



2019 JUAN DIEGO RÍOS – PRODUCT MANAGEMENT – DISTRIBUTION TRANSFORMERS – PEREIRA FACTORY

The world's first digital distribution transformer

ABB Ability™ TXpert™ supports the grid of the future

ABB

Agenda

TXpert™ – The world's first digital distribution transformer

Distribution Industry needs and challenges

ABB solutions and values

Success stories (real cases)

Q&A

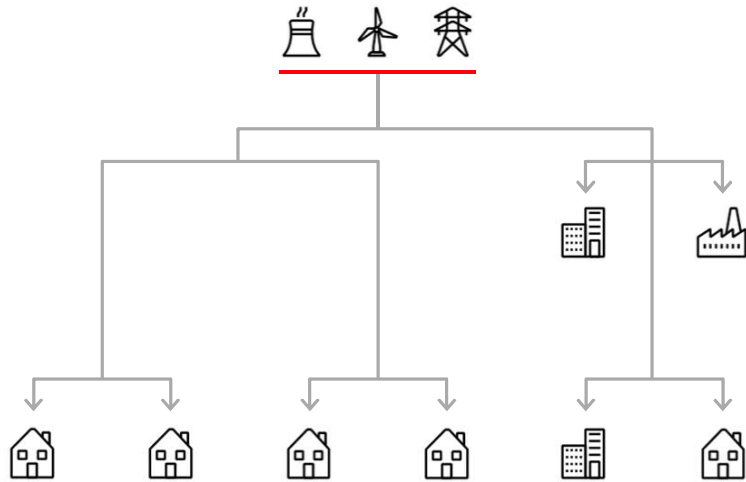
Distribution industry: needs and challenges

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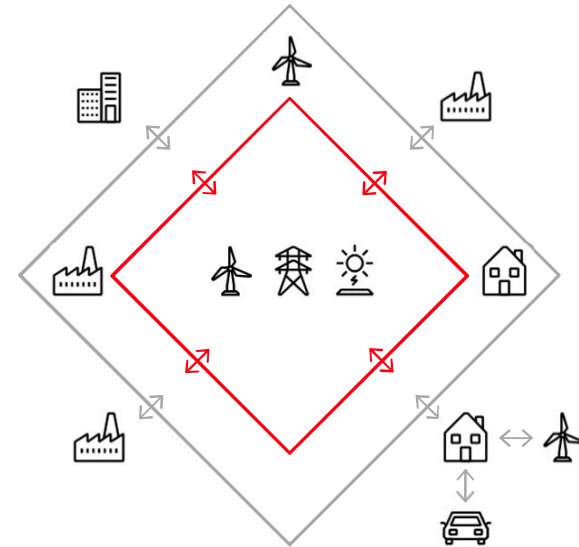
Energy and grid evolution

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TRADITIONAL GRID



NEW GRID



As the grid becomes more complex, it requires a more advanced distribution transformer

Industry's challenge: Monitor assets and grid to make informed decisions

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Many attempts to find solutions:

- Solutions “borrowed” from the power transformers industry monitoring solutions
 - More sophisticated and relatively costly when applied to distribution level
- Bolt-on solutions
 - Does not give accuracy or coverage of all sensing needs
 - Less than optimal level of accuracy and made estimations rather than actual measurements
- Connect several devices (monitoring, communication, etc.)
 - Harder to install, harder to maintain and more complications (failures)

ABB solutions and values

The world's first digital distribution transformer

Built upon ABB's heritage and transformer expertise

TXpert™ – The world's first digital distribution transformer

- Fully integrated solution incorporated into the transformer during manufacturing
- Mature and reliable sensors that provide best accuracy as well as longest lifetime
- Best industrial components in the market
- Best distribution transformer in the industry

- How to deliver the best data to make informed decisions
 - Consumed lifetime of the distribution transformer
 - Total harmonic distortion (THD)
 - Expandable digital platform to add functionality

- Ability to connect using multiple communication mediums and uses every standard protocol
- Ability to connect to multiple analytics and software platforms
- Ability to customize event thresholds

ABB Ability™ TXpert™ – Transformer innovation

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Industry value

- Integrated sensing technology capabilities
 - Top oil & ambient temp/levels/pressure/ moisture/hydrogen
 - Voltage/current
 - GPS/RFID
 - Local Wi-Fi
- Local inference analytics
- Compatible with wide-range of communications
- Can integrate with several software tools
- ANSI and IEC solutions available

Utilize distribution assets more effectively



Samples of different installations – ANSI and IEC solutions

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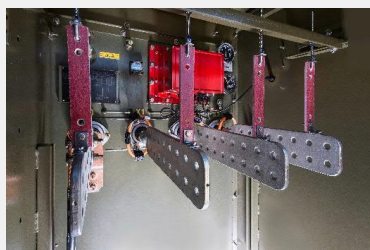
IEC model (on transformer top)



ANSI network model (on side of transformer)

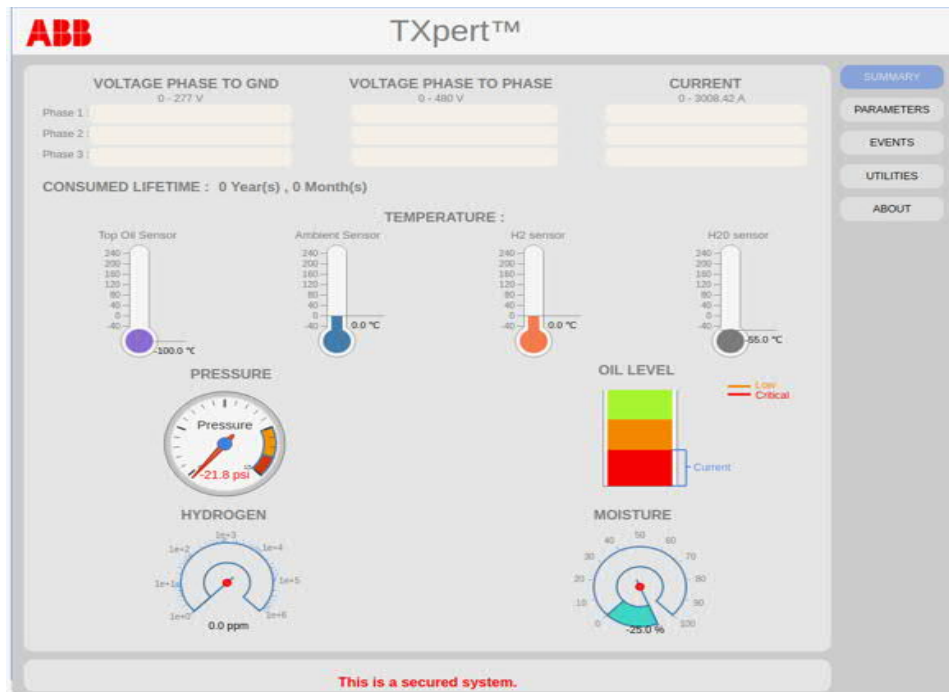


ANSI pad mount (inside the cabinet)



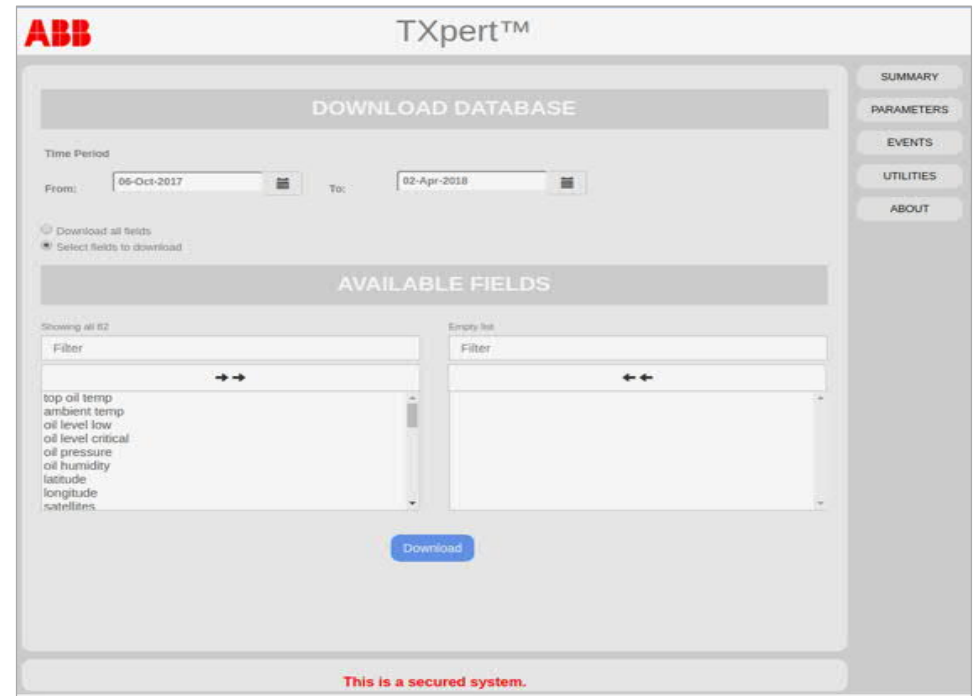
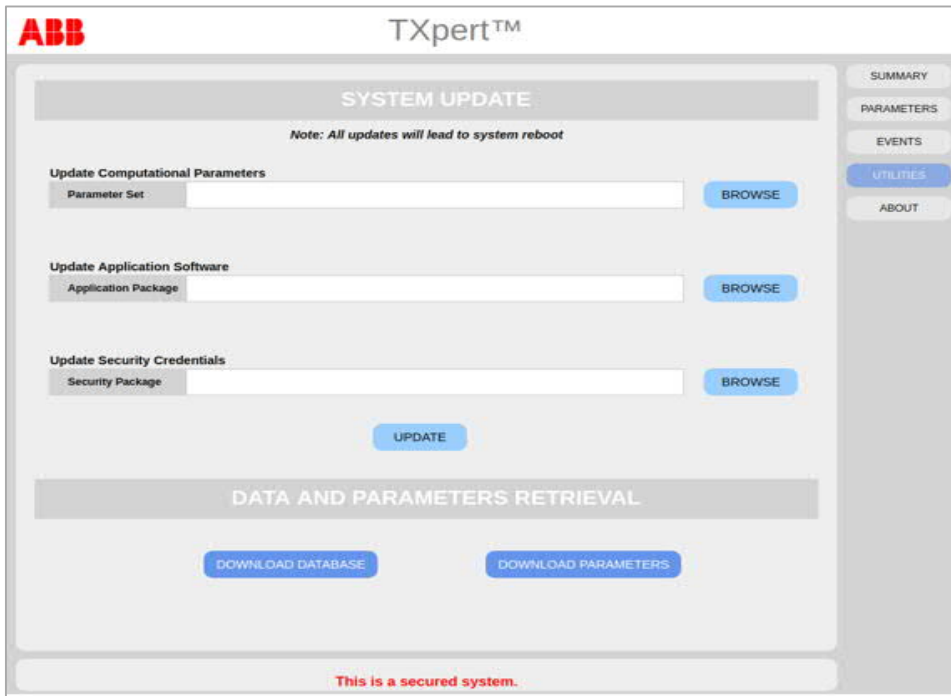
User tool and enterprise software

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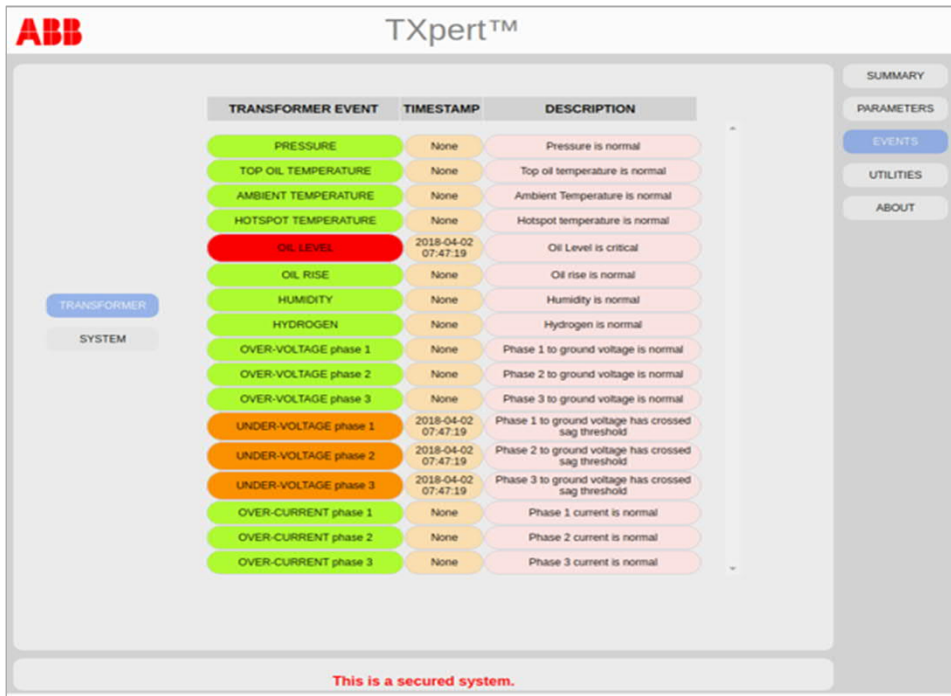
User interface – Configuration tool – Utilities page

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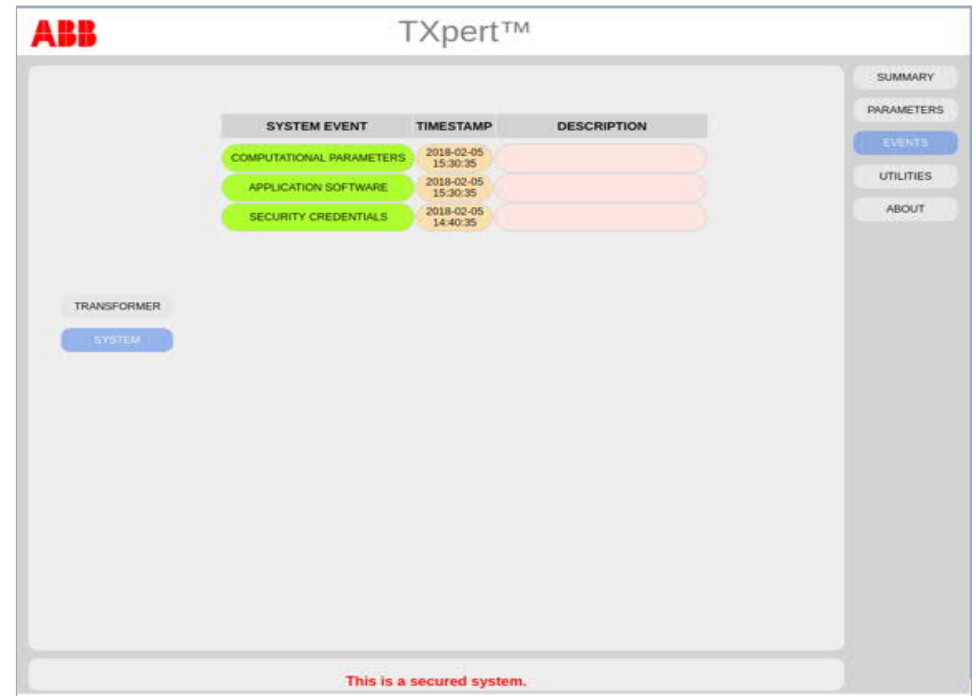


User interface – Configuration tool – Events page

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TRANSFORMER EVENT	TIMESTAMP	DESCRIPTION
PRESSURE	None	Pressure is normal
TOP OIL TEMPERATURE	None	Top oil temperature is normal
AMBIENT TEMPERATURE	None	Ambient Temperature is normal
HOTSPOT TEMPERATURE	None	Hotspot temperature is normal
OIL LEVEL	2018-04-02 07:47:19	Oil Level is critical
OIL RISE	None	Oil rise is normal
HUMIDITY	None	Humidity is normal
HYDROGEN	None	Hydrogen is normal
OVER-VOLTAGE phase 1	None	Phase 1 to ground voltage is normal
OVER-VOLTAGE phase 2	None	Phase 2 to ground voltage is normal
OVER-VOLTAGE phase 3	None	Phase 3 to ground voltage is normal
UNDER-VOLTAGE phase 1	2018-04-02 07:47:19	Phase 1 to ground voltage has crossed sag threshold
UNDER-VOLTAGE phase 2	2018-04-02 07:47:19	Phase 2 to ground voltage has crossed sag threshold
UNDER-VOLTAGE phase 3	2018-04-02 07:47:19	Phase 3 to ground voltage has crossed sag threshold
OVER-CURRENT phase 1	None	Phase 1 current is normal
OVER-CURRENT phase 2	None	Phase 2 current is normal
OVER-CURRENT phase 3	None	Phase 3 current is normal



SYSTEM EVENT	TIMESTAMP	DESCRIPTION
COMPUTATIONAL PARAMETERS	2018-02-05 15:30:35	
APPLICATION SOFTWARE	2018-02-05 15:30:35	
SECURITY CREDENTIALS	2018-02-05 14:40:35	

Success stories (real cases)

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Industry values

Value for specific industry segments



Residential & Commercial

- Maintenance costs
- Inventory reduction
- Outage notification
- Revenue protection



Renewables

- System efficiency
- Network quality
- Voltage monitoring
- Revenue protection



Industrial & Data Centers

- Uptime
- Proactive maintenance
- Safety
- Environmental



Oil & Gas

- Safety
- Environmental
- Uptime
- Asset management

Future analytics upgraded via firmware

Success stories (real cases)

TXpert™ – The world's first digital distribution transformer

- 1** **Utility**
TXpert is available in utility distribution grids feeding several applications such as apartment buildings, universities, houses, city centers, etc.
- 2** **Industry**
TXpert is installed and available in an industry application feeding a factory for a large company in the Food & Beverage segment
- 3** **Data Center**
TXpert is installed to feed a critical data center
- 4** **Airport**
TXpert is installed and feeding a major international airport

TXpert unlocks values across many segments and applications

Q&A

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Many thanks! ¡Muchas gracias!
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