



BOILER CONTROL, COMBUSTION MANAGEMENT & HARDWARE FOR THE STEAM POWER INDUSTRY

Controlling
the **power**
of **steam**

FPS PROPOSAL NO.19X080

REV.0

07 MAY 2019

EAST KENTUCKY POWER COOPERATIVE-- COOPER STATION

UNITS 1 & 2

BURNSIDE, KY

VOODOO SCANNER UPGRADE

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1.0 INTRODUCTION

This proposal is in response to an email request from Anthony Rose of EKPC to supply a new flame scanner system for Cooper Plant to replace the existing FPS equipment. The scope of this proposal is to design, fabricate and deliver a new flame scanner system.

Fossil Power Systems Inc. (Fossil) is a Canadian company that has been supplying system hardware/software and services to international customers for more than 30 years. By providing exceptional expertise and technical knowledge Fossil has become a trusted world class leader in the supply of control solutions and instrumentation for electrical utilities, pulp and paper processing plants, petro-chemical facilities, agricultural research facilities and food processing plants. Our outstanding customer service and industry knowledge distinguishes Fossil in the industry. Fossil is highly active in the research and development of new and existing products with a dedicated team of professionals that strives constantly toward innovative solutions. This approach has allowed Fossil to continually refine our product lines, and develop new products as we focus on the future.

FPS wishes to thank East Kentucky Power Cooperative for the opportunity to submit this proposal and to assure East Kentucky Power Cooperative that should this proposal result in a contract, the contract will be executed in accordance with industry standards of good engineering practice, and will be fabricated, delivered and installed in a timely manner in accordance with the defined schedule.

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2.0 EQUIPMENT BREAKDOWN

2.1 MAIN FLAME SCANNER EQUIPMENT

The scanner heads quoted have the ability to detect the light emissions from the flame envelope in the infrared, and visible spectrum. This will allow the user unsurpassed flexibility in tuning the flame scanners for detection of the main coal burner flames.

FPS Voodoo flame scanner modules will be supplied for the flame scanner amplifiers. Communications to the integrated scanner system is supported by means of Ethernet utilizing a common programming station with factory provided software. Alternatively, a Wi-Fi enabled connection (password protected) may be used to communicate from a handheld device to an individual scanner at the burner front. This form of handheld communication will allow for adjustments to be made at the burner while physically monitoring the flame via an observation port on the boiler.

FPS Voodoo flame scanners support Modbus communications for reporting common alarms to the DCS such as head temperature alarms and hardware status signals.

The flame scanner amplifiers are housed in a flame scanner cabinet located remotely (in a control room or relay/rack room). Flame scanners are supplied with quick disconnect cables terminated at existing flame scanner junction boxes. These junction boxes will be used as termination points only, no electronics are housed in the burner front junction boxes.

The scanner system quoted includes:

- Eighteen (18) FPS Direct Sighted Voodoo Flame Scanners, dual colour
- Eighteen (18) FPS Direct Sighted Scanner Head Mounts, with 0.5" cooling air connection – 4 SCFM of cooling air required per scanner head @ 2-4 INWC above furnace pressure.
- Six (6) Dual Scanner Head Junction Boxes
- Six (6) Single Scanner Head Junction Boxes
- One (1) Single Bay Free-Standing Enclosure, including:
 - Eighteen (18) Voodoo Flame Scanner Modules
 - Two (2) Power Supply Units, 24 VDC, 20 Amp
 - One (1) Diode Module, 24 VDC, 40 Amp
 - Two (2) 16 Port Ethernet Switches
 - Wiring to terminal blocks for DCS/BMS interface
- One (1) copy of the Flame scanner monitoring / tuning software

The maximum operating temperature of the flame scanner module is 70°C (158°F.) If the scanner enclosure is mounted such that the modules are subject to high temperatures, FPS can offer a means of cooling the enclosure at an additional cost.

Quantity required: 1 per unit

2.2 SCANNER CABLE

Bulk pricing for the flame scanner cable is available through FPS. This cable meets the following specifications required for the Voodoo head:

- Conductors: 6 conductors @ #18 AWG
- Voltage: 600 V
- Operating Temperature: -40°C to 105°C (-40°F to 221°F)
- CAN Pair: #18 AWG, 120 ohm
- Certified: CSA, UL
- Rating: FT4, TC

3.0 EXTRA SERVICES (ESTIMATE ONLY)

3.1 ONSITE ENGINEERING – COMMISSIONING

Based on similar projects we have completed, FPS has estimated the per unit requirement for system checkout and commissioning to be as follows:

- Flame Scanner I/O checkout and tuning – Three (3) 8-hour days.
- Travel – Two (2) 8-hour days.

EKPC will only be billed for incurred time and expenses, and any additional engineering support required can be provided at the standard FPS rates.

4.0 DOCUMENTATION

Complete engineering, drafting and related documentation is included with each of the above items as listed below. All documentation to be provided in English only and will be provided in both electronic and paper copies. Electronic documentation to be provided in Adobe Acrobat, AutoCAD, Microsoft Word, Microsoft Excel, and/or Microsoft Project, as required.

- Equipment list
- Equipment architecture and layout drawings (including Bill of Materials)
- Recommended spare parts list
- Operation and maintenance (O&M) manuals

5.0 PRICING – PER UNIT

Section	Description	Qty Required	Ext. Price (per unit)
2.1	Main Flame Scanner Equipment	1 per unit	\$ 64,770.00
4.0	Documentation	Lot	Included

5.1 ADDITIONAL PRICING

Section	Description	Qty Required	Ext. Price
2.2	Scanner Cable	per foot	\$ 3.00
3.1	Onsite Engineering – Commissioning (Estimate)	per unit	\$ 10,000.00

5.2 TERMS

- Approximate lead time: 14-16 Weeks
- FCA FPS Factory, Dartmouth, NS, Canada
- Prices stated in U.S. currency
- Payment
 - 10% ARO
 - 40% Release to manufacture
 - 50% Ready to ship
- Taxes, duty and freight extra
- Bid Validity: 30 Days