



TEST BENCH

For Electric and Thermal Tests of LV Drives and Other LV Electric Equipment

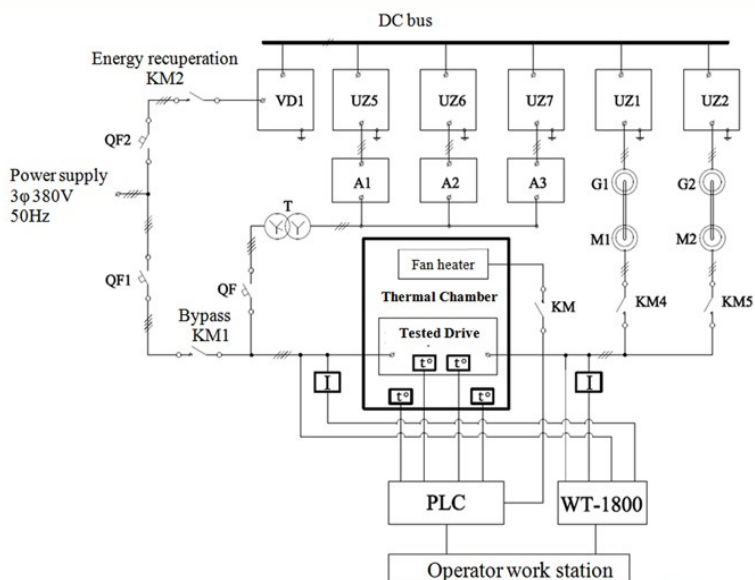
The Test Bench was developed and built by SPIK SZMA specialists in cooperation with Toshiba International Corporation (USA). The Test Bench is used for qualification, acceptance, sampling, and type tests of LV Drives and other LV electrical equipment for their compliance with effective regulations (GOST 26567-85, GOST R 51321.1-2007, etc.) and client requirements, and for R&D works in new developments.

Major technical specifications of the Test Bench are shown in the table

Item	Value
Voltage range at test equipment input and output, V	~3φ x 190...530
Current range at test equipment input and output, A	0...1250
Test equipment installed capacity range, kW	50...700
Frequency range at test equipment input, Hz	48...62
Frequency range at test equipment output, Hz	0...70
Accuracy of input and output electric parameters measurement, at least, %	0.5
Maximum ambient temperature, °C	+50
Accuracy of ambient temperature control, at least, °C	±2

Circuit Diagram of the Test Stand with Energy Recuperation via DC Bus:

- VD1 – rectifier
- UZ1...UZ7 – Toshiba voltage inverters
- A1...A3 – sinewave filters
- QF – circuit breakers
- KM – contactors
- T – power transformer
- M1, M2 – Toshiba induction motors, 375 kW
- G1, G2 – Toshiba induction generators, 375 kW
- WT-1800 – Yokogawa High Performance Power Analyzer
- WT-1806
- PLC – Toshiba V200 controller
- t – temperature sensors
- i – current sensors



SEVZAPMONTAGEAUTOMATICA

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WT-1806 High Performance Power Analyzer (Yokogawa, Japan) is used to measure electric parameters of the tested equipment, such as: voltage, current, capacity, power factor, efficiency factor, voltage and current harmonics (up to 100 harmonics), etc. WT-1806 Power Analyzer has twelve channels (6 voltage and 6 current measurement channels).

The Test Bench evaluates the energy performance of the test equipment and quality of various harmonics suppression devices.

The Test Bench is equipped with an automated tests control system which is based on Toshiba's V200 controller (PLC) and operator work station with Siemens' WinCC SCADA package.

Functionality of the automated tests control system:

- Continuous measurement of the Test Bench equipment and tested equipment parameters, including supply voltage, load, and temperature in control points (30 points);
- Automated (program specific) and remote (manual) control of the Text Bench equipment;
- Recording and display of tests' operational and accounting information, including measured parameter logging and storage in the data base;
- Test reports generation and storage in the data base.

The Test Stand is located in three rooms:

1. Rack room with power equipment of the Test Bench:



2. Thermal chamber (102 m3) for installation of the tested equipment:



3. Operator room with controls:



In the long run, further Test Bench expansion is planned for testing the equipment up to 1,500 kW and input/output voltage up to 800V.

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