

AI-PART C
ATTACHMENT C.9.xiv.

St. Clair Power Plant
Malfunction Abatement and Preventative Maintenance
Plan for the Coal Handling System

REV3

MALFUNCTION ABATEMENT AND PREVENTATIVE MAINTENANCE PLAN COAL HANDLING SYSTEM

DTE Electric Co.

St. Clair Power Plant

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1.0 BACKGROUND

This Preventive Maintenance and Malfunction Abatement Plan has been prepared to meet the requirements of FG-COALHAND-SC, IX.1 of the St. Clair Power Plant Renewable Operating Permit. This Malfunction Abatement Plan has been prepared by DTE Electric Co. in accordance with Rule 911 of the Michigan Air Pollution Act (Part 55 of Michigan Act 451).

2.0 DESCRIPTION OF SYSTEM

The St. Clair Coal Handling System is a coal receiving site. The coal handling system is equipped with baghouse dust collectors and water sprays to maintain a safe operating environment for workers inside the various transfer points and to minimize fire or explosion hazards from accumulated dust.

A wet dust collection system was installed in Transfer house 3TH1 in the winter of 2013. The new wet collection system replaced the bag house dust collectors 30DC01 and 30DC02. Transfer houses and most of the coal belts are enclosed to control dust. The wet dust collection system is designated as 30DC01 and manufactured by Engart.

Additionally, another Engart wet dust collector was installed in 3TH5 to replace 30DC06-6 and 30DC06-8. The new wet dust collector is designated as 30DC06-6.

Finally, another Engart wet dust collector was installed in 3TH6 to replace 30DC07 and 30DC08. The new wet dust collector is designated as 30DC07.

2.1 Baghouse Dust Collectors

The baghouse dust collectors remove dust that results from coal handling operations throughout the coal handling system. The dust collectors accomplish this by pulling dust-laden air within the confines of the transfer points and filtering out the dust particles. The dust collectors allow clean air to exhaust to the atmosphere and the collected dust to be returned to the conveyor belts. The baghouse dust collectors consist of the following major components:

- Baghouse (Filter)
- Exhaust Fans
- Screw Conveyor
- Filter Cleaning Blower Fan
- Air Lock Rotary Valve
- Slide Gate
- Controls
- Indicating Lights
- Instrumentation
- Annunciators
- Fire Protection System

The baghouse is a large housing containing bags mounted in parallel. The bags extend downward with their outlets mounted upward in a faceplate. Each bag is held in an expanded position by a steel frame. An exhaust fan pulls dust-laden air into the baghouse through pick-up hoods positioned above each transfer point. Air is pulled through bags in the baghouse and dust particles are collected on the exterior (dirty) side of the bags. An outlet blower exhausts clean air that passes through the bags to a screw conveyor. The screw conveyors transport dust back to the conveyor belts. A jet-pulsed bag cleaning system utilizes pulsed air jets to knock accumulated dust off of the bags and into a hopper at the bottom of the conveyor. A rotary air-lock valve at the base of the hopper discharges accumulated dust back to the conveyor belts.

The following table lists the coal handling dust collectors covered by this Malfunction Abatement Plan.

Description	ROP Stack/Vent ID	Type
1 / 2 Bunker Room 30DC105	SV001-214	Bag-house
3 / 4 Bunker Room 30DC106	SV001-218	Bag-house
6 Bunker Room 30DC107	SV001-583	Bag-house
7 Bunker Room 30DC108	SV001-572	Bag-house
3TH1 30DC01 (ENGART)	SV001-027	Wet
3TH2 30DC03	SV001-039	Bag-house
Crusher House 30DC201	SV001-049	Bag-house
TH1 30DC102	SV001-118	Bag-house
TH-A 30DC202	SV001-050	Bag-house
3TH3 30DC04	SV001-087	Bag-house
3TH4 30DC05	SV001-136	Bag-house
Rail Car Dumper House 30DC104	SV001-143, SV001-144	Bag-house
3TH5 30DC06-6 (ENGART)	SV001-177	Wet
3TH6 30DC07	SV001-220	Bag-house
3TH6 30DC08 (ENGART)	SV001-221	Wet

2.2 Wet Dust Collection System

The wet dust collection system removes dust that results from coal handling operations in transfer house 3TH1. Two impellers built into the duct work of the wet collector pull the dust laden air through pick up hoods positioned above the coal transfer points. Captured dust particles are carried through the duct work to a wet filter that traps the coal dust. The coal dust is continuously removed from the filters by a steady jet of water. The clean air is then exhausted to the atmosphere through the existing stack, SV001-027, that was previously used for the baghouse dust collector 30DC01. Captured dust travels with the filter-wash water to the coal pile runoff system.

The wet dust collector consists of the following major components

- Filters
- Fan Motor
- Duct Work
- Controls
- Isolation Valves
- Water Supply system
- Heat Trace on water supply
- Drain
- Alarms

3.0 PREVENTIVE MAINTENANCE OGRAM

3.1 Responsible Personnel

The Plant Manager/Director is responsible for ensuring that St. Clair Power Plant operates in compliance with all environmental and safety requirements and regulations. The Plant Manager/Director delegates day to day responsibilities for coal handling operations and maintenance to the Fuel Supply Manager and Maintenance Manager. The Fuel Supply Manager and Maintenance Manager are responsible for overseeing the inspection, maintenance, and repair of all air cleaning devices. The Fuel Supply Shift Supervisor is responsible for the day to day operations of the coal handling system including coal conveyors and dust collection devices. The Plant Shift Supervisor is responsible for all operations at the plant, and is management's representative during off-hours (i.e. nights and weekends) when plant management is not on site.

Critical phone numbers are as follows:

Plant Manager/Director (810) 326-6201

Fuel Supply Manager (313) 333-9917

Maintenance Manager (810) 326-6112

Fuel Supply Shift Supervisor (810) 326-6436 (Available 24 hours per day, every day)

Plant Shift Supervisor (810) 326-6235 (Available 24 hours per day, every day)

Fuel Supply Control Board (810) 326-6305 (Staffed 24 hours per day, every day)

3.2 Inspections/Maintenance

Daily (Baghouse) Dust Collectors

Check baghouse differential indicator.
Check for visible emissions at air outlet from filter.
Check control panel for alarms or other failed conditions.
Check fan and motor bearings for excessive heat or vibration.

Daily (Wet) Dust Collector

Check water supply, pressure should not be less than 60psi
Check drain piping for pluggage.

Fuel supply personnel inspect all coal handling dust collectors once daily. The following preventive maintenance items are inspected as scheduled:

Monthly (Baghouse) Dust Collector

Fan bearing lubrication
Valve bearing lubrication
Screw conveyor bearing lubrication

Monthly (Wet) Dust Collector

Lubricate Motor Bearings
Clean knit mesh filter
Inspect Impeller guard
Inspect Impeller spray head assembly
Inspect dust box water sprays.

Six Months (bag house) Dust collectors

Fan motor lubrication	Valve gear reducing oil change
Blower motor lubrication	Screw conveyor bearing lubrication
Cleaning blower oil change	System gear reducer oil change

Six Months(Wet) Dust collector

Inspect impeller

Annual

Certified Method 9 emission observations on baghouse dust collectors and wet dust collector.

Inspect fan shaft Seal Housing (Wet collector)
Verify airflow and re-balance system (Wet Collector)

3.3 Replacement Parts

DTE Electric Co. stocks parts necessary for routine maintenance and other common replacement parts. A complete list of parts kept in stock is listed in the company's Maximo computer system. The parts list is filed by system and major components (e.g. Dust Collector 30DC04, rotary valve) and contains a complete list of parts for that component including: stock number, noun/qualifier (e.g. gear reducer), manufacturer part number and quantity on hand.

Replacement parts (e.g. replacement bags and frames, timer, solenoids, diaphragm assemblies, rotary valves) may be ordered directly from the manufacturer. Most parts can be shipped within 24 hours of ordering. A complete list of parts and catalog numbers is included in the dust collector operating manuals.

4.0 MONITORING REQUIREMENTS

The dust collectors automatically monitor operating variables that may affect the performance of the system, and are equipped with equipment trip switches and/or alarms that will shut off the equipment or alert operators of a possible malfunction. Daily inspections of the system include an inspection of the control panel to check for failed or alarm conditions. The following table summarizes typical alarms present on the dust collectors, an explanation for the alarms and expected response to an alarm.

4.1 BAG-HOUSE ALARMS

Alarm	Description	Anticipated Response
Hopper HI Level	Collected Dust has backed up into the filter	Hopper must be emptied.
HI Differential Pressure	Pressure is too high across the collector	Bags must be cleaned.
Loss Of Dust Disposal Path/ Arm Drive Overload	A jam or plug has developed in the discharge spout of the screw conveyor	Collector will shut down until the jam or plug is cleared.
High Discharge Dust Level	Dust has been detected in the discharge	Inspect discharge and shutdown if dust is present. Inspect bags and replace as necessary.
Main Fan High Vibration	Excessive fan vibration has been detected.	Collector will shut down until the problem is corrected.
Motor Overload	Motor is overloaded.	Collector will shut down until the problem is corrected.
PD Blower Intake Filter Plugged	The intake filter is plugged.	Clean or replace intake filter.

PD Blower Overload	PD blower motor is overloaded	Collector will shut down until the problem is corrected.
Clean Air Plenum Door Open	Access door is open.	Collector will shut down until the door is closed.
Low Cleaning Air Pressure	Low cleaning pressure has been detected.	Repair as necessary to restore air pressure.
Explosion Door Open	Door is open.	Collector will shut down until the door is closed.
Fire Systems Controls	High temperatures have been detected in the dust collector.	Collector will shut down and the fire suppression system will be activated.

4.2 WET DUST EXTRACTOR ALARMS

Alarm	Description	Anticipated Response
Motor Trip Alarm	Electrical System Failure	Follow instructions in STCPP-FS-JITS 11.6, 11.7, & 11.13
Low Water Pressure Alarm	Reduction in water flow.	Follow instructions in STCPP-FS-JITS 11.6, 11.7, & 11.13
Heat Trace Indicating Light Not Illuminating	Water temperature drops below 50 degrees Fahrenheit.	Follow instructions in STCPP-FS-JITS 11.6, 11.7, & 11.13

5.0 CORRECTIVE ACTION PROCEDURES

If a malfunction or failure occurs that cannot be corrected by an operator, then a DTE Electric Co. service request must be entered into the work management system MAXIMO. Then an operating and maintenance work order will be issued to repair the system. These work orders will be assigned the highest priority and will receive immediate attention by the plant maintenance department.

Reasonable measures to correct excess fugitive dust emissions will be implemented when a dust collector is shut down due to a malfunction. These measures may include any of the following:

- Application of dust suppressants.
- Water misting of transfer points during coal transfer operations.
- Ceasing coal transfer operations during hot, dry, and windy weather conditions when the potential for fugitive dust emissions is highest

Procedures for corrective action and notification of regulatory agencies during a malfunction or excess emissions event are described in DTE Electric Co. Power Plant Order No. 223.

6.0 REFERENCES

1. DTE Electric Co. Power Plant Order No. 223 Air Quality Control
2. Fuel Supply JITs