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**INEFFICIENCY=WASTE=LOSS**

**White Paper for Nuclear News**

**(Nuclear Promise)**

**April 20, 2019**

Dear Nuclear Customer:

It's a well-known fact that inefficiency is the result of the waste of assets or labor and is the main cause of loss of revenue. If not corrected, inefficiency leads to business closure & bankruptcy.

Most of the inefficiencies in the nuclear generation of electricity are due to the present archaic and unreliable analog instrumentation that is used to control the world's most advanced and complex technology. Because the use of this archaic technology must include necessary safety factors (to account for operator's ambiguity margins when reading the analog needle), there is a 3-5% built-in safety factor or a 3-5% inherent inefficiency. This is why typical nuclear generators run at about 90-95% efficiency instead of 100%. The average typical daily billing of their product is about \$1,000,000.00, making every 1% of electricity equal to a \$10,000.00 daily profit or loss.

Therefore we can conclude that a typical nuclear power plant wastes between \$50,000-\$100,000 daily or up to \$36.5 Million/year all due to the obsolete analog instrumentation being used. No wonder some plants have announced their closure.

In 2014 my company introduced its NTM series of bar-digital meters to help nuclear power plants comply with the Fukushima "Lessons Learned" mandate. Since then, the government has mandated new cyber security regulations (NEI 08-09, et. al.) to force plants to spend (not invest) many millions of dollars if they want to digitize their I&C rooms and become more efficient and profitable. These regulations have made it unaffordable for many aging or in competitive non regulated market based plants to upgrade to digital technology.

My company has now developed a **Cyber-Security Exempt** (no microcontrollers or CDA) Solid State Analog Meter (**SSAM**) as a solution to the problems created by the mandate. SSAM is specifically designed to help you overcome NEI 08-09 and to modernize/digitize your I&C room to become less inefficient and more profitable (meeting the Nuclear Promise).

What are the current options available for nuclear power plants to survive and become profitable?

1. Do nothing, stay with obsolete technology and vanquish. Is it really an option?
2. Implement a touch screen/computerized Automatic Control rooms (SCADA) to the tune of >\$100,000,000million+ USD and wait 5-7 years for initial R.O.I. Ref.: INL's Human Factor editorial/study of NN June 2017 P.39 and PVN study.



3. Implement a touch screen & data acquisition system (data collection) for about half the cost of number 2, and only wait about 3-5 years for initial R.O.I.
4. For **SCADA** (vs Option 2): use existing control room, building, panels and wiring, implement cyber security protocols and use Otek's **NTM** series (NEI 08-09 compliant) or equivalent for ~ ½ half the cost of number 2, but with no waiting time for R.O.I. This upgrade can even be done during a scheduled outage if properly planned and executed.
5. For **DAS** (vs. option 3): Use existing I & C, replace obsolete meters with **NTM** in a single outage add DAS (Data Collection System) for approximately 1/3 of the cost of flat screens (option 3) and no waiting for R.O.I.
6. Lowest cost & Fastest ROI: Eliminate waste and inefficiency the day you install the **SSAM** (or equivalent) at the rate of ~\$10,000.00/day for every 1% increase in productivity. This upgrade can be done without changing anything, not even stopping your process (if loop or signal powered). Just connect the SSAM in parallel with the analog meter and disconnect the obsolete analog (Plug & Play). You now have an efficient digital upgrade that has eliminated the need for the 3-5% analog safety margin, millions spent in CS & Revenue LO\$. Just change the scale plate, all else is the same. One size fits all!

Conclusion: Upgrading nuclear power plant I&C Rooms will help you become more efficient and profitable and contribute to you Nuclear Promise.

Hard to believe? See it all, attend my presentation at the ANS-Annual Meeting June 7-9.

Sincerely,

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SSAM-N



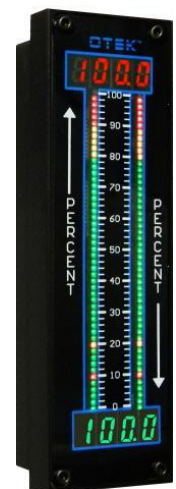
DB40



Interchangeable Scale Plates



GE180



NTM-9