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Data Sheet 11.1-1/3

HV power supplies for electrostatic precipitators



Application

Electrostatic precipitators are applied for cleaning of process- and waste gases in many different industrial divisions, such as cement factories, in steelworks, conventional power stations and refuse incinerations. Dust particles are charged by an electrode and will be extracted by precipitation electrodes in the electrical field.

Design

The needed high voltage is generated by a transformer/rectifier set. As shown in the picture above, the transformer/rectifier-set for electrostatic precipitators consists of a transformer/rectifier-unit and a control cubicle including the power electronics.

Modern controlling is based on single-phase thyristor switching devices, which feed the primary side of the transformer by phase-controlled modulator. The handling of the equipment can be effected from the central control station or directly by a frontal control panel onsite.

The transformer/rectifier is hermetically sealed in a tank with insulating oil and mainly consists of the current limiting choke, the HV single-phase transformer, the HV rectifier and the measuring divider. The high voltage transformer produces the secondary high voltage, which is rectified through a single phase rectifying bridge. It is possible to choose a horizontal bushing on the sidewall or a vertical bushing on the top cover.

The mentioned picture shows a cylindrical earthing switch, which is mechanical operated and optional available. A survey of equipment is shown in table 1.

The manufacturing of the transformer/rectifier-sets is effected on basis of an OEM-agreement with the Siemens AG.

Table 1 Survey of equipment

Mains voltage 380-690V – 2-phase	Type	Rate current output (mA _{arithm})	Power (kVA)	Cubicle weight (kg)	Transformer weight (kg)
Typ SIPREC-T 86kV	86000/0,28	200	17	160	740
	86000/0,56	400	34	160	810
	86000/0,84	600	51	160	870
	86000/1,12	800	68	170	1050
	86000/1,4	1000	84	170	1130
	86000/1,68	1200	101	170	1360
	86000/2,24	1600	135	180	1550
	86000/2,8	2000	168	220	1710
	86000/3,5	2500	210	230	1800
	86000/4,2	3000	252	260	2350
Typ SIPREC-T 111kV	111000/0,28	200	22	180	930
	111000/0,56	400	44	180	970
	111000/0,84	600	66	190	1160
	111000/1,12	800	88	190	1240
	111000/1,4	1000	110	200	1540
	111000/1,68	1200	131	200	1670
	111000/2,24	1600	175	240	1900
	111000/2,8	2000	219	240	2220
	111000/3,5	2500	273	250	2500
	111000/4,2	3000	328	260	2910