**OBJECTIVES**

- Develop sensors and controls technologies that will enable higher efficiency, improved availability, increased reliability, lower electricity costs, and ability to respond to load cycling.
- Demonstrate the ability to realize the improvements to existing power plants through cost-effective efficiency and reliability research and development.

**SENSORS & CONTROLS**

**University of Utah**:
- Detection of target gases at high temperatures

**West Virginia University**:
- Real-time measurement of temperature profiles in different boiler combustion zones

**Opto-Knowledge System, Inc.**:
- SO₂ monitoring for optimal control of alkali injection systems

**Microbeam Technologies, Inc.**:
- Predictions of the impacts of coal quality on boiler operations

**Sparkcognition**:
- Machine-learning algorithms to detect and diagnose premature equipment failure

**University of Maine**:
- Wireless harsh-environment sensor technology

**West Virginia University**:
- Electrochemical high-temperature corrosion sensor

**Develop Sensors and Controls Technologies to Improve Power Plants**

- **Title**: ImPOWER—Improvements to Coal Combustion Power Plants
- **Performers**: University of Utah, West Virginia University, Sparkcognition, and Opto-Knowledge Systems, Inc.
- **Total Award Value Across All Projects**: $2,592,152
- **Summary**: Laser sensor for continuous SO₂ monitoring, Artificial Intelligence Techniques, Ultrasoundic Measurements of Temperature Profiles and Heat Fluxes, High-Temperature Gas Sensors for Coal Combustion System

**Demonstrate Power Plant Improvement through R&D**

- **Title**: Advanced Combustion Coal Power Plant Improvement Technologies
- **Performers**: Microbeam Technologies, Inc., University of Maine, and West Virginia University
- **Total Award Value Across All Projects**: $6,003,602
- **Summary**: Integrated, Predictive and Condition-Based Monitoring Tools; Wireless Harsh-Environment Sensors for Improved Condition-Based Monitoring

**Accomplishments**

- Host power plant sites for demonstration have been identified
- Initial negotiations have been completed
- Technical scope and milestones have been established
- Project kick-offs coming soon

**Technology Managers**
- Briggs White
- John Rocky

**Team Supervisor**
- Patricia Rawls