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Variable Frequency Drives (VFD) for control of any technological facilities can be included to 6 (10) kV switchgears.

Application of a polyphase input power transformer in VFD allows to minimize the influence to supplying network (level of noise induced to input circuit does not exceed 5%); in this case  $\cos \varphi > 0,96$ . Application of cascade scheme of output voltage generation, based on IGBT power modules and digital control allows to get rid of output filters, because the shape of the output voltage is close to the sine wave, the value of  $dU/dt$  is small. That is why frequency inverters are applicable with a system of long output cables without the threat of their isolation or motor windings isolation damage. Total system efficiency is more than 96.5 percent (considering all losses in an input transformer and auxiliary equipment) and more than 98 percent for the inverter's part.

VFD has the function of automatic regulation of output voltage, this allows to maintain voltage at a constant level when input voltage fluctuations are within  $\pm 10$  percent of  $U_n$ , thereby providing a stable and safe motor work.

VFDs have a high-level security due to the following technical solutions:

1. Power components are used in the middle of their capacity range.
2. Cooling and temperature control systems provide optimal work of all the elements of the device.
3. Special cover of power busbars decreases parasitic inductance and impulse surges in IGBT modules.
4. Capacitors in DC circuits have extended lifetime.

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VFDs can be equipped with the function of motor switch from output to input line and vice versa (synchronization with supply line).

Integrated function of diagnostics warns users about the faults of power circuit or cooling system and necessity of their service.

User-friendly interface simplifies control function; it can be adjusted to the requirements of a specific application.

Schematic structure of the frequency inverter is shown at picture.

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