FINE CONTROLS (UK) LTD

Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product rangerepresenting leading technologies & brands:

Flow: Flow Meters & Transmitters, Flow Switches, Flow Control Valves & Batch Control Systems

Temperature: Temperature Probes & Thermowells, Temperature ransmitters,Temperature Regulators & Temperature Displays

Level: Level Transmitters & Switches

Pressure: Pressure Gauges &Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

Precision Pneumatics: Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

Valves: Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

Services: Repair, Calibration, Panel Build, System Design & Commissioning

A rotork Brand FAIRCHILD

bürkert

SIEMENS

alcon SOLENOID VALVES

A rotork Brand

MIDLAND-ACS

A rotork Brand

Honeywell

Bourdon Baumer Group

SOLDO CONTROLS

A rotork Brand

Fine Controls (UK) LTD, Bassendale Road, Croft Business Park,
Bromborough, Wirral, CH62 3QL UK
Tel: 0151 343 9966
Email: sales@finecontrols.com

SIEMENS

Process instrumentation

Generating power from wood waste with solid process automation

Thirteen years. Throw out that used wooden furniture and it will sit in a landfill for thirteen years as it decomposes.

Or, how about using it to power businesses' energy needs?

A wood waste gasification facility in England uses household wood waste—chipboard, broken furniture, building materials—to generate upwards of four megawatts of power.

Throughout the generation process, Siemens process instrumentation helps monitor and control operations, increasing efficiency and reducing waste.

Moving bedknobs to buckets

Trucks arrive regularly at the facility, first driving over a weighbridge to get material totals and then unloading wood into stockpiles. An operator maneuvers a bucket loader to carry wood from the piles onto a conveyor entering the plant.

Massive magnets remove any metals mixed in with the wood, followed by removal of rocks or other heavier debris using large fans, which blow the pieces or wood away from heavier materials.

The ideal material size for optimal burning is 150 millimeters in any dimension,

SITRANS LR560's high-frequency antenna monitors the level of materials on the walking floor as wood enters the facility on the intake conveyor.

Hundreds of SITRANS P DSIII pressure transmitters relay pressure levels from around the facility.

A row of guided wave radar transmitters from Siemens provides continuous levels of water in the scrubbers.

Milltronics MFA 4p motion failure alarm, connected to Milltronics MSP-12 motion sensor probe, monitors any stoppages that might occur on the belt conveyor.

so wood must be sorted and pieces that are too large are sent to the reject woodpile.

As the reject pile grows in size, SITRANS LR560 radar transmitter for solids level measurement monitors the height of the pile. If materials reach a certain level, the transmitter alerts operators to begin moving wood off the pile.

Similarly, after various sorting systems, the intake conveyor feeds the fuel wood onto two walking floors. SITRANS LR560 continuously monitors the level of wood on the walking floors as they slowly feed the process.

Plant designers selected this transmitter because it can be installed in open air applications, and has both a long range and very narrow beam angle.

As well, despite the wood's low dielectric constant—or reflective properties—combined with the irregular surface in the woodpile, this high-frequency transmitter has no trouble relaying accurate level measurements to the facility's control system.

A conveyor of buckets moves two to three kilograms (4.4 to 6.6 pounds) of correctly sized wood from the sorting area towards the gassifiers, where it will be burned at temperatures of 600 °C (1112 °F).

Instrumentation precision

The facility has 18 gassifiers, each monitored by a SITRANS TS temperature sensor and a SITRANS TH400 head mount temperature transmitter to ensure these high temperatures.

Setup and programming of these devices was simple, and technicians had no trouble installing them and connecting each to the facility's control system using Profibus PA industrial communications.

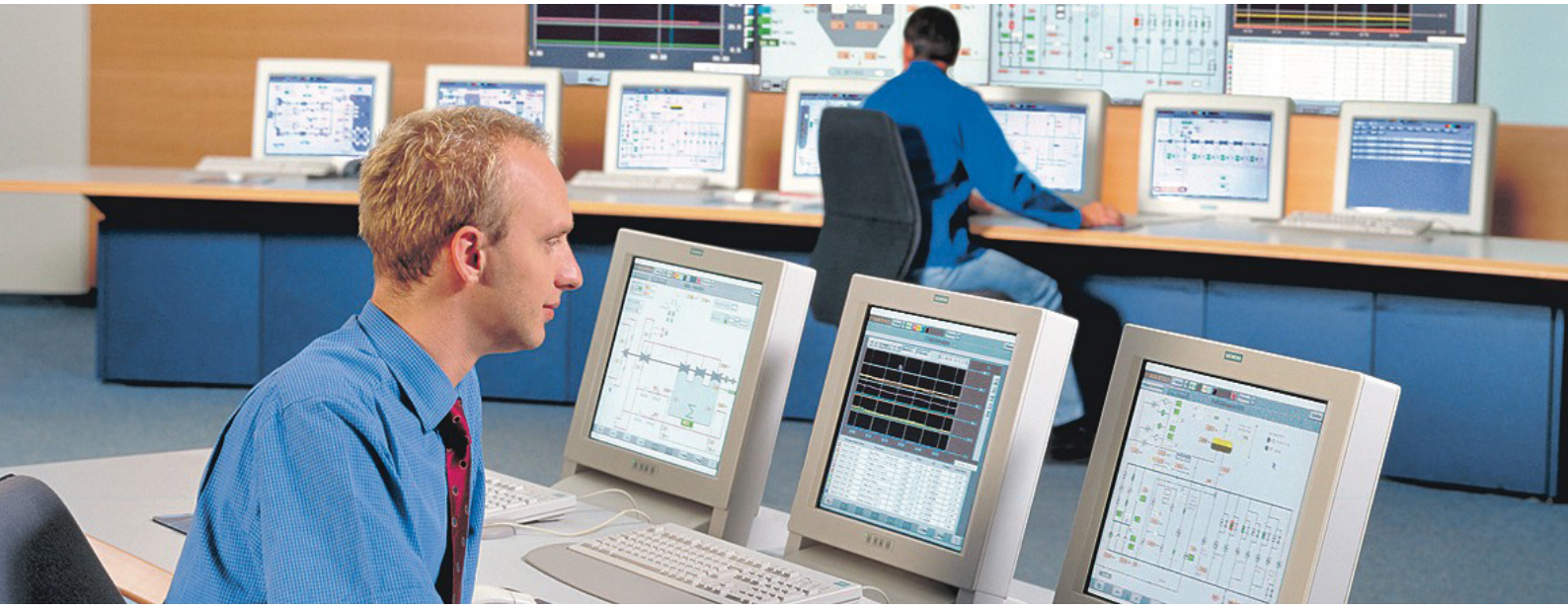
SITRANS P DSIII digital pressure transmitters measure the amount of pressure in the main combustion area of the gassifiers. Measurement accuracy is crucial here, as too much pressure could be dangerous, while pressure that is too low is not suitable for the gassification process. These transmitters offer extreme reliability in this application, maintaining the process at its optimum level and keeping operators informed of exact pressure levels.

With 140 tons of waste burned each day once the facility is operating at full capacity, operators need to remove the waste products left over after gasification. To do so, the resulting gas is cooled quickly to 25 °C (77 °F) and then moves through scrubbers. These scrubbers contain water that catches any tar particulates in the gas.

Siemens guided wave radar transmitters continuously measure the level of water in the scrubbers. As well, in the scrubber condensate vessels, Siemens Pointek CLS200 capacitance level switches provide high level alarming, sending an alert if condensate levels get too high.

The power is yours

All of these processes lead to the generation of 450 °C (842 °F) steam that powers one steam turbine, generating four megawatts of electricity. Generated heat and electricity is supplied to surrounding businesses, the national grid, and also for the plant's own consumption.



Using SIMATIC PCS-7 control system, operators monitor everything—from wood entering the facility to the megawatts of power generated—from the comfort of the control room.

The whole plant process is automated and controlled by Siemens SIMATIC PCS-7 control system. The process control system provides a complete status overview of all plant components in operation. This includes asset management and higher quality closed-loop control functions.

Integrated into SIMATIC PCS-7 control system is SIMATIC PDM (Process Device Manager), a universal tool for configuration of intelligent process instruments. The engineering personnel at the facility use SIMATIC PDM for parameter assignment, commissioning, diagnostics, and maintenance of process instruments.

In addition to those described, many other Siemens technologies make up this site in England:

- SITRANS FM MAG5100W and MAG6000 inline flowmeters on pipes measuring downstream cooling water
- Siemens Milltronics MFA 4p motion failure alarm controller and MSP-12 motion sensor on the belt conveyor, ensuring that no stoppages occur on the conveyor bringing materials into the facility
- SITRANS FX300 vortex flowmeter, providing flow measurement on condensate on the upstream deaerator
- Hundreds of other pressure and temperature monitoring devices nearly every part of the process
- Not to mention Siemens Drives and Motors in various pumping applications throughout the site

As the company's project manager says, "We've chosen Siemens because they provide us with the best combination of service and product. We are able to get a broad package of products across the whole range of our requirements.

"Since Siemens works in a range of environments around the world, they've been able to guide us in our solutions on this project, which we have found very beneficial in delivering the product on time and on budget."

Powering surrounding businesses one table leg at a time, with the help of Siemens process instrumentation and control systems.

Siemens AG
Process Industries and Drives
Östliche Rheinbrückenstraße 50
76187 Karlsruhe
Germany

Subject to change without notice
Available as pdf only