FLSMIDTH CEMENT

PIACS® DC4.1

Electrostatic Precipitator Controller

BETTER TECHNOLOGY, BETTER USER EXPERIENCE

The worlds best ESP controller just got better.

By continuously evolving the PIACS® technology and improving user experience, we have developed an enhanced ESP control unit that secures your production: PIACS DC4.1.

KEY BENEFITS

Remote support

User friendly, easy to monitor and troubleshoot

Meet environmental regulations while saving time and money

BEST-IN-CLASS ESP CONTROL

The PIACS® control system is used in over 3,000 ESP installations worldwide. Continuously evolved and updated over more than four decades, the latest PIACS DC4.1 solution includes a range of state-of-the-art features that ensure it remains the leading ESP control system on the market today. Compatible with all ESP applications, its fast and powerful microprocessor delivers a best-in-class control experience:

- Reacting quickly to process fluctuations and back corona.
- Ensuring the most efficient use of installed power.
- Delivering optimised ESP performance.

Enhanced user experience

A professional interface, distinct visual layers, and seamless motion help the user intuitively understand and interact with the system. Touch and discoverability heighten the user experience and enable access to functionality and additional content without losing context. Transitions provide a sense of depth as you navigate through content.

From the operator main menu, you can easily view the status of the ESP and control all key parameters, simply by tapping on the relevant icons, including:

- High-voltage.
- Rapping gears.
- Heating.
- Purge-air systems.
- Dust transport.

The latest PIACS DC4.1 system features an updated touch panel with more powerful and responsive processor, larger storage capacity for enhanced trend logging, higher-resolution display, and improved hardware supply security. The new display is backward-compatible with all existing PIACS DC4 systems.

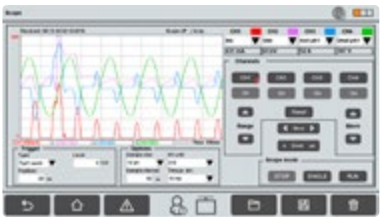
Unique internal measurement

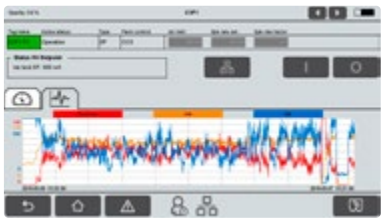
Improved ESP voltage and current measurements are achieved via an internal measuring board in the terminal box of the high-voltage rectifier. This improves spark detection (detecting sparks that otherwise might not have been detected) and provides the ability to react to real sparks, improving ESP efficiency. The benefits are faster, more efficient utilisation of installed power and, ultimately, even lower dust emission.

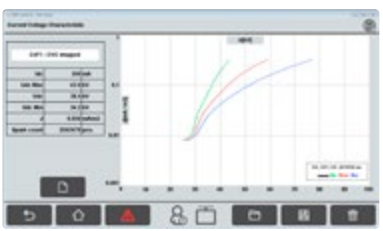
Remote service and support

With the latest PIACS DC4.1 controller, there is no need for an external computer or specialist software. It is instead possible to access the ESP control interface through a built-in ethernet connection. This allows plant maintenance staff to service the equipment remotely, increasing ESP reliability.

We also offer various service packages, including 24/7 support via remote access from our central Copenhagen or local customer service office. With client permission, our expert engineers can remotely access and control the PIACS DC4.1 system to provide urgent troubleshooting and assistance – particularly useful for clients in remote areas.







THE LATEST FUNCTIONALITY

The PIACS® DC4.1 includes a number of advanced features that further improve ESP control operations:

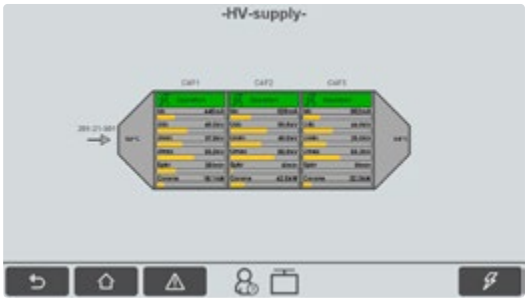
Dust transport	The new PIACS DC4.1 system can control up to 25 dust transport units including VFD speed control. Various graphical layouts of dust transportation systems are also supported. When a specific process layout is not supported, the PIACS DC4.1 panel can be configured to show dust transport in list form.
CVC trace	This innovative feature addresses limitations to traditional CVC measurements by allowing real-time monitoring of high-voltage electrical field behaviour during hot operations. Real-time voltage and current are displayed on the user interface, indicating whether the ESP is functioning normally or if there is an issue, such as a mechanical malfunction, dust build-up, or a problem with the flow/pressure.
Scope function	Downloading scope data has been significantly improved. The appearance of the scope page has also been updated.
Multi-operation mode	The PIACS DC4.1 system allows users to define a set of multiple high-voltage operating modes to reflect different plant operating scenarios.
Scheduled events	Certain rapping events – such as reduced-power rapping, power-off rapping, or additional rapping events – can be scheduled to occur at specific times.
Schedule maintenance	Users can now schedule maintenance service intervals for high-voltage, rapping, and heating units. A warning flag can also be set to indicate when there is less than 30 days left before a unit is up for servicing.
Coromax® visualisation	The new PIACS DC4.1 system offers visualisation of FLSmidth Coromax® mark4 via direct data interface. It can also be set-up to allow the PIACS DC4.1 user to manage and manipulate a minor set of Coromax parameters.

MODULAR FLEXIBILITY

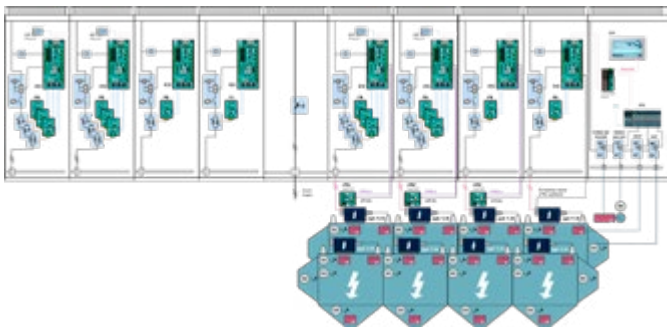
Previous generations of PIACS® controllers were built for each section of the ESP. With the PIACS DC4 controller – and continued in latest DC4.1 update – we introduced an expandable I/O system. It means you are no longer limited to only three rapping and heating feeders. You can expand by up to 90 rapping gears, 90 heaters, two purge-air, and 25 dust transport units – offering an almost limitless modular system.

Shared parts

Almost all parts can be used in both single and three-phase T/R systems, meaning you save on spare parts, have to keep track of fewer parts, and only require one order number. And, if necessary, it is easy to transition between single and three-phase T/R systems.



Modular system features

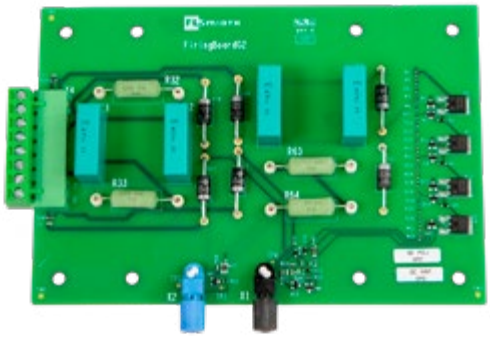


- One common interface to control and visualise the complete ESP system operation.
- High-voltage self-control in case any field or all fields lose communication with DC4.1 panel (offline mode).
- An optional local control panel for T/R control can be provided for each field.
- Cost-efficient spare parts with common parts for one and three phase systems.
- Increased electrical separation between SCR driver board and control board, using fibre-optic separation.

A 15.6” touch panel with capacitive touch screen featuring a common controller for one chamber with built-in ESP manager for remote support, and high-speed data communication with slave nodes using Ethernet Powerlink.

A 4.3” individual TFT touch panel for one T/R, with data communication with each iCU controller using Modbus, programmable via USB memory key.

iCU - intelligent Control Unit



FB - Firing Board

rMU - remote Measuring Unit

INSTALLATION OPTIONS

In addition to new panel installations, the PIACS® DC4.1 panel is available as a retrofit to existing units.

New control panel

Complete new panels are delivered pre-cabled, pre-tested, and CE certified, based on single-phase or three-phase high-voltage systems. Panels are completely customisable to match specific requirements:

- Single or individual incomers.
- Mains breaker with door handle.
- Up to 690V mains voltage.
- Up to 100kA short circuit current.
- Bottom or top cables entries.
- Optional EMC filter, power socket, light, and key interlocking system.
- Parallel or serial interface with CCS (Profibus, Profinet, Modbus, Ethernet, DeviceNet, etc).

As an option, pre-cabled and pre-tested back panels can be delivered and installed in the existing cubicles.

Built-in retrofit

The new PIACS DC4.1 systems are retrofittable with all previous versions of the control system. Retrofit kits are delivered with all required components for upgrading an existing panel with one-phase or three-phase thyristor control. Existing electrical apparel in the panels is maintained, including T/R, rapping motors, and heating systems feeders. Only key parts for new PIACS DC4.1 and I/Os installation are required.

Our electrical specialists will ensure that the new control system is properly installed in your existing ESP control panels. Built-in retrofits can be performed during maintenance stoppages or during operation, field by field.

CUSTOMER STORIES

FLSmidth has upgraded ESP control systems from all different manufacturers, starting with the first generation of PIACS® controllers. Over 500 panels have already been installed controlling the operation of around 1700 ESP fields.

Pulp & Paper

CMPC Santa Fe, Chile
Four ESPs in one of the recovery boilers were upgraded. This included new control panels and three-phase transformers for 12 fields.

Cement

Aalborg Portland, Denmark
Five new control panels for various kilns and coolers ESPs were provided, with new control panels reusing existing T/R sets.

Steel

ArcelorMittal Gent, Belgium
We installed eight new control panels for all ESPs in two sinter plants, two blast furnaces, and the steel shop, with new control panels, reusing existing T/R sets.

„We are very satisfied with FLSmidth's performance during both the design and installation of our new PIACS DC4 controllers. The new controllers are user friendly and make it easy to monitor operation and troubleshoot. They save us time and money, while meeting environmental regulations."

- Kenny Van Loo, Technicus

Power

Avedøre lignite coal power plant, Denmark
Existing control panels were upgraded for the ten field ESPs.

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