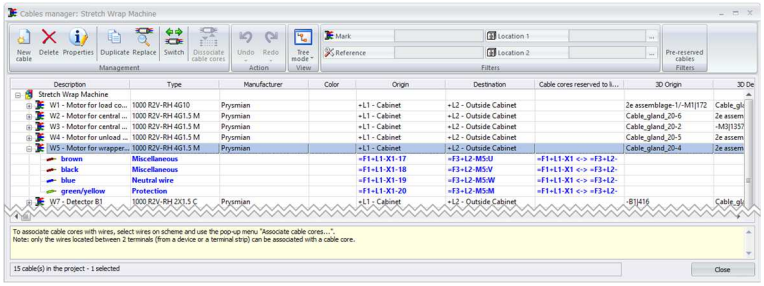
elecworks™ Tips & Tricks

Voltage Drop Calculations

Voltage drop describes how the energy supplied by a voltage source is reduced as electric current moves through the passive elements (elements that do not supply voltage) of an electrical circuit. The voltage drop across the internal resistance of the source, across conductors, across contacts, and across connectors is undesirable because some of the energy supplied is lost (dissipated). The voltage drop across the electrical load and across other active circuit elements is essential for supply of energy and so is not undesirable. (source: Wikipedia)

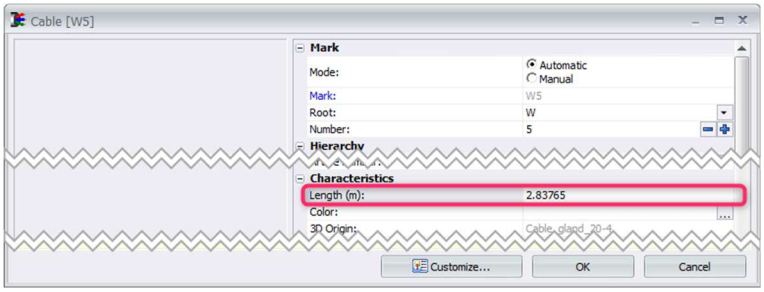
elecworks™ has the ability to provide basic voltage drop calculations when utilizing power cables that have a V/A/km value, cable length, voltage & FLC.
The length can either be automatically extracted from the 3D model (elecworks™ for PTC Creo) or can be manually defined.

To define a manual length for a cable, select *Project* ribbon tab > *Management* panel > 



Highlight one of your defined cables > 

If the cable has been routed in 3D, the length will be already populated as shown in the dialogue below:

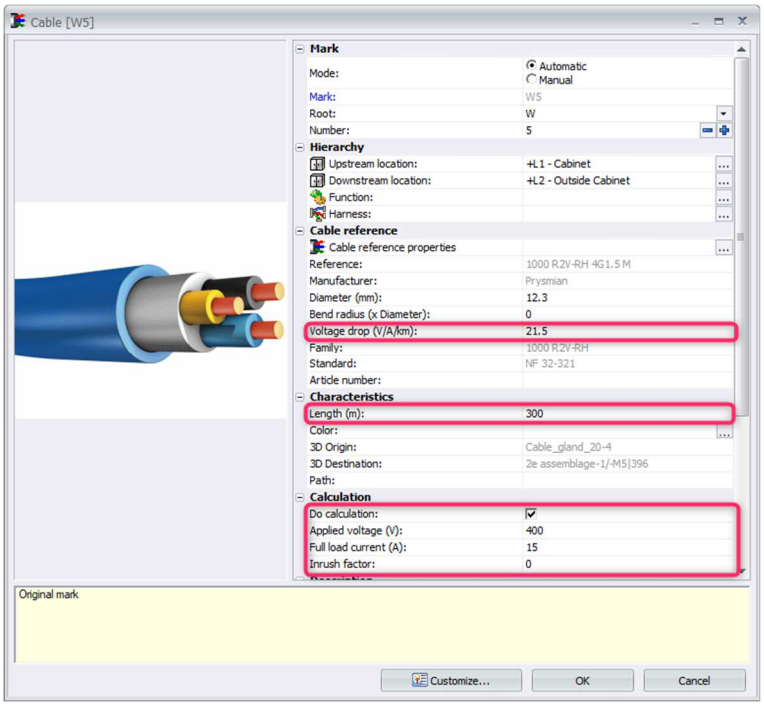


You can define a V/A/km at this stage too if this information hasn't been previously defined in the part information
The V/A/km value is usually defined within the manufacturers data sheet e.g:

Four cores

Cross section mm²	Voltage drop, 3 conductors V/A.km	Max. outer diam. mm	Perm. current rating open air A	Perm. current rating burried A	Approx. weight kg/km
1.5	21.5	12.0	22	26	170
2.5	12.8	13.0	30	36	220
4	8.0	14.5	40	46	300
6	5.4	16.0	52	58	410
10	3.2	18.5	71	79	600
16	2.11	21.0	96	100	860
25	1.37	25.5	127	141	1340
35	1.0	28.5	158	174	1780
50	0.76	32.5	192	206	2330
70	0.55	34.5	246	254	3375
95	0.42	42.5	298	301	4345
120	0.35	47.5	346	343	5590
150	0.3	52.5	395	387	6650
185	0.25	59.0	450	434	8350

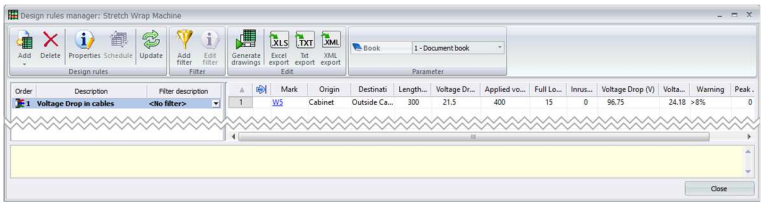
You should also define *voltage*, *FLC* and ☑ *do calculation* and ideally an *inrush factor*



To see whether the cable has issue, select *Project* ribbon tab > *Reports* panel > 

Select 

to add the report *Voltage drop in cables* as shown



If we go back into the cable 

and alter the length value, you will see the effect on the calculations!