

## 特高压输电

### 交流特高压线路高抗补偿度下限的研究

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**摘要:** 分析了潜供电流限制、空载线路电压控制对高抗补偿度的要求, 给出了从潜供电流限制与空载线路电压控制角度确定高抗补偿度下限的方法。结果表明, 为达到限制潜供电流的目的, 单回线路的高抗补偿容量应大于线路相间电容的无功功率, 双回线路的高抗补偿容量则应大于线路相间电容无功功率和以及部分回间电容无功功率之和, 故此类下限受到线路参数影响较为明显, 在可能的参数变化范围内, 单回线路和双回线路的此类下限最高约为55%和65%。而由空载线路电压控制所要求的高抗下限却随线路长度的增加而提高, 且与线路两端落点类型关系密切。线路较短时, 高抗补偿度下限一般由潜供电流限制决定; 线路较长时, 则由空载线路电压控制决定。

**关键词:** 特高压 高抗补偿度 下限 潜供电流限制 空载线路电压

### Research on Lower Limit of Compensation Degree for UHVAC Transmission Lines

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**Abstract:** To restrict both secondary arc current and no-load voltage of UHVAC transmission line, the relation between secondary arc current and compensation degree of HV shunt reactor and that between voltage of no-load line and the compensation degree are researched, and the method to determine the lower limit of compensation degree of HV shunt reactor in the viewpoint of restricting secondary arc current and voltage of no-load line is given. Research results show that to restrict secondary arc current of single-circuit UHVAC line the capacity of HV shunt reactor should be higher than the capacitive power of interphase capacitance; the capacity of HV shunt reactor should be higher than the sum of capacitive power of interphase capacitance and partial capacity of inter-circuit capacitance; thus the lower limit of compensation degree of HV shunt reactor determined by the restriction of secondary arc current is evidently influenced by parameters of transmission line, and within possible parameter variation range of UHVAC transmission line, the lower limit of compensation degree of HV shunt reactor for single-circuit UHVAC line is 55% and that for double-circuit UHVAC line is 65%. The lower limit of compensation degree of HV shunt reactor determined by the restriction of voltage of no-load line should be increased with the increasing of the length of transmission line and is closely related to the type of drop-point of both ends of UHVAC line. For short UHVAC line the lower limit of compensation degree of HV shunt reactor can be determined by the restriction of secondary arc current in general; for long UHVAC line the lower limit of compensation degree of HV shunt reactor can be determined by the restriction of voltage of no-load line.

**Keywords:** UHV compensation degree of HV shunt reactor lower limit restriction of secondary arc current voltage of no-load line

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