

**Summary:**

The Technical Training Course is designed to familiarize designers, installers, and maintenance personnel with the details on the Nexttronex architecture, as well as the fundamentals of string sizing, inverter sizing, and overall troubleshooting techniques. Nexttronex designs and manufactures utility scale solar inverter systems for arrays starting at 100 kW. Nexttronex offers a “system” including DC input components, Inverters, Load Centers (15 kV interconnect class), a PLC based “Smart Controller™” with Internet connectivity, and various monitoring and control options.

**Course Content:**

**1. Inverter Architecture**

- 1.1 Solar Inverter Overview (from Micro to Mega)
- 1.2 How Inverters Function
- 1.3 Inverter Block Diagram
- 1.4 Inverter Schematic
- 1.5 Critical and User Replaceable Components
- 1.6 Programming (Set Up) Overview
- 1.7 Power / Temperature Curve
- 1.8 Routine Maintenance

**2. System Architecture**

- 2.1 Single Line Diagram
- 2.2 System Wiring Diagram (detailed, with Instrumentation Connections)
- 2.3 Inverter Switching – Composite Efficiency Curve
- 2.4 Transformerless Inverter – Power and Voltage Curve
- 2.5 DC String Voltage and AC Coupling Voltage Requirements
- 2.6 PV String Sizing Calculations
- 2.7 Inverter Sizing Calculations
- 2.8 Inverter Sizing / Power Shaving Thresholds
- 2.9 AC Load Center Details (Connection, Protection, Monitoring)

**3. Smart Controller (PLC)**

- 3.1 Controller Network Diagram
- 3.2 Controller Wiring Diagram
- 3.3 Installation and Wiring
- 3.4 Internet Options
- 3.5 Data Screens and Options
- 3.6 Maintenance and Service
- 3.7 IP Address / Modbus Address / Data types

**4. Commissioning**

- 4.1 Safety
- 4.2 Procedure
- 4.3 Commissioning Log

**5. Troubleshooting**

- 5.1 Load Center Operation and Maintenance
- 5.2 Inverter Troubleshooting Narrative
- 5.3 Inverter Troubleshooting via keypad
- 5.4 Error and fault codes from the smart controller
- 5.5 Remote Diagnostics and monitoring

**6. Support Documents**

- 6.1 National Electrical Code requirements for 1000 V PV systems
- 6.2 GFD Information
- 6.3 Fuel / Energy / Emissions

**Course Length:**

8 hours: 4 hours from the course book, and 4 hours on-site (or in the test lab), working with an inverter.

**Instructors:**

Peter Gerhardinger, VP Technical Sales email: peterg@nexttronex . com

**Schedule:**

*Quarterly:* We offer this class once a quarter at our Toledo based headquarters.

*Cost:* The material cost is \$100 per student which includes a box lunch.

**About Nexttronex**

Nexttronex, Inc., is a manufacturer of non-residential and utility scale solar inverter systems 100 kW and larger. The company is focused on solar energy optimization through intelligent balance of systems design and offers components from the array wiring through the utility interconnection and is a leader in the promotion of high efficiency 1000 V systems. For more information please visit [www.nexttronex.com](http://www.nexttronex.com) or call 419-838-7889 or email at [info@nexttronex.com](mailto:info@nexttronex.com) .

