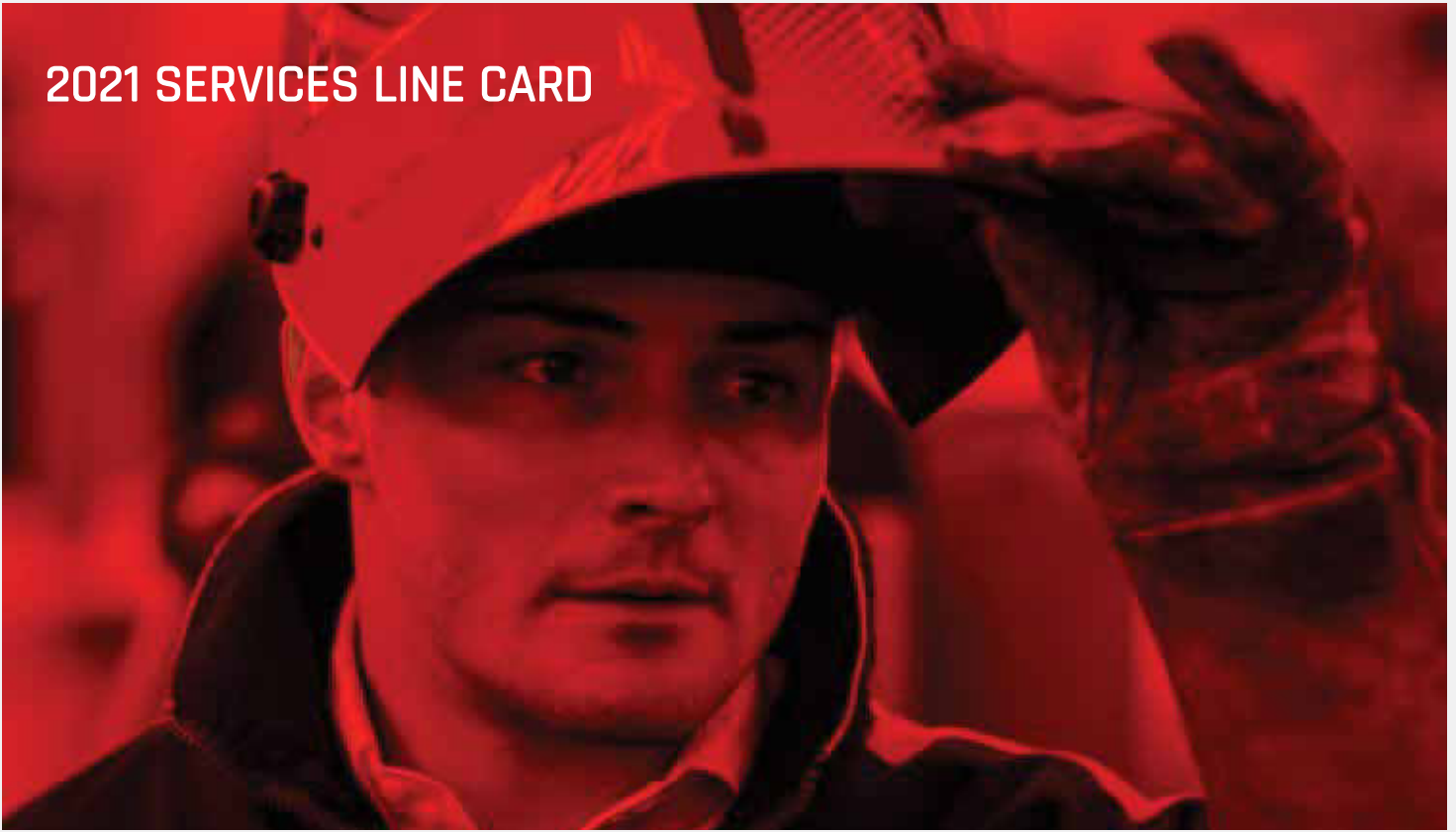


2021 SERVICES LINE CARD



CONSULTANTS
WITH ENERGY, LLC

CWE is an SBA recognized Veteran Owned Small Business (VOSB) that provides best-in-class services & products to the energy sector. Safely delivering, quality, and value we ensure each client receives the highest level of attention. Leverage our experience and nimble size to quickly respond providing intelligent solutions to your issues. Call to discuss your needs and we will deliver solutions that exceed expectations.

PROJECT MANAGEMENT SERVICES

- ✓ Project Execution (Turnkey, Scope of Work or Specific Skillsets)

- ✓ Hydroelectric, Solar, CHP, RICE, Aero, Frame, Coal, Biofuels and WTE plants
- ✓ Advisory Consulting & Subject Matter Experts (multiple areas)
- ✓ Balance of Plant
- ✓ Water Treatment
- ✓ Oil & Gas Pipeline Pumps & Compressors
- ✓ Fossil Plants
- ✓ Field Engineers
 - ▶ Mechanical
 - ▶ Electrical, Instrumentation & Turbine Control Systems & BOP DCS / PCS Systems
 - ▶ Structural
 - ▶ Civil



5605 North MacArthur Boulevard | Irving, Texas 75038

1-833-293-3973

PRE-COMMISSIONING, COMMISSIONING, STARTUP

- ✓ Turnkey Commissioning Services
- ✓ Dry Commissioning / Wet Commissioning / POCO & Hot Commissioning
- ✓ Startup Management, CSU Engineers, Techs and Specialists
- ✓ Construction Turnover (CTO) and Operations Turnover (OTO)
- ✓ Commissioning Planning, Procedures and Program Management
- ✓ OEM Support Services

FIELD TESTING & INSPECTION

- ✓ Mechanical & Electrical System
- ✓ Instrumentation & Control Systems
 - o I&C Onsite Calibrations & Audits
 - o I&C Loop Checks & Functional Testing
 - o Process Control Valve Testing & Maintenance

SHUTDOWNS, TURNAROUND & OUTAGE (STO)

- ✓ Turnaround Planning & Scheduling
- ✓ QA/QC Inspections
- ✓ I&C Field Support
- ✓ Mechanical Field Support
- ✓ Electrical Field Support
- ✓ Thermography Audits

SPECIALTY SERVICES

- ✓ Rotating Equipment
- ✓ Piping System Oil Flushes
- ✓ Mechanical and Chemical Cleaning & Steam Blow
- ✓ Subcontract Procurement & Oversight Services
- ✓ OEM Factory Acceptance Testing
- ✓ Load Bank Testing
- ✓ Third Party Vendor Inspectors
- ✓ One-Off & Grey Market Procurement
- ✓ Integrated System Drawings

PROGRAMS, PROCEDURES, STUDIES & ANALYSIS

- ✓ NFPA 70E Compliance Audits
- ✓ Protection System Coordination
- ✓ Procedures / Programs
- ✓ Plant Operating Procedures
- ✓ Lock Out Tag Out
- ✓ Testing and Maintenance Procedures
- ✓ Data Sheets of all Electrical Equipment

ONSITE TRAINING

- ✓ Operating Fundamentals
- ✓ 3rd Party O&M Training
- ✓ OSHA 10 Hour
- ✓ OSHA 30 Hour
- ✓ General Electrical Safety
- ✓ NFPA 70E Compliance

HYDRO & CT TURBINE SERVICE & MAINTENANCE

- ✓ Installation & Commissioning Oversight
- ✓ Outage Management & Support
- ✓ Borescope Inspections
- ✓ Package Inspections
- ✓ 3rd Party Inspection & Witnessing

SKILLED CRAFT & CONSTRUCTION FIELD SUPPORT

- ✓ Millwrights, Mechanics & Machinists
- ✓ Certified Welders
- ✓ Electricians
- ✓ Instrument Fitters & Boilermakers
- ✓ Heavy Equipment Operators

OPERATIONS & MAINTENANCE

- ✓ Pre-Acceptance Operations
- ✓ Short Term Staff Augmentation
- ✓ Long Term O&M Contract Operations
- ✓ Specialty O&M Contracting
- ✓ Transitional Operations (decommissioning operations, labor disputes, asset sale, etc.)

ELECTRICAL TESTING

HIGH, MEDIUM & LOW VOLTAGE SYSTEMS



Ensuring your facility's electrical devices, equipment and system is safe and ready for service is at the heart of Consultants With Energy LLC's electrical testing services. Whether it is a new installation, retrofit or existing system, Consultants With Energy, LLC will execute the appropriate electrical testing of all protection and control devices, cabling, terminations, interlocks and other components in your high, medium, and low voltage switchgear, motor control centers, breakers, battery banks, transformers, and other system equipment. We strictly adhere to the latest applicable ANSI/NETA Test Specifications.


- Low, Medium & High Voltage Electrical Systems
- Substations,
- Switchyards
- Switchgear
- Relays & Protection, Controls

- DCS, SCADA & RTU
- Batteries, UPS & Inverters
- Transformers
- ATS
- Generators

- Generators
- QA/QC
- Factory Acceptance Testing
- Load Bank Testing – Resistive, Reactive & Inductive



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FIELD SERVICES

- Construction Oversight & Construction Testing
- QA/QC & Inspection Services
- Acceptance Testing - ANSI/NETA-ATS 2021
- Commissioning - ANSI/NETA-ECC-2020
- Maintenance Testing - ANSI/NETA-MCS 2019
- Repair & Maintenance of New & Vintage Gear
- Procedures

ENGINEERED SUPPORT SERVICES

- Coordination Study & Reporting
- Short Circuit Analysis
- Arc Flash Hazard Analysis
- Power Condition Monitoring
- Grid Assessments
- Buyer's Engineering Report
- Due Diligence inspections
- Failure Analysis

EXCELLENCE. DELIVERED. - SAFELY

Consultants With Energy, LLC delivers excellence while always maintaining our focus on safety. Each of our employees have current certifications for OSHA10-Hour, CPR with AED, First Aid, and NFPA 70E Arc Flash Training. CWE ensures our programs meet the industry's most stringent standards. How do we know? We participate as an ISNetworld Member Contractor!



CALL US 1-833-293-3973

WWW.CONSULTANTSWITHENERGY.COM

**WE PROVIDE
SOLUTIONS
THAT MAKE A
DIFFERENCE**

THE RIGHT PEOPLE & TOOLS FOR THE TASK:

Along with expert engineers and technologists, Consultants With Energy, LLC has tremendous equipment capacity which allows our teams to use only modern and reliable test equipment from manufactures such as Omicron, Doble, Fluke, Meggar and others. Going beyond the industry norm, each of our test sets have been calibrated within 6 months of each test we perform, and we provide you with the documentation to ensure each measurant is traceable to the national standards (NIST).



INSTRUMENTATION & CONTROLS SERVICES



CONSULTANTS
WITH ENERGY, LLC

1-833-CWE-EXPERTS

www.consultantswithenergy.com



Our Instrumentation Team will safely and expertly support your upcoming commissioning, startup, shutdown & turnaround, outage, scheduled calibration audit or emergent troubleshooting needs. Using state of the art modern, calibrated and reliable measurement test equipment to provide measurements that are traceable to NIST, we will perform the work and provide complete and organized documentation which allows your team to see what was done so that ongoing maintenance can be planned for the future. Each device will receive the attention that is necessary to ensure that what you see is what you got.

We are ready to support your facility.

- **Install Firmware Updates**
- **Install Security Updates**
- **Bench Calibrations of field devices**
- **Installation of Instrumentation**
- **Point to Point Checks**
- **Functional Testing**
- **Establish communication between field to PLC, DCS, SCADA and/or RTU**
- **Loop Checks & Full Loop PID Tuning**
- **Design & configuration of wireless networks**
- **Configuration & calibration of pressure, temperature, and level transmitters**

Why Should I Care About Calibrations?



WHAT ARE CALIBRATIONS?

Calibration is often required with a new instrument or when a specified time period or a specified number of operating hours has elapsed. In addition, calibration is usually carried out when an instrument has been subjected to an unexpected shock or vibration that may have put it out of its specified limits. When a sensor or instrument experiences temperature variations or physical stress over time, its performance will invariably begin to



decline, which is known as 'drift'. This means that measurement data from the sensor becomes unreliable. Although drift cannot be eliminated, it can be discovered and rectified via calibration. The purpose of calibration is to determine how accurate an instrument or sensor is. Although most instruments provide high accuracy these days, regulatory bodies often need to know just how inaccurate a particular instrument is and whether it drifts in and out of specified tolerance over time. The costs and risks of not calibrating. Unfortunately, calibration has costs

associated with it and in uncertain economic times, this activity can often become neglected or the interval between calibration checks on instruments can be extended in order to cut costs or simply through a lack of resources or manpower. However, neglecting calibration can lead to unscheduled production or machine downtime, product, and process quality issues or even equipment damage. Furthermore, if the instrument is critical to a process or is in a hazardous area, allowing that sensor to drift over time could potentially result in a risk to employee safety. Similarly, a product manufactured by a plant with poorly calibrated instruments could present a risk to both consumers and customers. In certain situations, this may even lead to a company losing its license to operate due to that company not meeting its regulatory requirements. In the power generation, energy and utilities industries, instrument calibration can help to optimize a company's process or to increase the capacity. For example, at the one CWE project, by calibrating the measurement of the dry bulb, and wet bulb temperatures and the barometric pressure, the gas turbine was able to generate more output power during peak operations – increasing revenues.

Safety is another important reason to calibrate instruments. Production environments are potentially high-risk areas for employees and can involve high temperatures and high pressures. Incorrect measurements in a hazardous

area could lead to serious consequences, particularly in the oil and gas, petrochemicals, and chemicals sectors. Ronald Weitzman is a CWE Field Instrumentation and Controls Technician at a large, combined cycle power facility under construction in the eastern US. As he puts it: "Calibration is of great importance, especially from the viewpoint of safety, normal startup and shutdown operations and even efficiency of the facility once commissioned. Ensuring that the Control Room Operator and DCS System is accurately "seeing" what is actually occurring in a system is precision work and it is important that real time data is available for both the automated systems and operations personnel if we are to expect either to make correct decisions. These decisions are based on data that is derived from instrumentation. Instrumentation that provide wrong values could easily ruin the equipment which is rotating at high speeds. The plant is also full of pressure instruments and so it is also important for the safety of the workers that those instruments show the right values." Neglecting to calibrate process instruments can also affect a company's bottom line profits. This is particularly true if invoicing is based on accurate process measurements, for example, gas conversion devices. Indeed, according to recent research by Nielsen Research/ATS Studies show that poor quality calibration is on average costing manufacturers more than 1.7 million US dollars every year. When only large companies with revenues of more than



Why Should I Care About Calibrations?

(continued)



1 billion US dollars are considered, this figure rises dramatically to more than 4 billion US dollars per year. Proper invoicing is therefore critical to energy and utilities companies. One CWE Client states that “Most importantly, with regards to flow analyzers, accurate measurements ensure proper billing. The impact of even a small measurement error can be tremendous in terms of lost revenue. Customers want to pay for the exact amount of gas they have received. Therefore, gas conversion devices must be extremely accurate in measuring delivered gas. This means that requirements for the calibrators are especially high.” Today, controlling emissions is another critical factor for many process manufacturers. Calibrating instruments can help to make combustion more efficient in utility scale boilers and furnaces. The latest Government regulations relating to carbon emissions may also require that companies calibrate specific instruments on a regular basis, including sensors used for measuring CO2 and NOX emissions. Until around 2002 calibration of non-control type instrumentation was mainly driven by economic motives as even the smallest of errors in delivery quantities are unacceptable in any companies’ operations due to the vast sums of money involved for both customers and governments [fiscal metering]. Today, calibration has an important role especially for the license to operate. Government regulations demand that specific instruments must be calibrated,

for example, instruments related to CO2 and NOX emissions.”

Common Misconceptions

There are some common misconceptions when it comes to instrument calibration. For example, some manufacturers claim that they do not need to calibrate their fieldbus instruments because they are digital and so are always accurate and correct. This is simply not true. The main difference between fieldbus and conventional transmitters is that the output signal is a fully digital fieldbus signal. Changing the output signal does not change the need for periodic calibration. Although fieldbus transmitters have been improved in terms of their measurement accuracy when compared to analogue transmitters, this does not eliminate the need for calibration.

Another very unfortunate but common misunderstanding is that new instruments do not require calibration. Again, this is not true. Just because a sensor is newly installed does not mean that it will perform within the required specifications. By calibrating an instrument before installation, a company can enter all the necessary instrument data to its calibration database or calibration management software, as well as begin to monitor the stability or drift of the instrument over time.

When to Calibrate

Due to drift, all instruments require calibrating at set intervals. How often they are calibrated depends on several factors. First, the manufacturer of the instrument will provide a recommended calibration interval. This interval may be decreased if the instrument is being used in a critical process or application. Quality standards may also dictate how often a pressure or temperature sensor needs calibrating.

CWE can provide you with a cost estimate to calibrate all your process instrumentation so that your systems are reading and responding to actual conditions.

CWE can tailor our field calibration services to your needs & budget:

- Safety & Unit Critical Only
- Emissions Compliance
- Process Efficiency
- Monitor Only
- Alarm Priority Audits
- Logic Validation & More

Call Or Email Us Today and Tell Us About Your Plant Issues.

1-833-293-3973

www.consultantswithenergy.com



HYDRO PROJECT SERVICES FROM START TO FINISH, EXCELLENCE. DELIVERED.



Our company's DNA is a strongly connected bond between safety, integrity, tenacity, talent, and ethics. The result is best in class service delivered by a diverse team of professionals that not only deliver superior value and results to our clients but are a force multiplier to any team they are assigned.

Our approach is founded in common sense, experience, hard work and innovation for improvement, not merely for the sake of being innovative. We believe in delivering real value that is measurable and repeatable. Consultants With Energy, LLC (CWE) provides companies in the hydroelectric sector with project expertise, third-party engineering capabilities, specialists, technicians, operations, and maintenance personnel as well as craft support services & equipment that you can rely on today, tomorrow and beyond.

CWE provides turnkey, tailored scope of work solutions and supplemental staff to your team during planned projects, emergent needs, peak periods as well as transitional periods. CWE can also support decommissioning planning and execution for assets being retired from commercial operation.

We offer solutions for installation, commissioning, operations and maintenance of hydro, and balance of plant equipment. CWE can support greenfield sites as well as deliver superior support to unit rehabs, retrofits, uprate & upgrades. CWE also offers service solutions for Owner's with complicated decommissioning and retirement activities for their coal-based generation.

We are not a large company which makes us nimble and requires us to be smart about every project we pursue. Banks are too big to fail. CWE is too small to ignore our clients or risk our reputation on projects we cannot or should not pursue. As such, we will not waste your time or your money. Know that if we bid it, we can perform it.








Our Hydro Capabilities

- Project Consultancy & Advisory Services
- Hydro Plant O&M Services (Third-Party O&M Provider and/or Supplemental Staff)
- Hydro Turbine/Generator Maintenance
- Turbine/Generator Auxiliary Equipment Install
- Unit Inspection & Maintenance
- Spillway Gates and Controls
- Plant/Unit Inlet Valves and Controls
- Emergent Rehabilitation & Repairs
- Scheduled Outage Support & Upgrades
- OEM & Facility Owner Support for Unit Rehab & Upgrades
- BOP-E and BOP-M
- Hydraulic/Digital Governors
- Plant Control System & Automation
- Design Build, Commission, Operate Solutions
- Modification, Inspection & Repair
- Instrumentation & Controls Calibrations, Tuning & Trip Protection
- Protective Relay Testing, Transformer, Switchyard, Switchgear, MCC Maintenance & Upgrades
- Project Management, Site Management, Construction Management & Project Controls
- Onsite Training including NFPA 70E & OSHA certification
- Field Support
 - Mechanical, Turbine, Generator, Rotating Equip, BOP & Hydraulics
 - Electrical, Instrumentation & Controls
 - QA/QC Inspectors, Field Inspectors,
 - Documentation Auditors & Inspectors
 - Geotechnical, Civil & Structural
 - Safety Site Supervisors



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