



Improving energy reliability

A technology which helps industry...

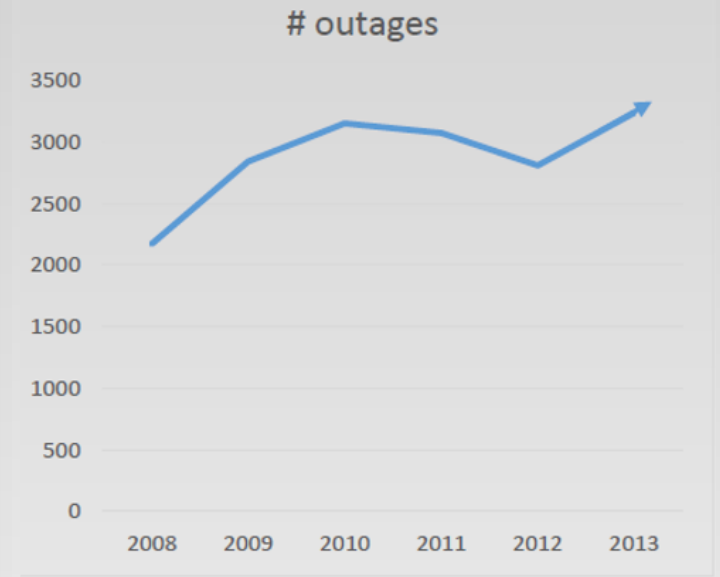


- Prevent power outages
- Restore power quicker

... in a very unique way

Aging infrastructures

Power disruptions are up 50% (in last five years)



In many instances, Substation engineers lack the needed data to prevent disturbances

PROBLEM

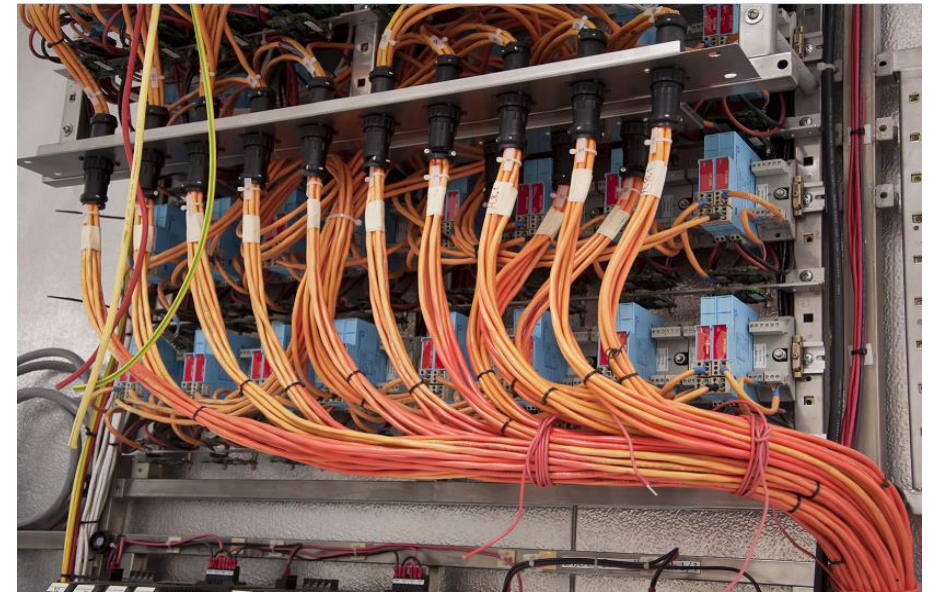
Installing monitoring equipment is a difficult process

Requiring:

- New engineering drawings
- Substation shutdowns
- Removal of existing wiring
- Equipment removal
- Panel disassembly
- Panel modification/machining
- Panel reinstallation
- Equipment installation
- Routing of new wiring
- Point-to-point testing
- Technician training
- Substation power-up

Typically taking months to complete

At significant cost and risk



FISCHER BLOCK SOLUTION

Simplified approach

reducing months to minutes



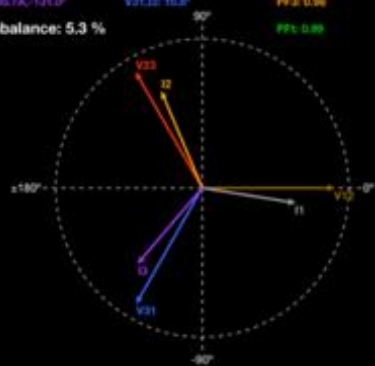
Sensors which require *no* wiring



Non-intrusive installations

Phasor Diagram#0 of sample

Voltage	Current	Phase Lag	Power Factor
V12: 203.9V, 9.8°	I1: 282.4A, -9.8°	V12,I1: 9.8°	PF1: 0.99
V23: 202.8V, 100.4°	I2: 319.9A, 113.4°	V23,I2: 7.0°	PF2: 0.99
V31: 200.2V, -101.2°	I3: 300.7A, -121.0°	V31,I3: 19.8°	PF3: 0.98
V Imbalance: 0.5 % I Imbalance: 5.3 %			PF4: 0.99




Fundamental Frequency: 60.0Hz



Fischer Block

Installation Requirements

	Traditional Solution Fully-wired	 FischerBlock, Inc. SMART Cover™
New Engineering drawings	✓	
Panel shutdowns	✓	
Panel cutouts	✓	
Panel rewiring	✓	
Station power	✓	
Installation time	Months	Minutes
Installation cost	> \$300,000	< \$500

SMART Cover™

- Simple Test Switch cover replacement
- Compatible with *all* existing test switches in the field (10+ million).
- Allows for wide-scale deployment of advanced sensors



Patent pending SMART Cover™ technology

SMART Cover™

- Monitoring, recording, and streaming data, reporting the health of the grid and its critical assets:

- Voltage
- Current
- Harmonics
- Power
- Frequency
- Waveforms
- RMS
- Synchrophasors
- SOEs
- Energy
- ROCOF
- Fault records
- Dynamic disturbance records
- Power Factor
- Load analysis

8kHz sampling



INDUSTRY ACCEPTANCE

DTE Energy



“ We have strong interest in your technology...”

“ Fischer Block’s SMART technology enhance grid planning and operations ”

“ Your SMART technology will have wide industry acceptance”

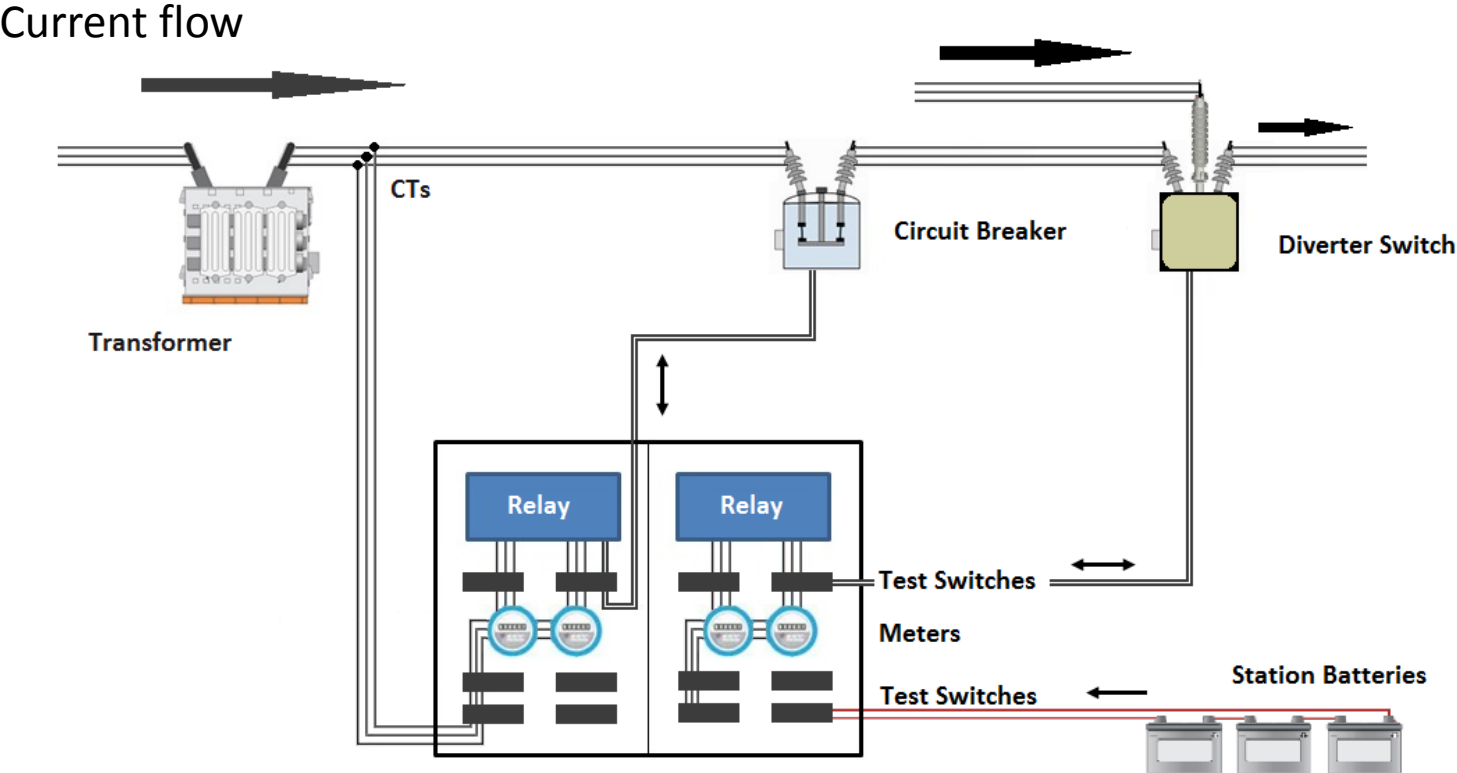
“ We need to be doing more with leading edge technologies”

“ We have 200 substations that these could drop right into”

“ The Fischer Block technology overcomes a number of challenges we currently have to deal with ”

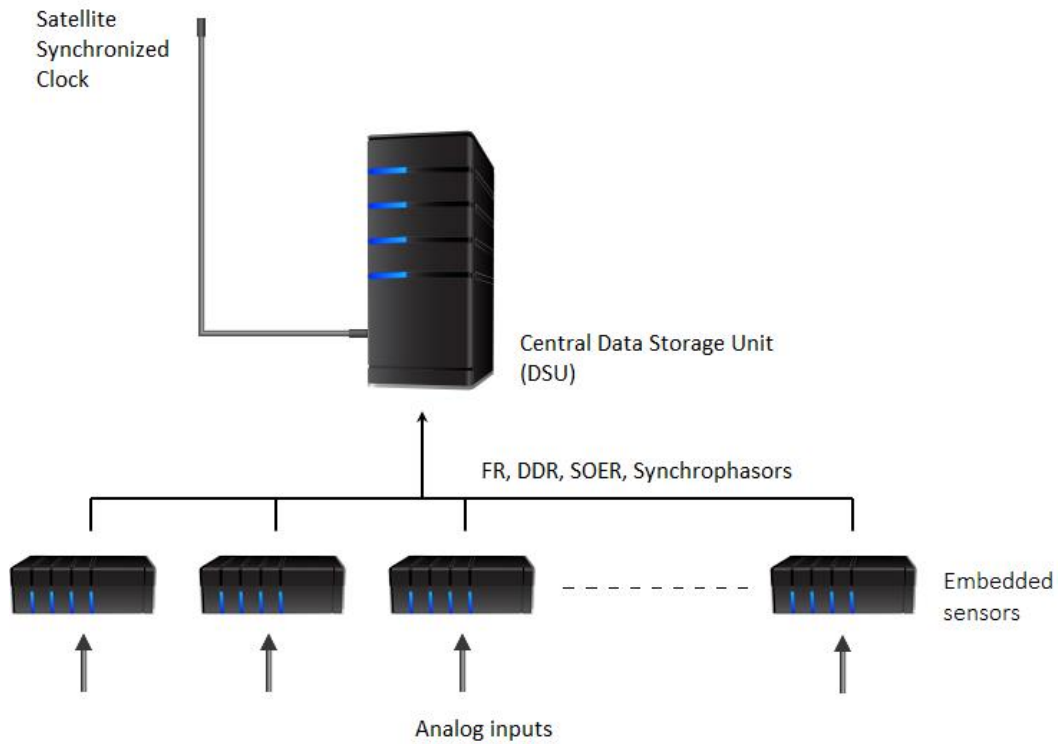
Substation diagram

– Substation control equipment is connected through Test Switches





SYSTEM DIAGRAM



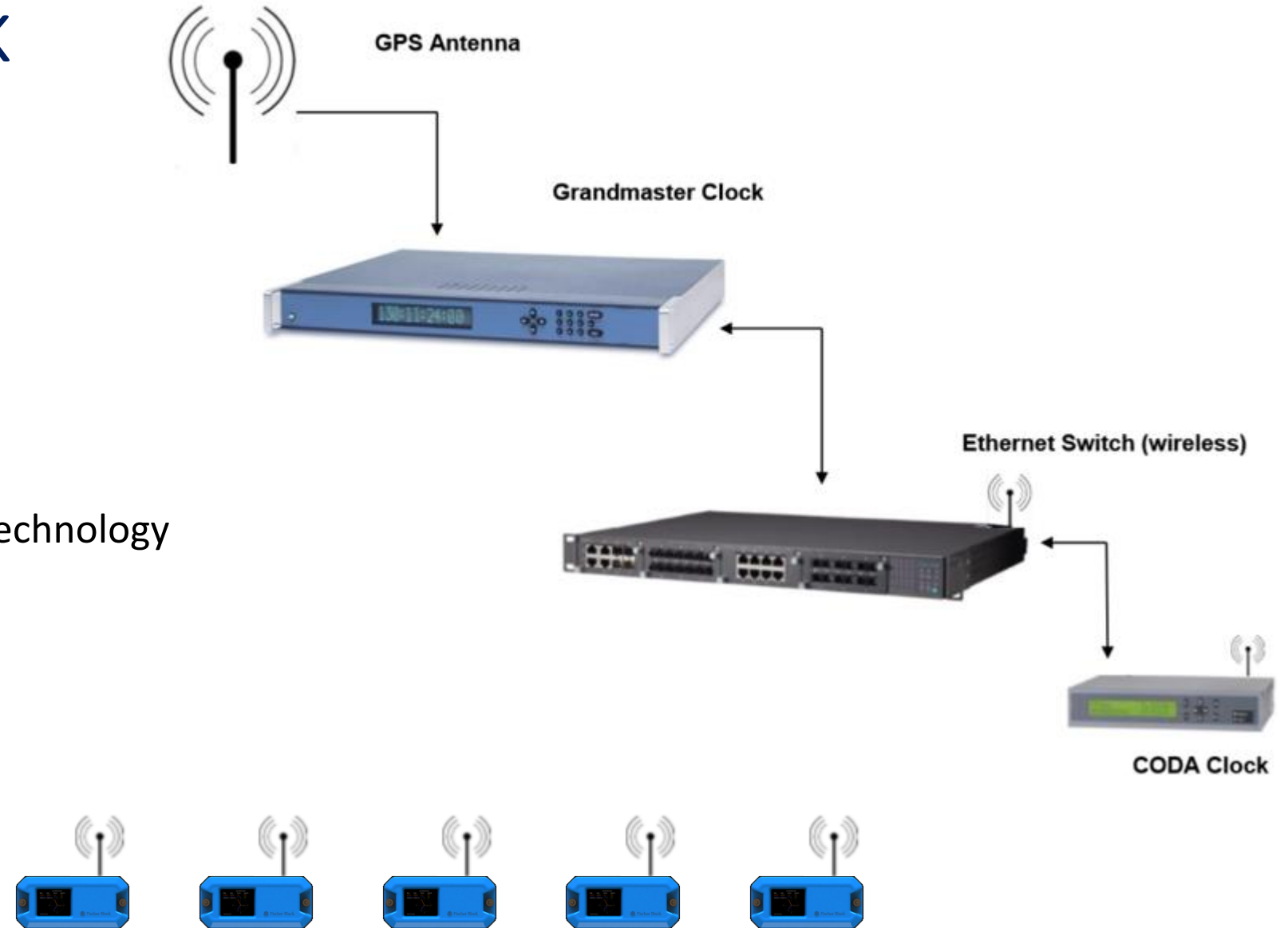
Remote real-time access
to critical data

- Continuous streaming
- Alarm triggering

WIRELESS NETWORK

IEEE 1588 v2
C37.118

Using clock offset annunciation technology



Remote synchrophasor capture

- Non-network solution
- GPS Transceiver technology
- Time stamped to w/in 100ns of UTC



COMMON HARDWARE PLATFORM FOR INDUSTRY

- Wide-scale implementation viability
- High-speed sampling of critical data
- Remote data access, time-stamped to UTC
- Enables industry to write, run, share custom apps







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