



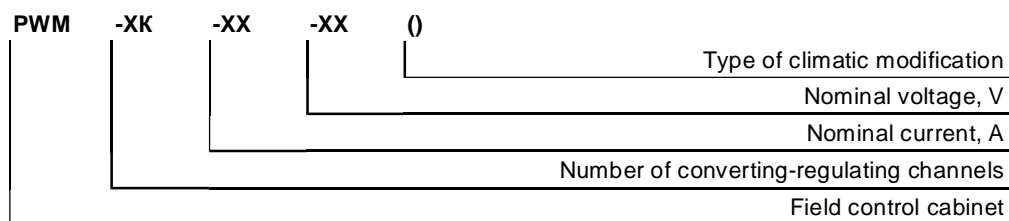
SUV SERIES AUTOMATIC FIELD CONTROL FOR BRUSHLESS TURBO- AND HYDROGENERATORS

APPLICATION

SUV series microprocessor automatic excitation control produced by CC "Energocomplekt" is designed for power supply with automatically adjustable current of field winding of brushless exciters of turbo- and hydrogenerators by capacity from 1.5 to 120 MW in all its operational modes. The control carries out all the functions of control, protection and signaling about the field system condition. SUV series controls can also be used for completing field systems of generators of other series and types, and also for reconstruction of electric machine, high-frequency and brushless field systems of generators incorporating control and control equipment realized on the basis of EPA panels, RBA-62 controls, SDE-76 control stations, ARV-R devices, etc.

SUV automatic control has passed tests on the electrodynamic model of PC "NIPT" (St. Petersburg) and has an expert testimony of its applicability on generators of any capacity.

STRUCTURE OF SYMBOLS



The control is produced in UHL climatic modification, accommodation category with the following influencing factors:

- ambient temperature from +1 up to +40 °C;
- height above sea level up to 3000 m;
- relative humidity not more than 80% at temperature +25 °C.

On operational conditions regarding mechanical factors, the control has mechanical performance class M39; thereby acceleration of the premise floor vibration can not be more than 2.5 m/sec² at frequencies in the range from 0.5 to 100 Hz, hardness class 8. Protection class of the control is IP20, 23 or 54 in accordance with GOST 14254-96.

THE CONTROL PROVIDES



Fig. 1. Appearance of type SUV-2K automatic field control (with a 100% reserve)

THE CONTROL PROVIDES

- I generators operation in the modes:
 - I initial field,
 - I idling,
 - I including in a network by methods of exact synchronization and self-synchronization,
 - I work for the network or independent loading;
 - I local or remote change of voltage setting with the speed of 0.5 % per second in the range from 80 up to 110% with relation to the generator nominal voltage;
 - I maintenance of voltage set by the device on the generator outputs with accuracy not worse than 1% with relation to the established static characteristic;
 - I independence of voltage on the generator outputs in the idling mode by frequency change from 47 to 52 Hz;
 - I forcing field current up to the preset values on the frequency rate at reduction of voltage on the generator outputs by 10-20% and more;
 - I limiting field current on the double value of the generator rotor current;
 - I limiting field current of excitant on time-dependent characteristic according to the data on the generator overload;
 - I clearing (unexciting) the generator field by clearing the brushless exciter field;
 - I program initial field;
 - I steady control of generator field current at fast alternating loadings, up to single load surges, caused by simultaneous switch-on of asynchronous engines with total capacity up to 30% of the nominal generator power;
 - I limiting the minimal field current to the value not allowing the generator switch to the mode of reactive capacity deep consumption;
 - I steady distribution of reactive capacity without use of group control or cross leveling connections between several uniform generators of comparable capacity, switched on in parallel on the generating voltage level;
 - I unloading the generator on its reactive capacity and its switching off the network.

STRUCTURE

Brushless field system includes a brushless exciter installed on the generator shaft, a control and a converting transformer connected to the generator stator clips. The control is a structurally completed block consisting of a power section and a control section. The control appearance is shown on Fig. 1. On the operational conditions, the control block can be located in a separate cabinet (Fig. 2) or in one of the panels of the generator control panel.

BASIC SPECIFICATIONS

Name of the parameter	Value
Nominal rectified current, A	4 - 100
Nominal rectified voltage, V	36 - 250
Forcing ratio on field current and voltage, r.u., not less than	3
Overload duration by two-times current, sec	60
Nominal power supply voltage of the power module, not more than, V	440
Power supply voltage frequency of the power module, Hz	25 - 100
Power supply voltage of the control equipment, V	120 - 375
Power consumption by the control equipment on power supply, W, not more than	100
Nominal voltage on circuits of the stator voltage measurement, V	105
Power consumption from current and voltage measuring transformers, per phase, VA, not more than	2

The company carries out installation supervision, adjustment and testing of field systems, warranty and post-warranty service, modernization and repair of engine field systems in operation, maintenance personnel training and technical advisory services on the equipment selection. Field systems equipment is delivered within 3 months from the date of contract execution and prepayment.
