling more precise distance to fault calculations. With additional data from more locations the ADMS can zero in on the actual fault location.
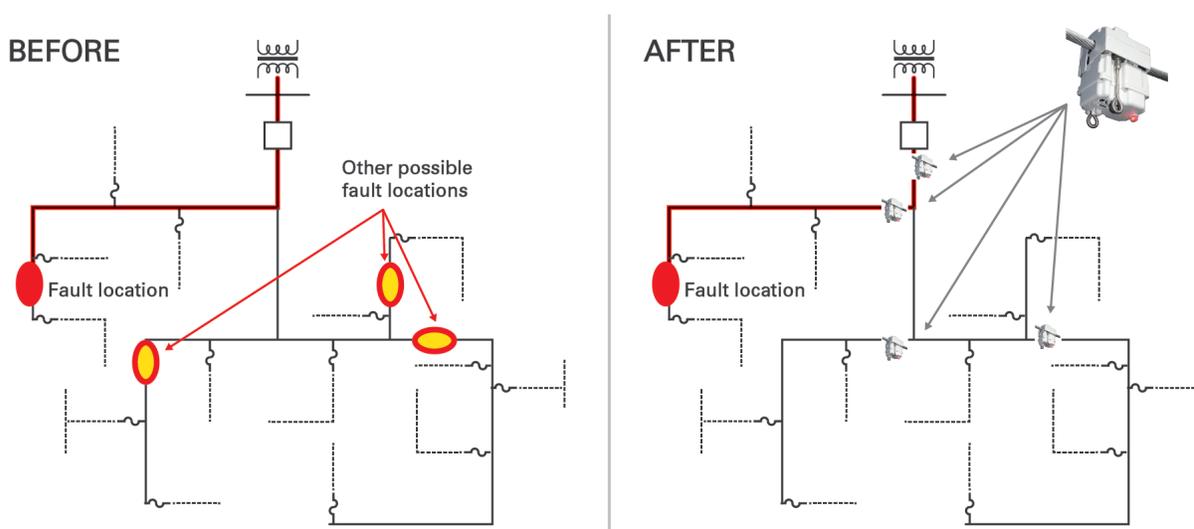
How It Works
With Sentient Energy MM3™ and low-load ZM1™ line sensors for overhead and UM3+™ underground sensors utilities can integrate more fault detection location data points into their ADMS. These sensors offer:

1. **Accurate fault magnitude measurements –** Line sensors accurately capture peak fault current magnitude up to 10kA within 2% accuracy.

2. **Identification of ground faults –** MM3 sensors and Ample® can distinguish between line-to-line and line-to-line to ground faults. Depending on the feeder, this distinction significantly improves fault location.

3. **Support for dual DNP[1] masters –** Sentient Energy's intelligent line sensors can report DNP data directly to both an ADMS and the Ample Analytics Platform for more effective sensor management.

Results
Sentient Energy intelligent line sensors enable more precise ADMS distance-to-fault calculations to help crews locate faults more quickly and improve automated ADMS fault isolation and restoration schemes.

[1]DNP/IEC 60870-5-104 through concentrator

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