

ClearView® – Connected Services

ClearView® RENEWABLES

– a smarter digital partnership



TOPSOE

ClearView® FEATURES

ClearView® is powered by three primary features:

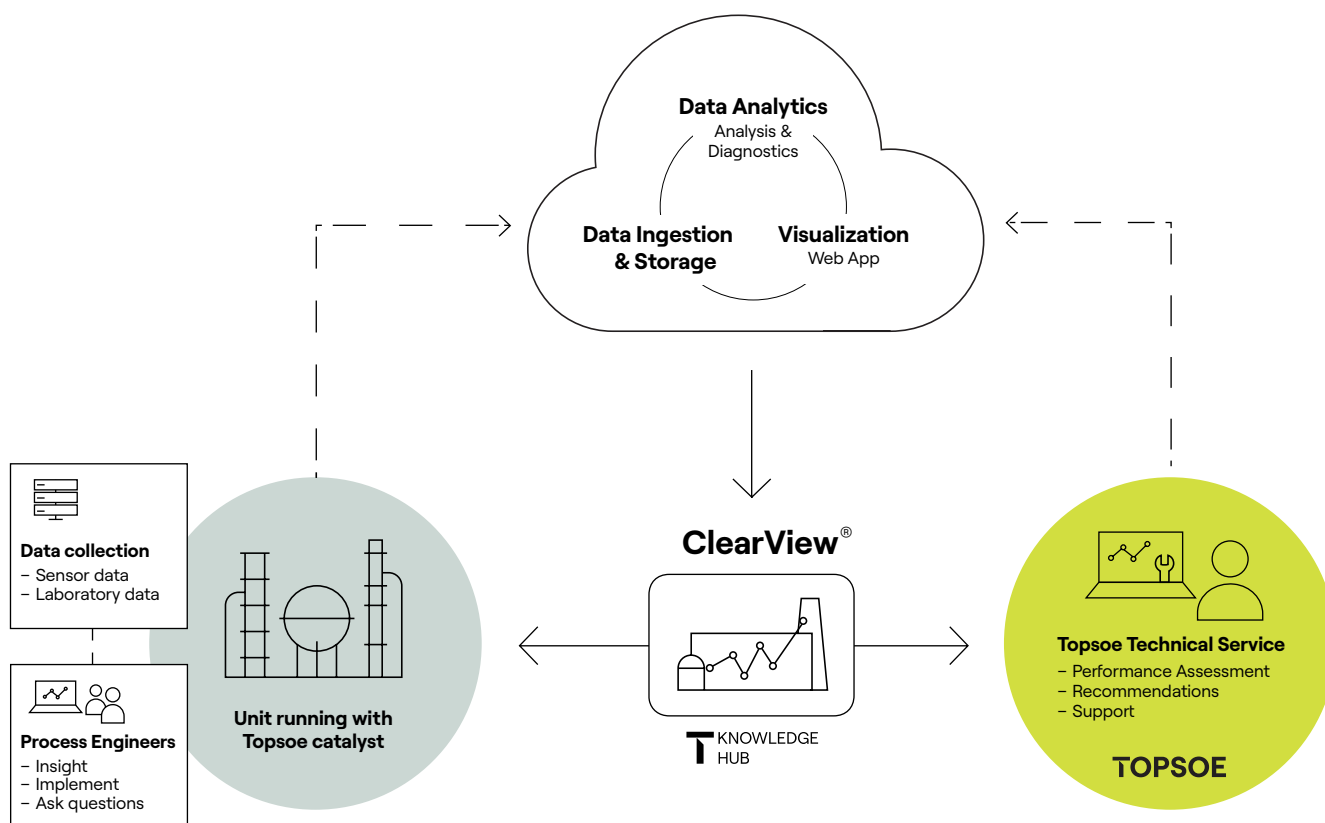
1. At-a-glance Performance
2. Analytics Dashboards
3. Knowledge Hub

ClearView® renewables is a connected service that delivers closer collaboration between your unit, its personnel, and Topsoe's experts to enhance the overall performance of your renewables unit.

ClearView® renewables is based on a state-of-the-art IoT and analytics Platform that enables secure live streaming of your unit's operational data. The basic principles and components of ClearView® connected service are illustrated in Figure 1. Your data is thoroughly evaluated by Topsoe's proprietary simulation models built on our comprehensive R&D and industrial databases. Through ClearView®, Topsoe experts provide you with insights to enhance the unit performance based on our vast experience within both catalysis and process design.

ClearView® means smooth and efficient support, since our experts have access to the same data as your plant personal. This shortens response time and allows Topsoe to further empower your plant personnel with insights that help optimize performance and establish best practices for the operation of the unit.

FIGURE 1: THE ClearView® CONCEPT





AT-A-GLANCE PERFORMANCE

ClearView®'s homepage lets you assess the overall unit performance via a customized set of Key Performance Indicators (KPIs). These could include, but are not limited to:

- Cycle length prediction
- Yields
- Feed rate and properties
- Product specs
- Key-parameter monitoring (e.g., Hydrogen partial pressure, temperatures, pressure drop and exotherm)

ANALYTICS DASHBOARDS

The Analytics Dashboards offer a single access point for data from your unit – both from process sensors and laboratory data, and data generated from Topsoe's proprietary models. These dashboards are an extension of the At-a-glance Performance dashboard, and visually enhance the viewer's understanding of data correlations. Dashboards include, but are not limited to:

- Feed rates, feedstock properties and contaminants
- Yields and mass balance
- Product specifications
- Cycle length evaluation, incl. exotherm management and pressure drop monitoring
- Temperature and pressure assessment
- Gas rates and compositions
- Hydrogen availability, consumption, and partial pressure

KNOWLEDGE HUB

The knowledge Hub is the unit's encyclopedia with Topsoe knowledge, industry best practices, and your unit's performance history. The various components of the Knowledge Hub are illustrated in Figure 2.

The insights from the Knowledge Hub allow you to improve your performance, with a focus on reliability, planning, and troubleshooting. The Knowledge Hub also makes it easier to onboard new process engineers or other plant personnel to the unit, since all knowledge is stored in a single, commonly accessible location.

The Knowledge Hub includes:

- **PERFORMANCE EVALUATIONS:** Assessment of current performance with possible suggestions for enhancements, updated regularly by the Topsoe Technical Service Engineers following the unit.
- **CONTACT US:** A platform for communication between plant personnel and Topsoe experts, where you, for example, can ask our experts questions about changing operating conditions, feedstock, catalysts, capacity, or optimizing unit performance. All questions and answers are stored in Knowledge Hub for future reference.
- **INSIGHTS:** A collection of all previous Performance Evaluations, maintained together with questions and answers from Contact Us. Easily accessible through dynamic content search and filter, this feature has proven especially valuable as a way to speed up the onboarding of new process engineers as it delivers easy access to archived knowledge and insights. It also acts as an invaluable knowledge sharing platform in cases where multiple process engineers influence a unit's operation.
- **FAQs:** A library of answers to Frequently Asked Questions (FAQs) concerning your unit type and catalysts, all answered by Topsoe experts. This feature supports faster decision making.
- **MY PLANT:** This provides easy access to plant-specific documents like catalyst material safety data sheets, catalyst manuals, loading and start-up reports, test-run reports, and flowsheet and equipment specifications (if a Topsoe design), and more.
- **SCIENCE LIBRARY:** This provides an extensive collection of Topsoe white papers, videos, podcasts, and scientific articles.

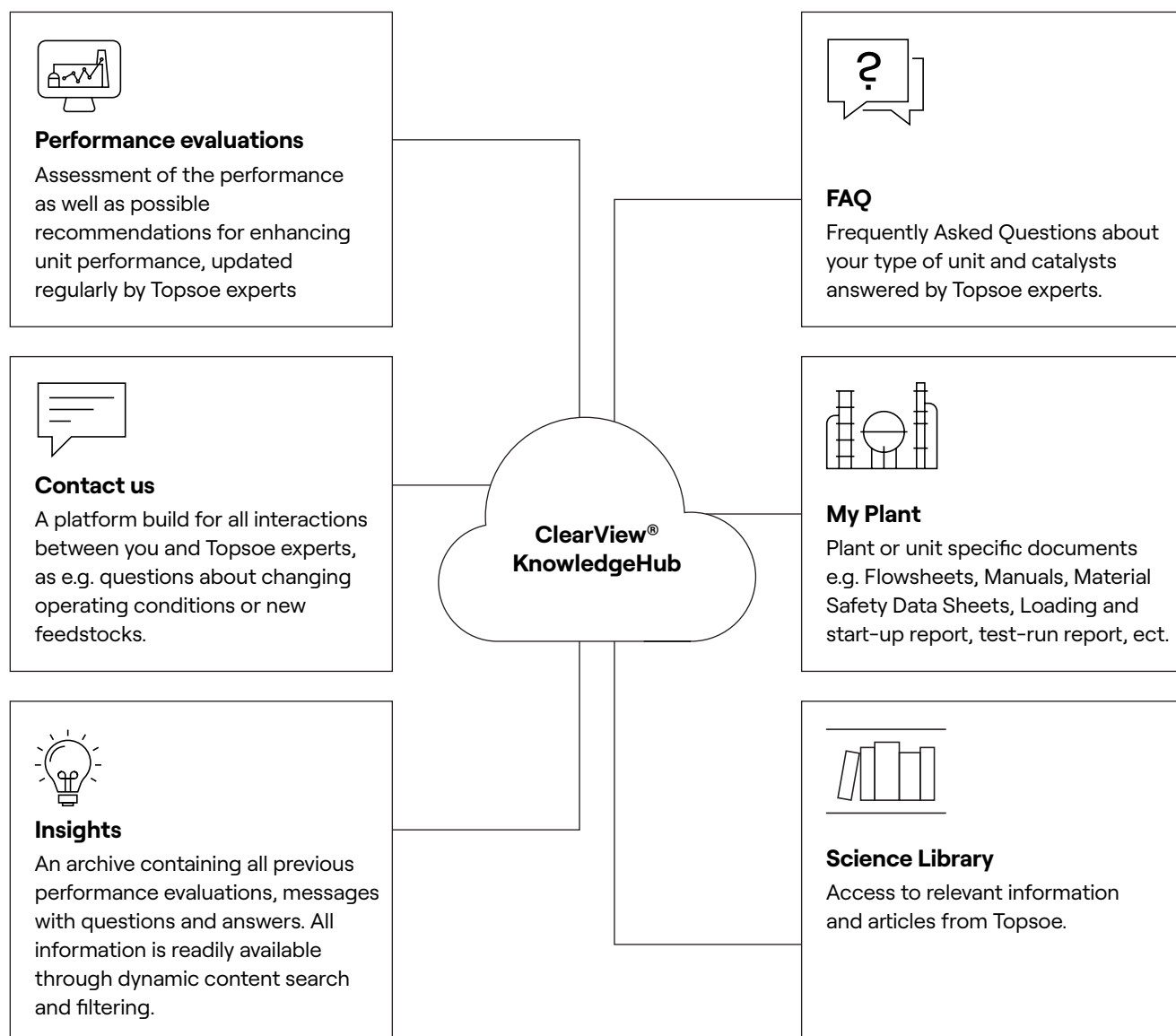
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CONTINUOUS DEVELOPMENT OF ClearView®

The mentioned ClearView® features are included as standard, while new features are currently being developed and may become available as add-ons in the future.



FIGURE 2: KNOWLEDGE HUB FEATURE OVERVIEW



Founded in 1940, Topsoe is a global leader in developing solutions for a decarbonized world, supplying technology, catalysts, and services for worldwide energy transition.

Our mission is to combat climate change by helping our partners and customers achieve their decarbonization and emission-reduction targets, including those in challenging sectors: aviation, shipping, and production of crucial raw materials.

From low-carbon or zero-carbon chemicals to renewable fuels and plastic upcycling, we are uniquely positioned to aid humanity in realizing a sustainable future.

Topsoe is headquartered in Denmark, with 2,400 employees serving customers all around the globe. To learn more, visit topsoe.com

Get in touch today
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