## ANNEX VIII

**Reactive power and voltage requirements referred to in Article 48**

|  |  |  |
| --- | --- | --- |
| Rated Voltage | Voltage range | Time period for operation |
| 110 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,10 pu | Unlimited |
| 1,10 pu-1,12 pu | Unlimited, unless specified otherwise by the relevant isolated AC network operator, in coordination with the TSO |
| 1,12 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO |
| 132 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,10 pu | Unlimited |
| 1,10 pu-1,12 pu | Unlimited, unless specified otherwise by the relevant isolated AC network operator, in coordination with the TSO |
| 1,12 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO |
| 150 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,10 pu | Unlimited |
| 1,10 pu-1,12 pu | Unlimited, unless specified otherwise by the relevant isolated AC network operator, in coordination with the TSO |
| 1,12 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO |
| 220 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,10 pu | Unlimited |
| 1,10 pu-1,12 pu | Unlimited, unless specified otherwise by the relevant isolated AC network operator, in coordination with the TSO |
| 1,12 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO |
| 275 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,05 pu | Unlimited |
| 1,05 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO Various sub-ranges of voltage withstand capability can be specified. |
| 330 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,05 pu | Unlimited |
| 1,05 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO Various sub-ranges of voltage withstand capability can be specified. |
| 400 kV | 0,85 pu-0,90 pu | To be specified by each relevant isolated AC network operator, but not more than 60 minutes. |
| 0,90 pu-1,05 pu | Unlimited |
| 1,05 pu-1,15 pu | To be specified by the relevant isolated AC network operator, in coordination with the TSO Various sub-ranges of voltage withstand capability can be specified. |

**Table 12**: Minimum time periods for which a remote-end HVDC converter station shall be capable of operating for different voltages deviating from a reference 1 pu value without disconnecting from the network. Specifications to respect established technical standards;