

**FLUKE®**

**Precision and  
accuracy for the  
intelligent future**

**Clean Energy**  
Fluke products and  
applications handbook



**FLUKE®**

Driven by the urgency to tackle climate change, several countries are setting new policies and taking on technology innovation. This has given rise to the emergence of a new industry - the clean energy.

Many countries have set the goal of achieving net zero carbon emissions by 2050-2060, which leads to an optimistic long-term outlook for PV, wind power, hydropower and other new energies, with demand rising every year.

Focusing on the clean energy industry, Fluke provides tools and solutions to support the preparation of core materials used in the upstream production process of clean energy, so as to ensure smooth operations and safe production of PV power stations, wind power farms and hydropower equipment.



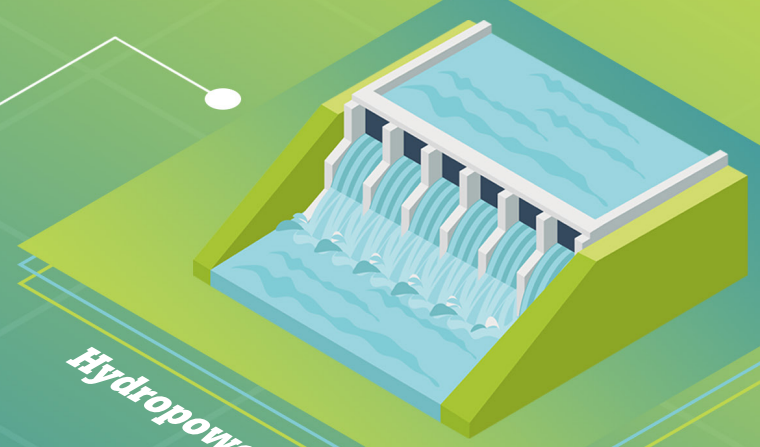
**FLUKE**®



*Clean Energy Institute*



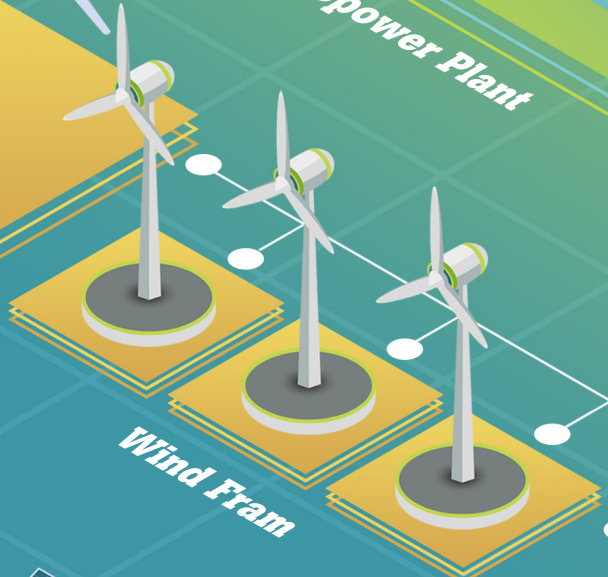
*Wind Turbine*



*Hydropower Plant*



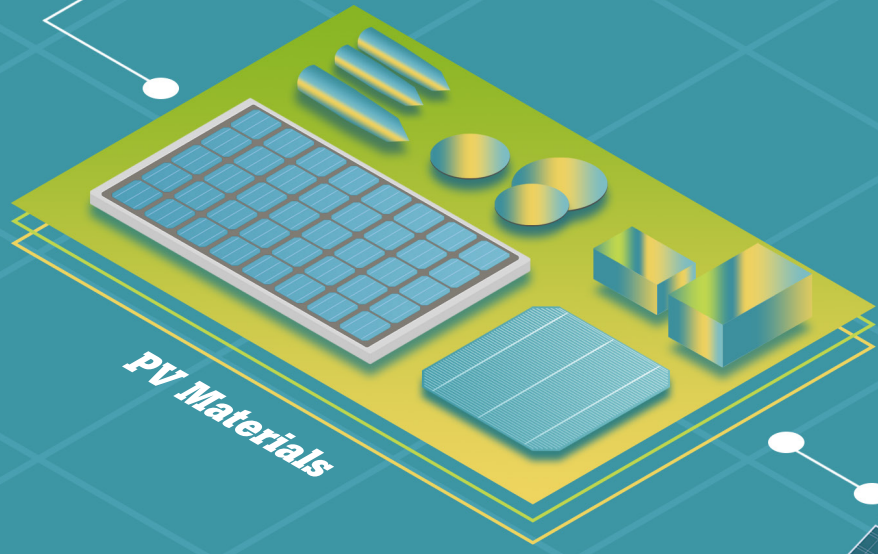
*Metrology Laboratory*



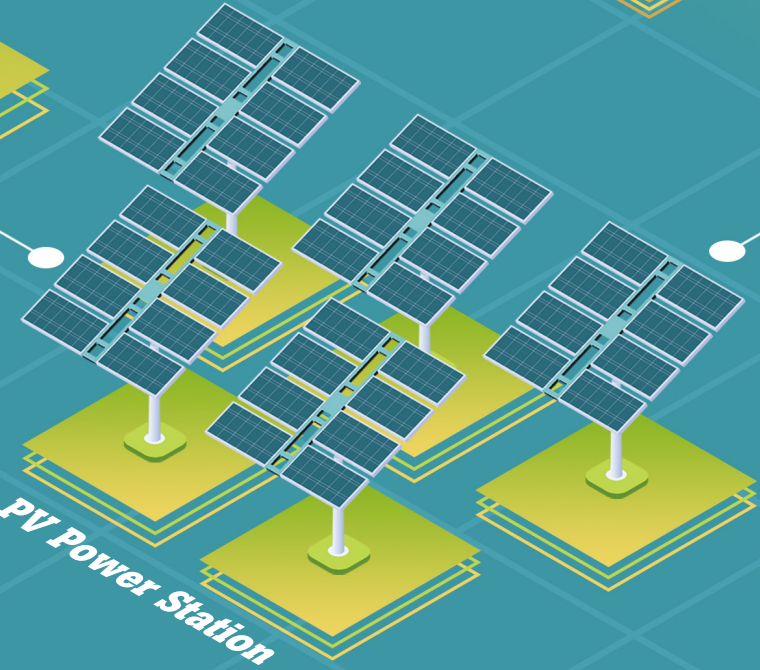
*Wind Farm*



*Data Monitoring Station*



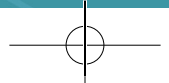
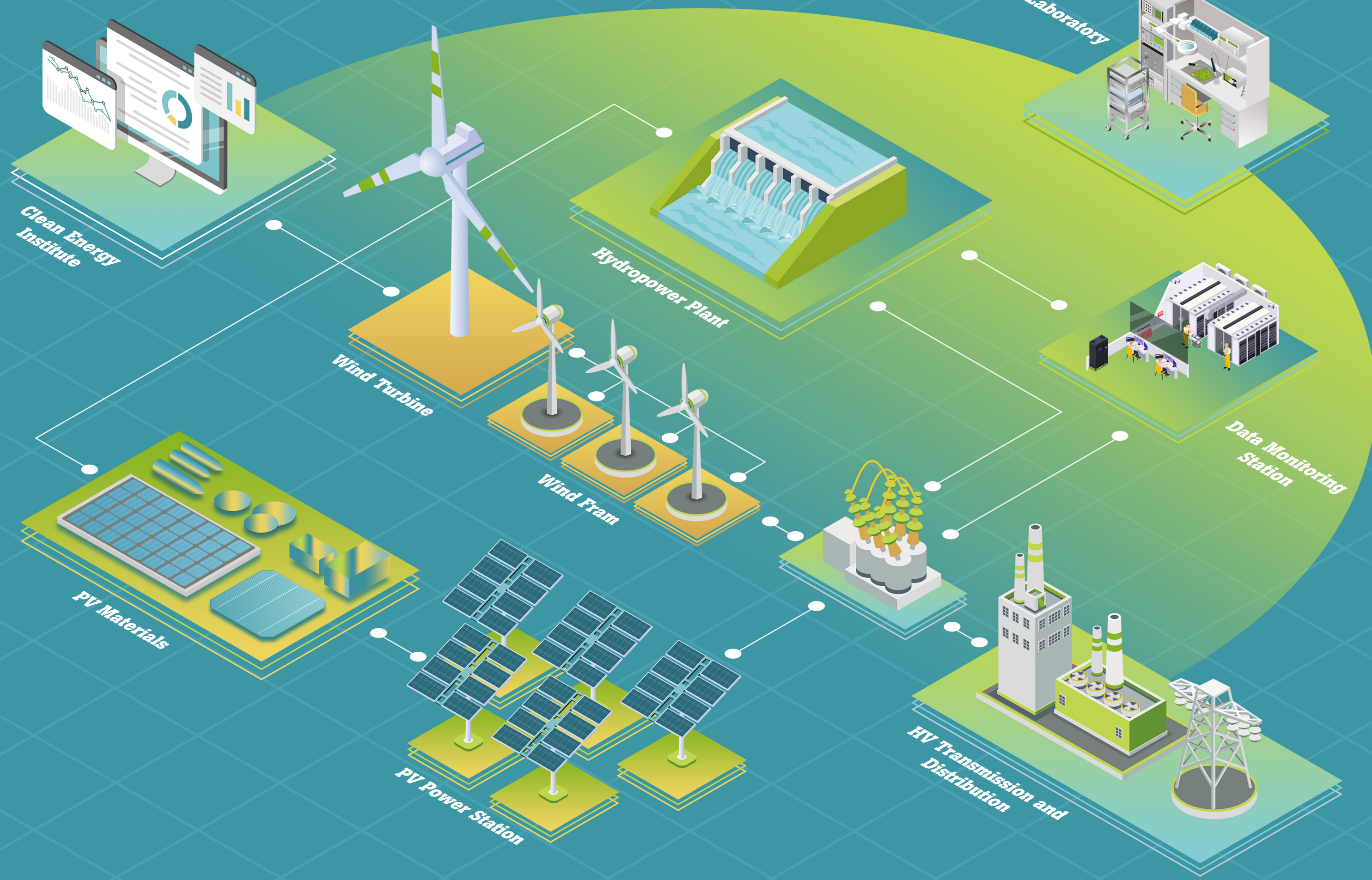
*PV Materials*



*PV Power Station*



*HV Transmission and Distribution*



# Fluke test tools

FLUKE®

**1** Clean energy technology research



**Fluke 393 FC**  
Clamp Meter, 1500V



## Applications

In the field of clean and electrical energy production and consumption, companies are advancing on new clean energy technologies to reduce carbon emissions. Clean energy has received great attention in the world. It is emerging fast with high demand for alternative energy generation types and research and innovation is critical to support the industry. At present, countries leading the energy transition are focusing more on the field test, device and material development, microgrid simulation, power transmission and distribution, inverter research and PV power station standards etc..

- Norma 6000
- 1777
- 393FC
- TiS 75+
- 190-III
- 1740

## Products Recommended

**Fluke Norma 6000 Series**  
Power Analyzer



**Fluke TiS75+**  
Thermal Camera



**Fluke 190 Series III**  
Digital Oscilloscopes,  
with Color Display



**Fluke 1777**  
Power Quality Analyzer

**Fluke 1740 Series**  
Portable Three-Phase  
Power Quality Loggers



## 2

### PV power generation

PV power generation system uses photovoltaic effect to convert the sun's rays directly into electricity. It has broad prospects for development by high reliability, long service life, no environmental pollution, independent power generation and supports micro-grid solution.



**Thermalert 4.0 Series Pyrometer**

## Applications

### 2.1 Production of PV materials

The production process of PV modules require several manufacturing steps that typically occur separately from each other.

Temperature control is critical during polysilicon rod, silicon ingot and silicon wafer production. Infrared pyrometers are used to monitor critical temperature values during this production process. The SV600 continuously monitors for gas leaks in the facility. This is followed by cell fabrication and module assembly. The glass required for module assembly must be tempered in an oven. The glass furnace tracker system is used to measure true glass temperatures through the furnace and air quench to get the full picture. MP150 line scanners provide edge to edge thermal imaging of the tempered glass surface to ensure products are manufactured to specifications to improve quality.

- MI3
- SV600
- DP5
- 4181
- Endurance
- T40
- MP150



**MI3 Miniature Infrared Pyrometer**



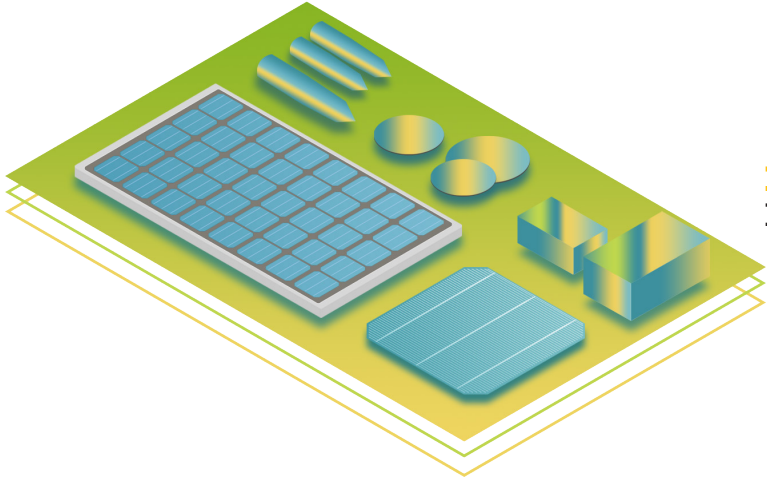
**Datapaq DP5 Glass Furnace Tracker System**



**Fluke SV600 Fixed Acoustic Imager**



**MP150 Linescanner**



**Endurance Series Pyrometer**

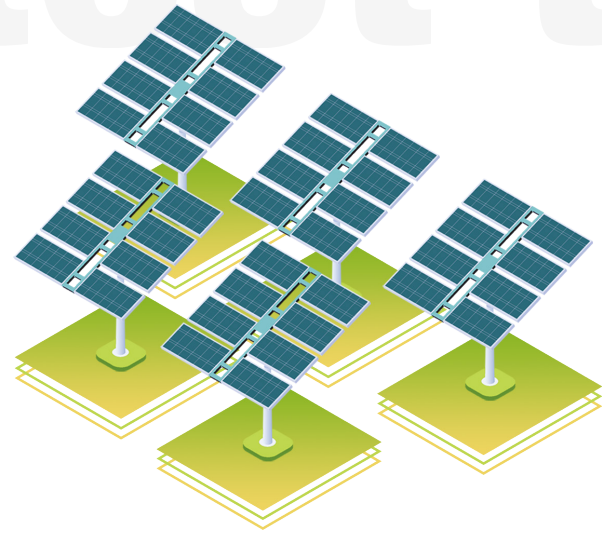


**Fluke 4181 Precision IR Calibrator**

## Products Recommended

# Fluke test tools

FLUKE®



**SMFT-1000**  
Multifunction PV Tester



**Fluke IRR1 SOL**  
Solar Irradiance Meter



**Fluke 1777**  
Power Quality Analyzer



**Fluke ii910**  
Acoustic Imager



**Fluke Norma 6004**  
Power Analyzer



**ThermoView®**  
Critical Asset  
Monitoring Solution



**MI3**  
Miniature Infrared  
Pyrometer

## Applications

### 2.2 Maintenance of PV power stations

PV power stations use solar power to generate electricity, and there are critical assets that require proper maintenance such as PV strings, inverter systems, combiner boxes, AC/DC wiring connections and battery energy storage systems. Efficient and economical operation of a PV power station requires reliable operation of the equipment in the station to prevent downtime due to failure of system. Therefore, in the process of operation and maintenance, it is necessary to pay attention to the components' solar irradiance test, power quality check, inverter power measurement, solar panel temperature test, current, voltage and insulation safety tests, and IV curve performance and troubleshooting.



Online temperature monitoring solutions for on small Solar PV installations. Complete range of products to meet their critical asset monitoring needs.



**Fluke 393FC**  
Clamp Meter



**Fluke Ti480 PRO**  
Infrared Camera

Products  
Recommended

Products  
Recommended

## 3 Wind power

Backed by years of research and development, wind power technology has reached maturity. Cost of wind power production is decreasing, paving the way for many countries to select wind power as their transition into clean energy.

The current industrial application demand in clean energy production is to continuously reduce the Levelized Cost of Energy (LCOE). To reduce LCOE in wind power, it is important to ensure the stable operation reduce downtime. Fluke provides comprehensive solutions for wind power equipment, including electrical and mechanical maintenance, data acquisition, condition assessment to ensure the smooth, stable and efficient operation. <sup>2</sup>

<sup>2</sup> <https://gwec.net/global-wind-report-2022/>

### Applications

#### 3.1 Wind turbine components

The complex mechanical and electrical structure of the wind turbine has given rise to a variety of critical assets that requires dedicated maintenance solution. The monitoring of key components can effectively reduce unplanned downtime.

- MI3
- ThermoView®
- TiX 580



**MI3**  
Miniature Infrared Pyrometer



**ThermoView®**  
Critical Asset Monitoring Solution



**Fluke TiX580**  
Infrared Camera



Products Recommended

### Applications

#### 3.2 Wind power farms

Wind power farms

- 810
- 831
- 190-204
- ii910
- MI3
- SV600
- TV30



**ThermoView TV30**  
Thermal Imager



**Fluke SV600**  
Fixed Acoustic Imager



Products Recommended

# Fluke test tools

FLUKE®

**Fluke 810**  
Vibration Tester



**Fluke 190-204-III-S**  
ScopeMeter® Test Tool



**Fluke 831**  
Laser Shaft  
Alignment Tool



**Fluke ii910**  
Acoustic Imager



4

Hydropower

## Applications

Hydropower is another alternative source of clean energy. The industry has also implemented industrial control system to control the processes. It is also necessary to perform tests to ensure the efficient, reliable and safe operation of the hydropower system.

- 177X
- 1748
- 729 PRO
- ii900
- 754
- 750P
- ThermoView®
- SV600
- 9142

## Products Recommended



**Fluke 1777 and Fluke 1748**  
Portable Power Quality Analyzer  
and Logger

**Fluke 729 Pro**  
Automatic Pressure  
Calibrator

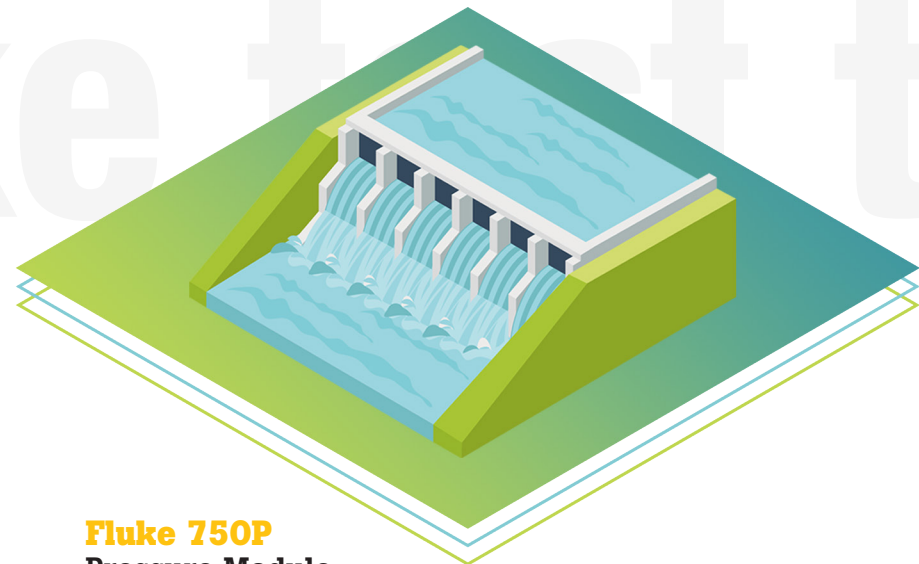


## Products Recommended



**Fluke ii900**  
Acoustic Imager



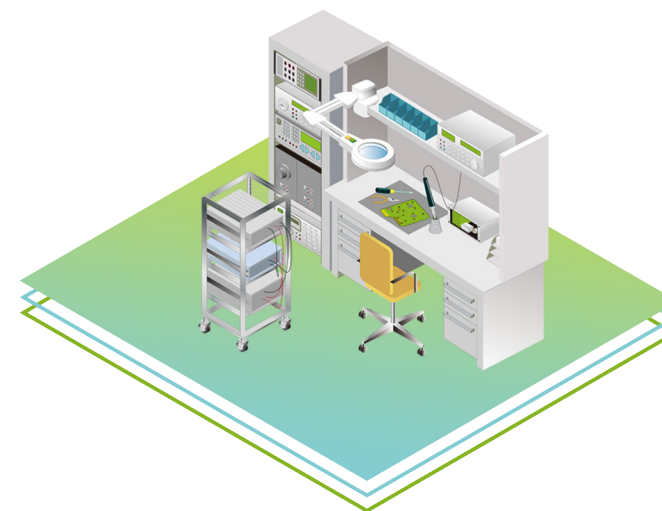


## 5 Metrology Laboratory

### Applications

Electrical measurement is important in electricity generation and management. Accurate and reliable measurement instruments play a crucial role in maintaining measurement quality. In turn, energy providers are able to provide efficient services to industrial energy consumers.

Fluke products are comprehensive, covering electrical, temperature and pressure, and are widely used in metrology, calibration and scientific research laboratories in the energy and electricity industries, as well as enterprise metrology laboratories and metrology institutes of all levels.



- 5560A
- 5730A
- 5080A
- 8588A
- 4180
- 4181
- 1586A
- 9132
- 9133

### Products Recommended



**5560A, 5730A, 5080A and 8588A**  
High Performance Electrical Calibrators and Reference Multimeters

### Products Recommended

**Fluke 754**  
Documenting Process Calibrator-HART



**Fluke 750P**  
Pressure Module



**ThermoView TV30**  
Thermal Imager



**Fluke SV600**  
Fixed Acoustic Imager



**Fluke 9142**  
Field Metrology Well

# Fluke test tools

FLUKE®



**4180 and 4181**  
Precision IR Calibrator

**1586A**  
High Precision Multi-channel  
Thermometer



**9132 and 9133**  
Portable Infrared Calibrators

Products  
Recommended

6

Data Monitoring Station

Applications

Data communication plays a crucial role in the clean energy sector by enabling real-time monitoring, analysis, and optimization of renewable energy resources. It allows for efficient management of power grids, predictive maintenance of equipment, and integration of diverse energy sources.

To ensure maximum operational uptime, certifying and maintaining the foundational copper and fiber cabling infrastructure is a basic necessity.

Versiv™ CableAnalyzer modular design supports copper certification, fiber optic loss, OTDR testing and fiber end-face inspection.

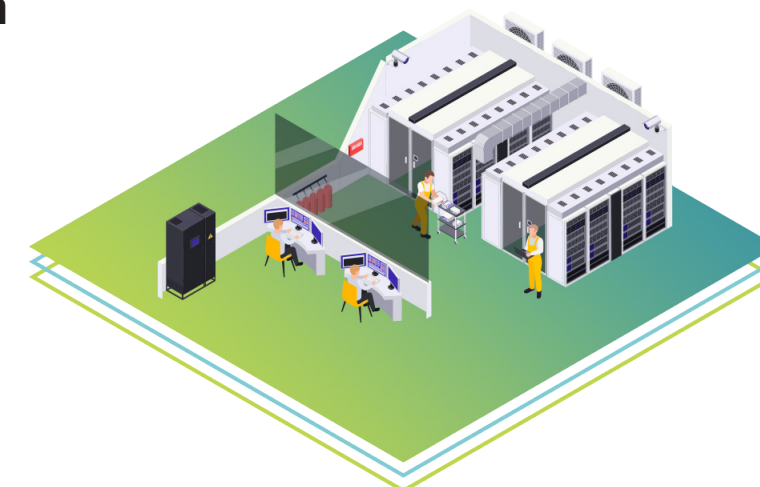
LinkIQ Cable + Network Tester validates connectivity performances and provide network diagnostics including in-depth PoE testing.



**OFP2-100-Q AP**  
OptiFiber Pro Quad OTDR



Products  
Recommended



**Versiv DSX2-8000 AP**  
CableAnalyzer

**LIQ-KIT-IE (Industrial Ethernet Kit)**  
LinkIQ™ Cable + Network Tester



Your authorized Fluke distributor

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