

Instruction FuseSpline 2.1 - Calculation HV Fuse-link according VDE 0671-105

1. Step:

Fill out the technical data of the transformer (see picture 2.1)

- rated voltage transformer, e.g. 10 kV
- power transformer, e.g. 250 kVA
- time inrush, is defined to 0,1s
- rel. Short circuit voltage u_k , e.g. 4%
- factor inrush, e.g. 12

| | | |
|----------------------------------|----------------------------------|-----|
| rated voltage transformer | <input type="text" value="10"/> | kV |
| power transformer | <input type="text" value="250"/> | kVA |
| time inrush | <input type="text" value="0.1"/> | s |
| rel. short circuit voltage u_k | <input type="text" value="4"/> | % |
| factor inrush | <input type="text" value="12"/> | |

picture 2.1: technical data of transformer

2. Step:

Select switchgear (e.g. Siemens 8DJH 12 kV – see picture 1.1). If the needed switchgear is not available, „user defined...“ could be selected to fill the data manually (see picture 1.2).

| | | |
|------------------------|-----------------------------------|---|
| Siemens - 8DJH 15 kV | | ▼ |
| T0 | <input type="text" value="0.05"/> | s |
| rated transfer current | <input type="text" value="1300"/> | A |

picture 1.1: selected switchgear Siemens 8DJH 12 kV

| | | |
|------------------------|-----------------------------------|---|
| user defined... | | ▼ |
| T0 | <input type="text" value="0.08"/> | s |
| rated transfer current | <input type="text" value="1250"/> | A |

picture 1.2: user defined data filled out manually

3. Step

Preselect the HV Fuse-link according the selected data from step 1 and 2 (see picture 3.1).

The range of the voltage of the HV Fuse-link correlates with the rated voltage of the transformer and the used switchgear.

For example a HV Fuse-link with voltage range 6/12 kV is used with a 12 kV switchgear and a rated voltage of 12 kV of the transformer.

Using a 10/24 kV HV Fuse-link could also be possible respecting the insulation level of the installation. In this case the switching voltage of 10/24 kV HV Fuse-links could be higher comparing to 6/12 HV Fuse-links.

| | |
|---------|---|
| ETI | ▼ |
| all | ▼ |
| 4222003 | ▼ |

picture 3.1

By selecting the automatically calculation in step 4, it is not necessary considering the order number in the preselection of step 3.

Deactivating the automatically calculation, the computation is done with the selected order number of the selected HV Fuse-link.

4. Step

The opportunity is given to select a proper HV Fuse-link automatically by selecting the corresponding checkbox. Otherwise the calculation is done with the preselected data from step 3.

The image shows a dialog box with a checked checkbox labeled 'automatically...'. Below the checkbox is a button labeled 'calculation'. At the bottom of the dialog is a button labeled 'draw result'.

picture 4.1

If the tool could find a suitable HV Fuse-link you will get the following result dialog:

The image shows a dialog box titled 'choice HV fuse-link' with a close button (X) in the top right corner. Inside the dialog, there is an information icon (i) followed by the text 'Protection with HV fuse-link: 4222012'. At the bottom center of the dialog is an 'OK' button.

picture 4.2

Otherwise some error hints will be displayed.

ATTENTION: During automatically selection, the tool calculates from the smallest to the greatest rated current of the HV fuse-links. Once a fuse-link was found fulfilling the conditions according VDE 0671-105, the tool will abort displaying the result. Following deactivate the „automatically calculation“ and recalculate with the next higher fuse-link. Repeat this step until the potential highest rated current of fuse-link is computed.

Occurring errors while calculating automatically, deactivate it and calculate manually by selecting a fuse-link. Afterwards some hints will be given. For example the factor inrush has to be decreased.