

# Convenient NARPI Upgrades: Individual Module Replacements, Phased Implementation, or Complete System Upgrades



## Does this sound like your Rod Position Indication System?

- *Inaccurate Indication*
- *Excessive Calibration Time*
- *Drifting Indication with Power Changes*
- *Nonlinear Detector Outputs*

**Why replace your whole system when you can upgrade to a modern, accurate system for a fraction of replacement cost?**

**Why tolerate inaccurate rod indication when you can correct problem channels by upgrading on an individual rod basis?**

**Why wait for an outage when you can upgrade selected channels while at power?**

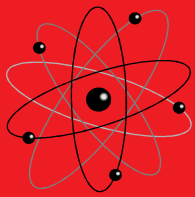
## The New Analog Rod Position Indication System (NARPI):

- *Provides automatic linearization of rod position curves.*
- *Provides automatic temperature compensation (for reactor power) on a system, group, or individual rod basis. On-board temperature compensation available.*
- *Requires minimal installation time. Virtually no wiring or physical changes required. Does not require removal of existing RPI cabinets. Minimizes impact on plant procedures.*
- *Greatly reduces calibration time. Initial calibration typically less than 13 hours. Subsequent calibration typically less than 3 hours.*

**NARPI modules have the same form, fit and function as the original models, but include component, operational, and maintenance enhancements. This includes full use of discrete electronics, individual module power supplies, and front panel access for calibration and maintenance.**

**The NARPI upgrades, can be installed at your convenience, as individual module replacements, a phased implementation, or complete system upgrade.**

**Why not investigate this cost-effective solution to reduce the burden on plant staff and numbers of unplanned call-outs, and increase system reliability and accuracy?**



## Upgrade Electronics for the Westinghouse Analog Rod Position Indication System

# AEP NARPI Modules

### AEP NARPI modules offer numerous advantages:

■ **Reduces Calibration Time**

*System calibration time reduced from days to hours. Calibration process simplified. No zero/span interaction problem.*

■ **Improves Accuracy**

*Major sources of error reduced or eliminated. Improved electronics and unique sensing circuitry provides ultra stable operation fuel cycle to fuel cycle.*

■ **Features Built in Custom Coil Stack Linearity Correction**

*Individual coil stack output signal linearity can be corrected to provide extremely linear indication over full range of rod motion.*

■ **Corrects Reactor Temperature Automatically**

*Changes in drive rod and pressure housing magnetic susceptibility due to RCS temperature changes can be compensated for automatically as reactor power level changes. Each rod's participation can be adjusted to reflect how much it is influenced by changes in power level.*

■ **Supports All Original ARPI Plant Outputs**

*Upgraded modules provide independent outputs to RPI indicators, plant process computer, rod bottom indication.*

■ **Reduces Calibration Time**

*Improved tolerance to high resistance connections in bad coil stack connectors. Bench calibration for replacement cards and simplified on line maintenance. Single failure provisions of the original system design retained.*

■ **Installs Easily and Inexpensively**

*Upgrade uses original cabinets, power supplies, card cages, card connectors, coil stacks and indicators. Minimal additional in-cabinet wiring needed. No external cabling changes or additions required for basic system upgrade.*

■ **Uses Smart Technology**

*Upgrade modules are hybrid electronics circuits utilizing analog and digital signal processing techniques. No microprocessors or programmable logic devices are employed. All data is written to EPROM chips.*

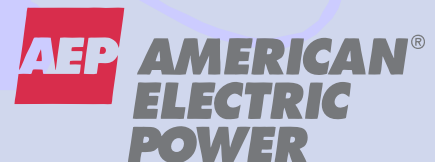
■ **Features User Friendly Maintenance Interface**

*Modules are calibrated through convenient front faceplate adjustments. Coil stack linearization data is loaded onto socketed removable EPROM's through a Windows® based program designed to run on IBM® compatibles.*

### For information please contact:

Mr. Tim Hurst  
Hurst Technologies Corp.  
P.O. Box 1718  
Angleton, TX 77516  
(409)849-5068  
(409)849-6663 fax  
E-mail: [thurst@hcinc.com](mailto:thurst@hcinc.com)

Visit the AEP web site at <http://www.aep.com>



*AEP: America's Energy Partner<sup>SM</sup>*

**HURST**  
TECHNOLOGIES  
CORP.