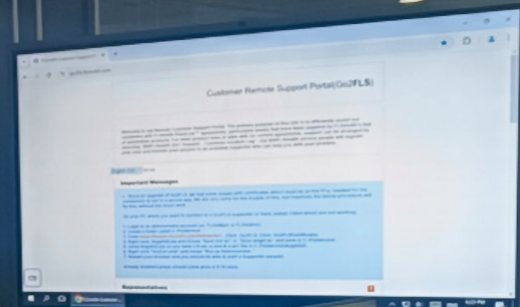


**FULLER®**

ECS/PlantDataManagement

U-4	U-5	U-6	U-7	U-4	U-5	U-6
1369.9	1434.6	1229.1	1318.4	1.3	5478.4	2202.2
224	299.6	298.9	228.6	19.2	386.2	384
239.5	261.6	260	197.3	61.1	687.2	406.2
209.2	192.3	227.2	193.3	11.3	627.6	404.1
830.5	796.4	927.4	864.1	74.1	7096.4	7402.2
6	6	6	6	6	6	6
400.9	479.5	454.8	487.3	191.2	518.2	1076.8
179.7	184.9	261.5	185.4	196.8	347.6	332.4
237.5	237.1	237.4	231.3	0.5	405.6	405.9
U-4	U-5	U-6	U-7	U-4	U-5	U-6
1405.9	1237.5	6	1279.8	0	2386.5	2028.6
994.9	1028.5	5.3	962.9	13.2	2187.7	2039
327.3	273.9	-	211.7	69.4	404.7	405.4
115.5	118.9	129.8	104.3	94.9	26.4	22.9
U-4	U-5	U-6	U-7	U-4	U-5	U-6
606	643	600.7	677.9	124.1	819.3	819.3
258	303.3	279.8	281.8	0	3407.9	339.8
193.8	229.9	194.2	231.4	3	47.4	34.3
38	2	41.8	36.3	0	33.6	33.6
25.7	36.4	18.8	23.8	21.9	33.6	33.6
22.3	16.9	17.8	30	0.1	34.3	34.2



# ECS/PLANTDATAMANAGEMENT V9 PROCESS HISTORIAN

Advanced data management software for process industries

# TRANSFORM DATA INTO ACTIONABLE INTELLIGENCE

## USING ECS/PLANTDATAMANAGEMENT WITH PDM FORESIGHT

Make critical plant data accessible for improved decision making at operational, management, and enterprise level.

### KEY BENEFITS

**01**

Integrate all process and plant data into a single system

**02**

Connect multiple plants for enterprise-level benchmarking and improvement

**03**

Enhanced data visualisation, notifications, and reporting improves decision-making

**04**

Protect critical data via secure data collection and storage

**05**

Expert insights and best practice KPIs help identify productivity and sustainability gains

**06**

Raise profitability and deliver quick return on investment

# DATA TO FUEL YOUR DIGITAL TRANSFORMATION

## Data to fuel your digital transformation

Data is the foundation of the Industry 4.0 era. Connected devices and systems continuously provide huge amounts of process data on machine performance, status, and health, while your laboratory provides critical product quality data. But the benefits of Industry 4.0 depend on how you manage the data to create actionable information that can be used to optimise production lines, minimise equipment downtime, and improve productivity, while also reducing the environmental impact of cement production.

Which is where our ECS/PlantDataManagement (PDM) software comes into play. Integrating all process and quality data, PDM provides comprehensive data management that makes critical plant data available to those who need it most via:

- **Data collection and storage.**
- **Data presentation.**
- **Trending and analysis.**
- **Reporting and visualisation.**
- **Process insights and KPIs**
- **Notifications and alerts**

In short: it turns data into intelligence that supports improved decision making at operational, management, and enterprise levels, creating a smarter, more profitable, and more sustainable business.

## All your data, in one place

Our ECS/PlantDataManagement software has been developed to ensure all process, production, and quality data from your operations are available to you via the PDM Connect data connection function. This provides smooth and secure data collection from both Fuller and third-party equipment and systems into a single central database.

It's designed for quick and easy set-up and installation – so you don't have to waste time getting started. The standard solution comes with all the components needed to better understand the performance of your assets, including predefined standard report templates and dashboards. It's also easy to customise to the specific needs of your business.

The result? Your plant engineers, managers, and other personnel can access and visualise both the real-time and long-term trend data they need, in the format they require, via our PDM Foresight plant analytics and reporting platform. In doing so, they will be able to detect anomalies in your process lines, identifying what went wrong and avoiding repeat occurrences. They will be able to quantify energy consumption by process and plant, and then identify opportunities to improve energy efficiency. They will be able to monitor operational hours of your equipment and transform these data into actionable scheduled preventative maintenance plans.



## PDM Foresight

Included in the latest version of ECS/PlantDataManagement systems, PDM Foresight is a powerful web-based platform that allows users to navigate all plant-related data including:

### Cement Insights:

Using both ECS/PlantDataManagement and industry experience, we have designed a library of pre-set KPI dashboards that support plant operators in monitoring plant processes, interpreting plant performance, benchmarking against best practices and delivering actionable intelligence.

### PDM Calculator:

Allows users to make calculations on the fly and store them internally in a historian database for visualisation, reporting, and notification purposes. Available for both process and quality data tags.

### Data mining:

Search and analyse large batches of raw process and quality data to identify patterns and extract useful information.

### iClick:

Iframe functionality allows you to easily import and embed content from other platforms into PDM Foresight.

### PDM Notification:

Receive user defined and configured notifications via SMS, email and/or desktop notifications.

## UptimeGo

PDM Foresight comes with UptimeGo, our modern downtime analysis system. UptimeGo analyses process, production, health, and downtime data, using a unique and unified user interface, to provide the insight you need to identify what causes equipment to fail and improve your processes in the future to prevent further unplanned stoppages. UptimeGo is also available as a standalone SAAS service.



# WHY CHOOSE OUR ECS/PLANTDATAMANAGEMENT SYSTEM?

01

**Intelligently transform vast amount of operational data** into actionable information.

02

**Reduce risk of error and ensure no data are lost** through automatic, immediate, and accurate collection, with data substitution for faulty or offset instrumentation.

03

**Improve asset management** through centralised and safe storage of essential data for ten years (or even longer if desired) for historical analysis and documentation of crucial information.

04

**Move data efficiently from the plant floor to the control room** for better data analysis and reporting.

05

**Support analysis and improvement** with comprehensive library of best practice KPIs, set by Fuller experts.

06

**Provide plant managers, operators and engineers** with the specific information they need, via personalised profiles, regardless of their location.

07

**Promote communication and collaboration** between the plant personnel by presenting and sharing information through the same dashboards and portal.

08

**Provide insight into specific process problems** through data mining functionality in PDM Foresight

09

**Trigger notifications** that alert to specific preset conditions with suggested remedial actions.

10

**Improve plant productivity (energy, production, quality)** by making available real-time dispatch and environment data.

11

**Connect multiple plants** to provide complete enterprise-level insights.

12

**Safe and secure** data transmission and storage according to the latest cybersecurity standards.

# POWERFUL FEATURES DELIVER NEXT-LEVEL DATA MANAGEMENT

The ECS/PlantDataManagement system sets the industry standard when it comes to plant data management systems built to meet the challenges of today. We've designed it to allow easy access to real-time and historical data about your business, so you can make better decisions that boost productivity, profits, and sustainability.

## Powerful data-driven dashboards

As the old saying goes, you can't manage what you don't measure. Dashboards allow data transparency through your organisation, fostering a culture of continuous incremental improvement based on data-empowered insights. Access to real-time and historical data via user-friendly dashboards allows all users to track and monitor the performance and health of the plant and so identify opportunities for improvement.

Each user has different requirements when visualising and analysing data. For that reason, ECS/PlantDataManagement allows the dashboards to be customised for different applications, including:

- Quality, cement dispatch and environmental data
- Production
- Energy consumption
- Operation
- Emissions
- Stoppages
- Silo levels

The latest version of our ECS/PlantDataManagement solution also include **PDM Foresight**, a collection of pre-built dashboards designed to improve the viewing experience.

Meanwhile, **process mimics** – an inbuilt graphics package – allows users to create dynamic, interactive graphics and trends, featuring real-time data from the ECS/PlantDataManagement historian database.

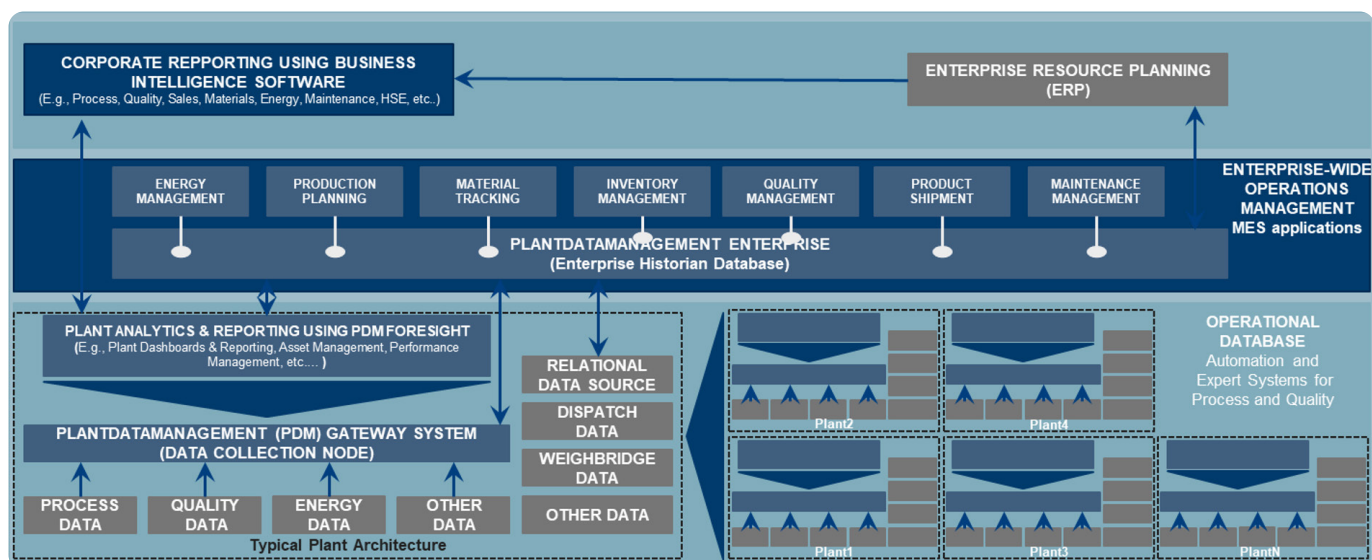
## Standard reports and easy integration with other reporting tools or BI systems

With ECS/PlantDataManagement, plant managers and engineers can produce all required reports with just one touch. Automatic reports can also be set-up and scheduled for defined times, from every minute to every hour, shift, day, week, month or year. Reports can be generated in standard formats, such as Microsoft Office Excel, and customised to suit the needs of each plant. However, a number of standard reports are included with initial setup:

- Production
- Process
- Quality
- Downtime
- Alarms and Events

The **Report Viewer** offers enhanced file search and the option to download files for offline viewing.



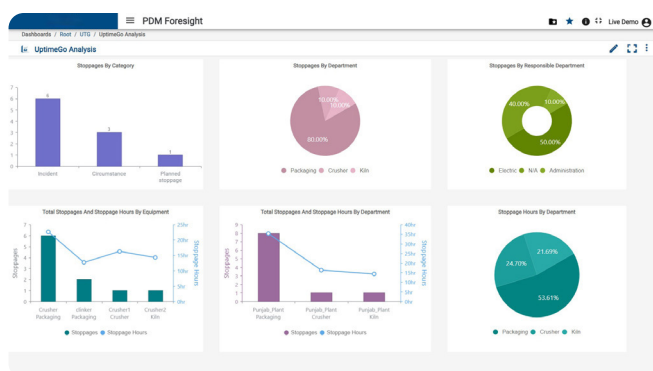


## Alarms and events

The ECS/PlantDataManagement software analyses all the process values for limit violations and draws statistical conclusions for the process department. Armed with this overview, plant staff can make adjustments to the PLC programs and control systems to reduce the number of non-critical process alarms and gain a better overview of plant processes.

## Easy to use, set-up, and configure

We've designed the ECS/PlantDataManagement system to be quick and easy to configure and customise to fit your needs. Key staff are also able to access reports with a single touch to ensure information is readily available for quick decision making.



- **Lite, Standard and Professional versions:** we appreciate that not everybody needs everything. Therefore, we offer the flexibility to select the package to best meet the needs of your operation. ECS/PlantDataManagement is available in Lite, Standard and Professional versions.
- **Scalable to your needs:** the ECS/PlantDataManagement solution can be implemented to cover just one process area, a complete plant, or at an enterprise level across several facilities, following an enterprise architecture.
- **PDM Connect:** allows the flow of data from any Fuller or third-party equipment to the ECS/PlantDataManagement software via a proprietary SDK enabling data in various formats to be imported from a range of stand-alone devices (e.g., XRF, XRD, CST, CV, CBA, PSD, LIMS, GCX, OPC, PLC, ECS).
- **Open structure:** the system stores data in an open structure, so it can be accessed with any common reporting tool. We've also made sure the system can be integrated with your Business Intelligence solution of choice to consolidate and visualise the data.
- **Data export via standard inbuilt APIs:** users can export PDM data to third-party systems via inbuilt APIs. Users simply copy and paste the expressions they require and input into the destination system to fetch the data from the ECS/PlantDataManagement system.
- **User management:** user access can be managed according to their roles, and their online/offline status viewed by system administrators. An auto-logout feature allows users to set the duration of inactivity after which they are automatically logged out of the system, strengthening data security.

# CUSTOMER SERVICES

We offer a wide range of training and support services to help you secure your investment in the ECS/PlantDataManagement system, providing maximum satisfaction and product efficiency by ensuring performance, utilisation and productivity.

## Training programs

One of the secrets of our success is our course-development process. Best practices are continuously reviewed and training focuses on the latest knowledge and experience, both in a classroom setting and in practical exercises.

## PlantLine™ service agreement

A PlantLine service agreement is a prudent investment that gives top priority to emergency assistance. You are supported through onsite service visits, as well as remotely via Go2FLS, which allows our engineers to connect to the system to make any necessary configurations for rapid resolution of problems. The result is reduced system downtime and optimal plant performance.

# SYSTEM ARCHITECTURE

ECS/PlantDataManagement includes all necessary modules to collect, treat, and store data, as well as to visualise, report and trend. Everything is included with the solution.

## Data Collectors

At the very start of the process, ECS/PlantDataManagement collects the data from various data sources, such as our ECS/ControlCenter™ Platform and QCX® Advanced Quality Control system, or any other process control system or third-party solution supporting OPC connectivity through an ECS Gateway Server.

## Server

The ECS/PlantDataManagement server aggregates and transforms the data, calculates automatic statistics, such as averages, and stores data for up to ten years (or even longer if desired) for historical analysis and documentation of crucial information. Process, quality, alarms and events data are all stored in the same database.

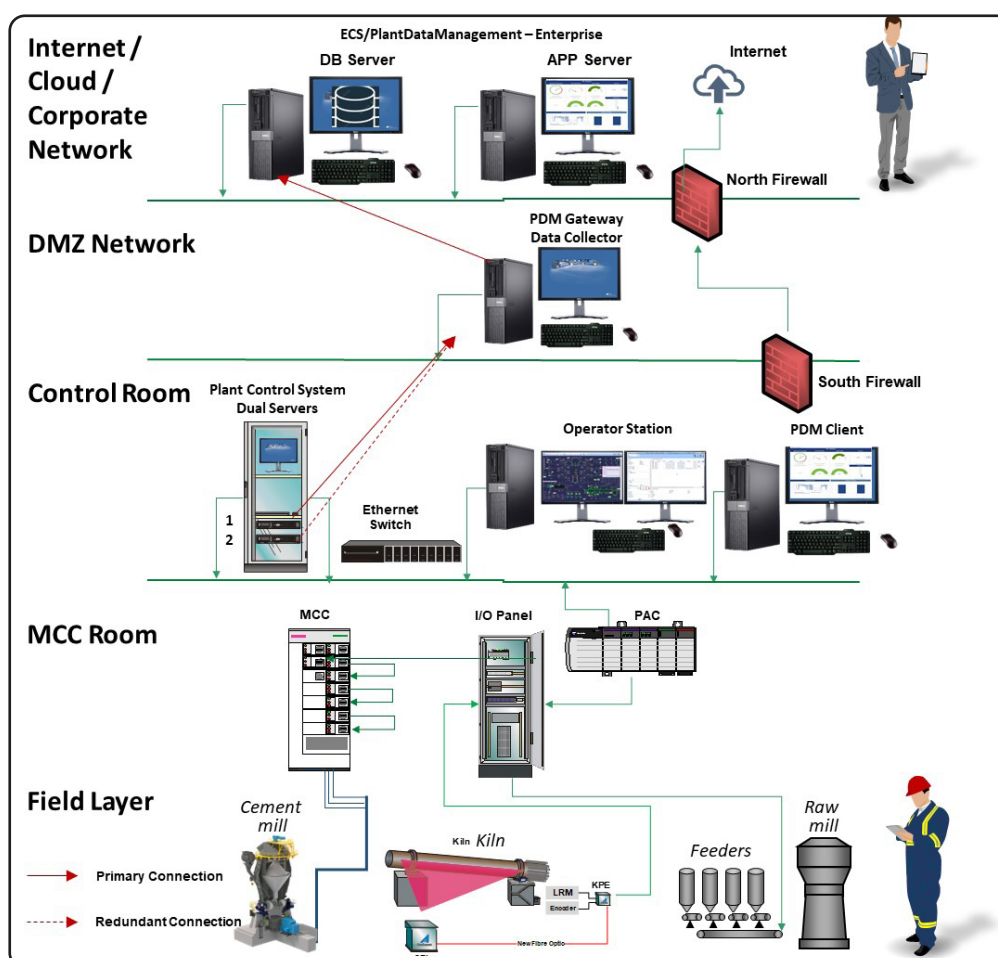
## Components

ECS/PlantDataManagement includes easy-to-use visualisation, reporting and analytical tools. These allow for optimal insight to support effective decision-making process. Third party applications, such as Microsoft reporting tools or BI solutions can also be used to visualise and analyse the data.

## Connectivity and Security

Any user in the plant network connected to the ECS/PlantDataManagement server can access the data. This empowers and enables users to make business decisions from any location.

Data security is paramount. When the system is setup, we will verify and ensure that all hardware and software required to protect the integrity of the data are installed.



# FULLER<sup>®</sup>

## TECHNOLOGIES

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