ADVIDA™ DX-PLANT™ Operation Support Services

Advanced **D**ata-driven **V**isual **I**ndication, **D**etection and **A**lert
Anomaly visualization to assist plant operators in monitoring

Challenges in plant operations

Operators are responsible for monitoring and controlling various operating parameters of the plant to ensure each parameter is stable.
However:

- ☑ Monitoring numerous parameters through numerical displays is challenging.
- ☑ Until alarms are triggered, it is difficult to determine whether the system is operating normally or anomalously solely based on numerical displays.
- ☑ Alarms often trigger after the plant has entered an anomaly state.

When analyzing plant anomaly in operation data:

- ☑ The occurrence of the anomalies must be identified from the data of several equipment.
- ☑ Minor and early anomalies are difficult to detect and may get overlooked in data analysis.
- ☑ Conventional Trend Graphs and DCS screens do not provide insight to grasp how an anomaly arises and propagates across different equipment.

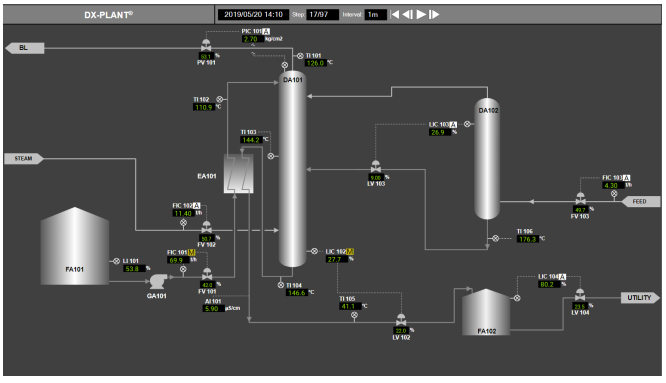
What ADVIDA™ can achieve?

The ADVIDA™ enables the efficient detection of anomalies from the pre-warning stage by providing an overview of the entire plant system.
It visually represents anomaly states on a process flow screen as circles, allowing anyone, not just experienced operators, to easily identify the presence of anomaly conditions at a glance.

Key features:

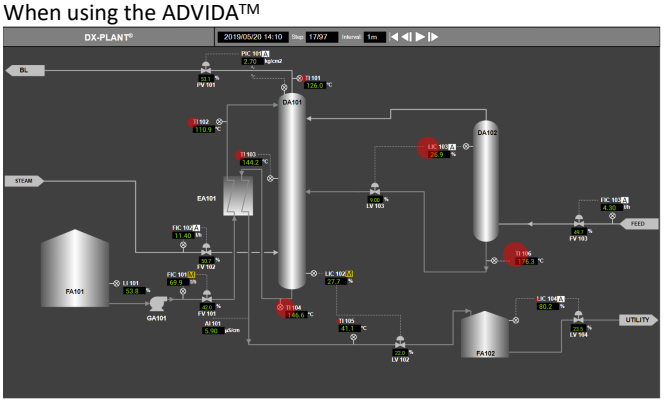
- **Dynamic Anomaly Representation**: Circle size reflects the degree of deviation from the normal state.
- **Early Anomaly Detection**: ADVIDA™ visualizes anomalies from the moment the operational state begins to deviate from stability, even before alarms are triggered.
- **Anomaly Replay**: Replay of past operations with visualization of past anomalies on the process flow screen.

Without the use of ADVIDA™



It is difficult to determine whether the system is operating normally or anomalously based on numerical displays, making it challenging to identify where are anomalies.

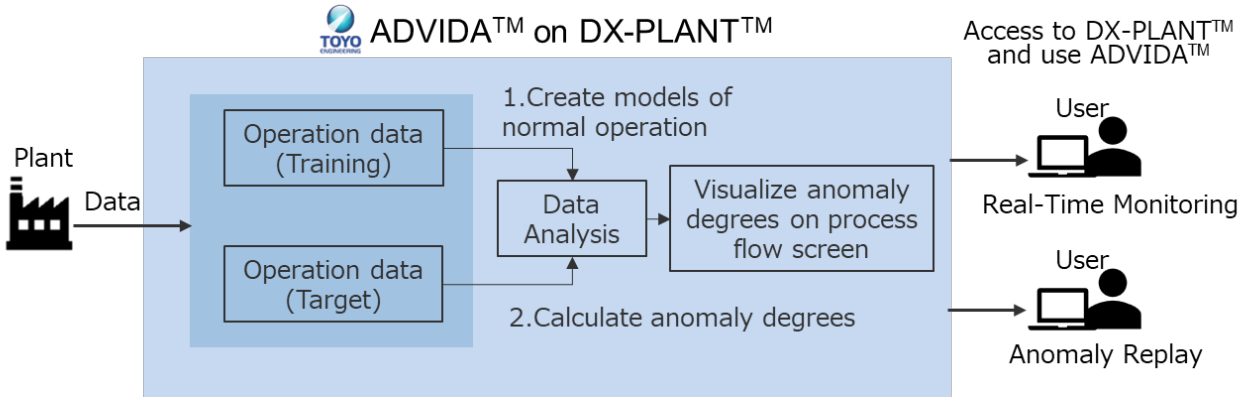
When using the ADVIDA™



Operators can immediately recognize there is an anomaly in the system in the area where the circle is displayed.
It allows for a clear understanding of how anomalies propagate.

Implementation of ADVIDA™

To utilize ADVIDA™, the introduction of DX-PLANT™ as a cloud data collection platform for plant operational data is essential. Users can then access ADVIDA™ as a feature within DX-PLANT™.



What ADVIDA™ provides:

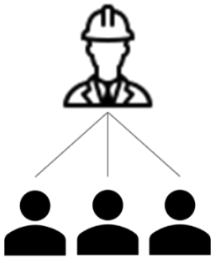
Visualizing real-time operational anomalies enable to:

- Reduce the burden of monitoring on operators.
- Detect anomalies at an early stage. It helps to avoid severe anomaly operation.
- Maintain operating conditions closer to the optimum operating point.

Visualizing past operational anomalies enable to

- Accelerate and streamlines the process of root cause analysis, by efficiently identifying anomaly occurrences.
- Recognize operational issues that may have gone unnoticed in the past and provide opportunities for operational improvements.
- Make precise determination of the root cause and its impact on related equipment

ADVIDA™ to help train operators



Benefits for trainers

- Facilitate easy sharing and explanation of operational conditions.
- Enable visual explanations of the propagation of anomalies between equipment.
- Streamline the extraction of anomaly operation using data of past operation cases for training purpose.

Benefits for trainees

- Create learning opportunities through replication of various past operational scenarios.
- Along with process flow, enhance understanding and comprehension of the situations that lead to an anomaly.

For more information on ADVIDA™, please contact us.

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