



SubCon
Power of Experience

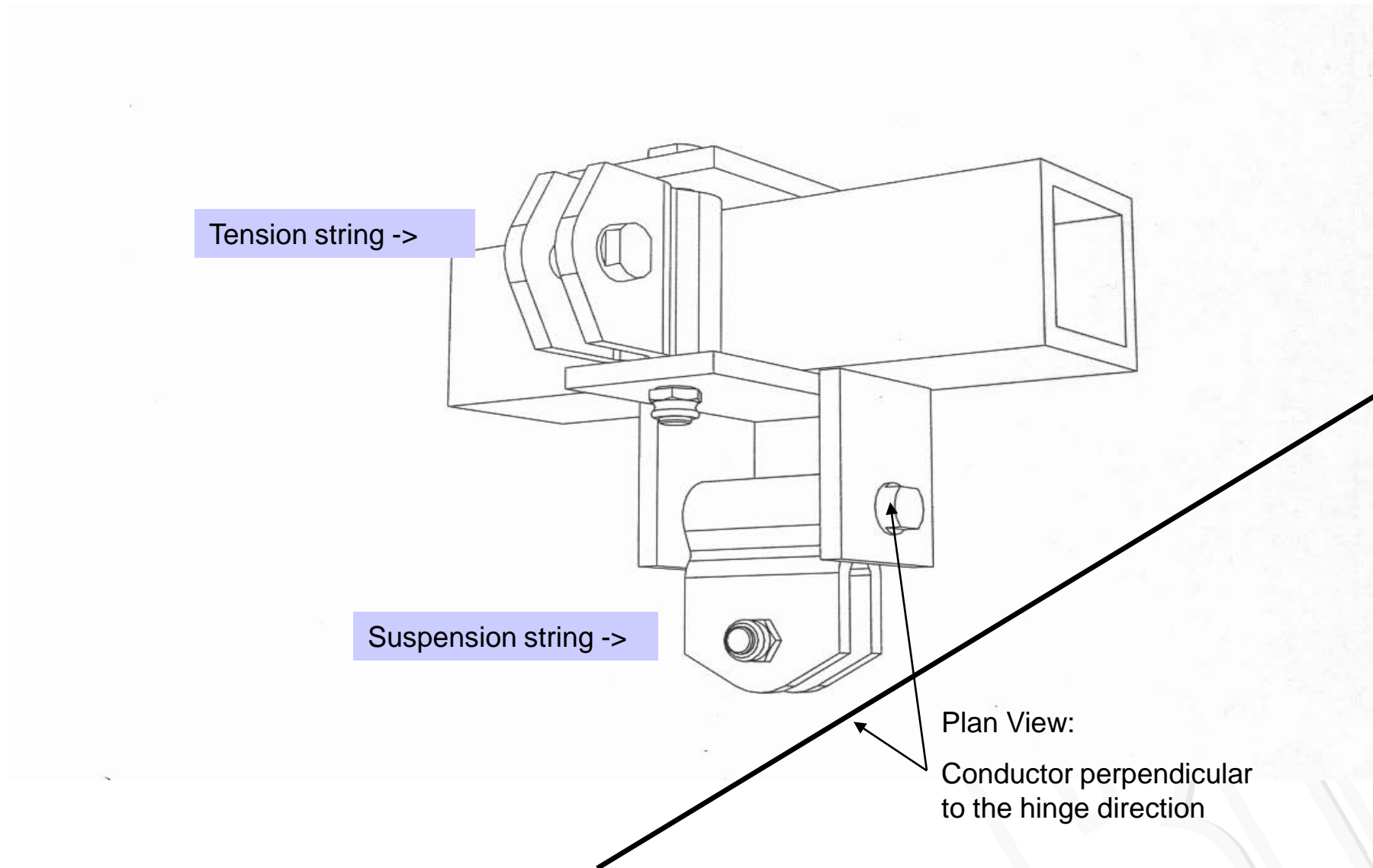
Insulator strings for substations 66-500kV

Differences between OHL and S/S strings

- **Breaking loads**
(substations max. ca. 130kN, OHL higher)
- **Short circuit currents**
(substations usually 40-80 kA1s, OHL lower)
- **Conductor arrangements**
(OHL always jumper, substations dead ends)
- **Clearances acc. to EN61284**
- **Quantities**

Standardisation basics (1)

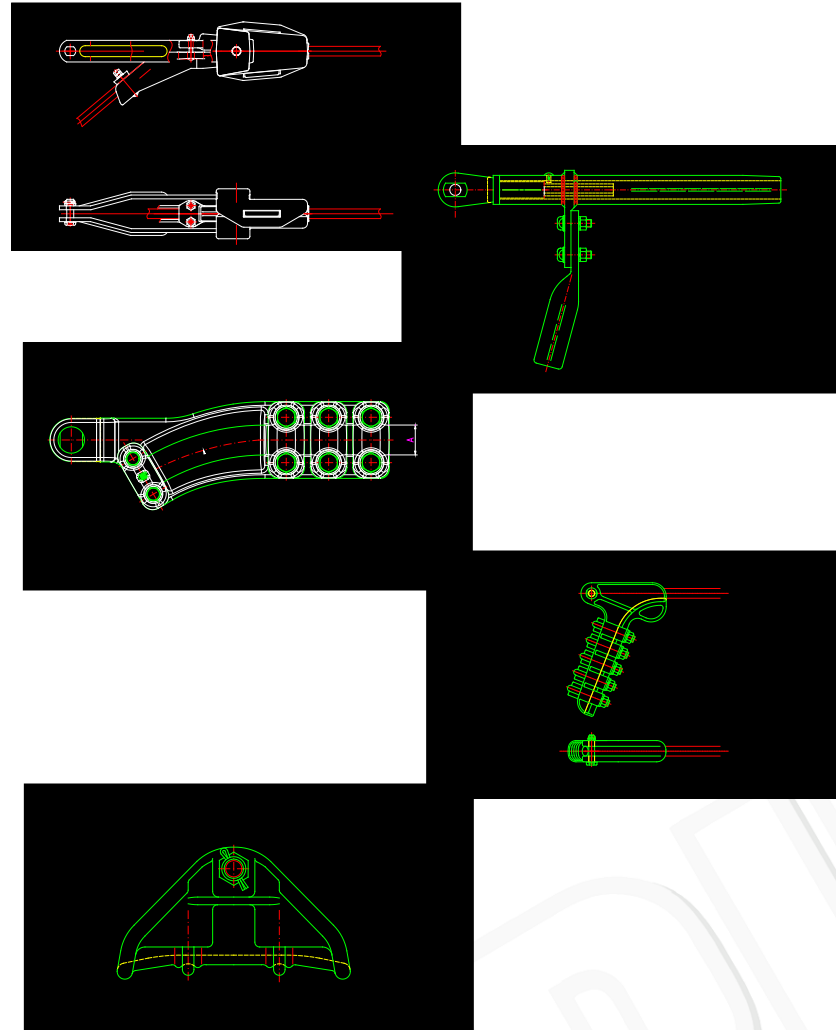
Uniform tower attachment



Standardisation basics (2)

„End“ clamps separate

- **KAK** = Wedge type
- **PAK** = Compression type.
- **DAK** = Bolted cover type.
- **BAK** = U-bolted type.
- **HK** = Simple suspension type



Standardisation basics (3)

Performance values

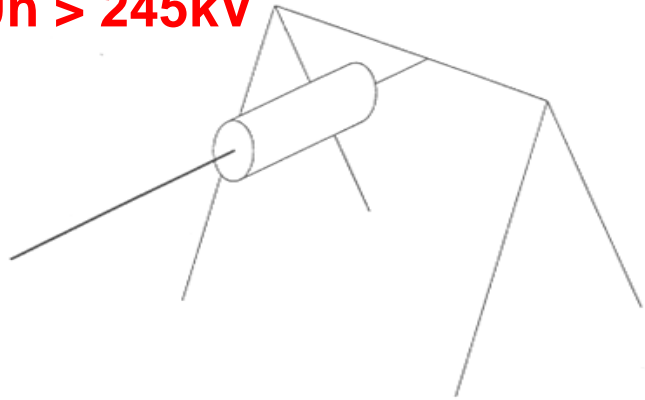
- **Voltage levels**
66 / 145 / 245 / 300 / 420 / 500 kV
- **Short- current withstand levels**
40 / 50 / 63 / 80 kA1s
- **Insulator types**
Cap & pin / long-rod / polymeric
- **Breaking load**
minimal 130 kN, usually 160kN and more

DRBEE

Sensitive topics – string arrangements

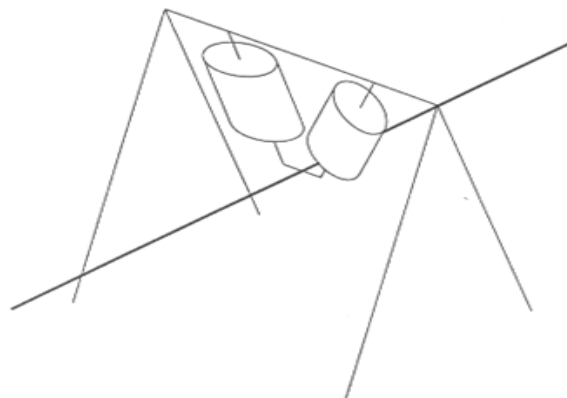
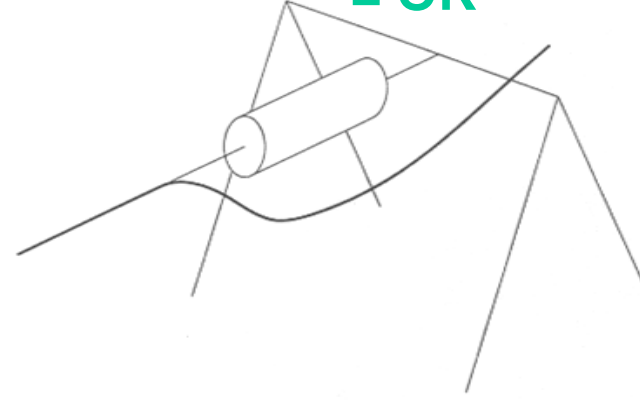
Dead End -> Corona

if $U_n > 245\text{kV}$



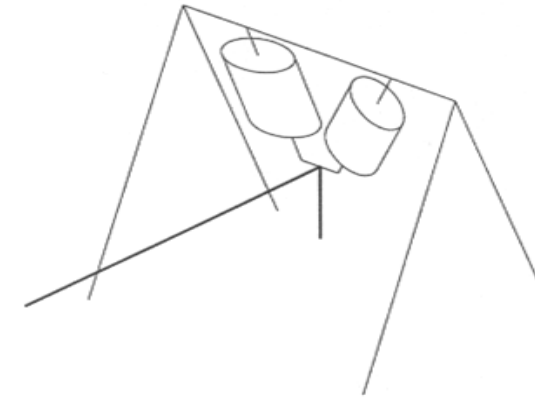
Tension with jumper

= OK



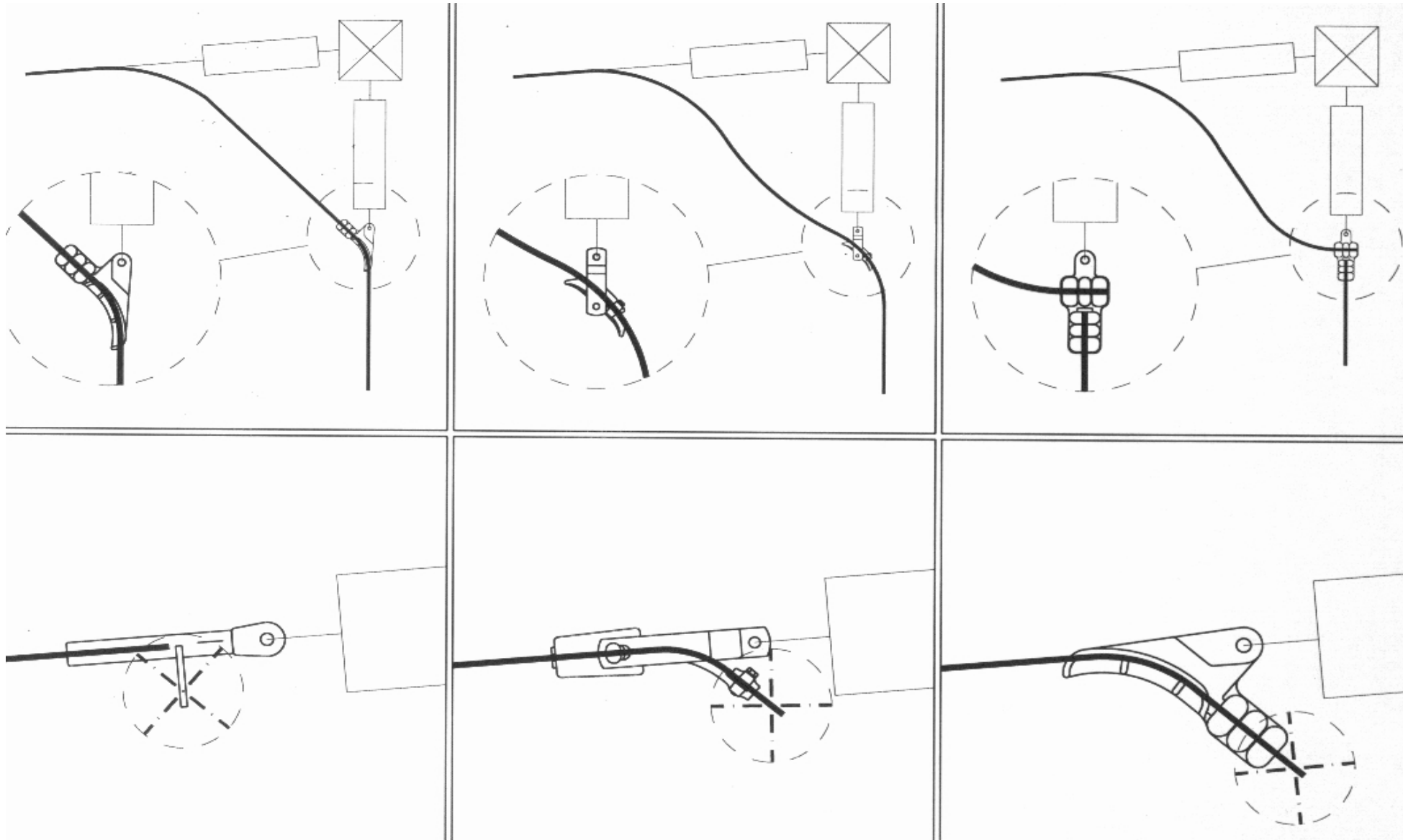
Suspension (run)

= OK

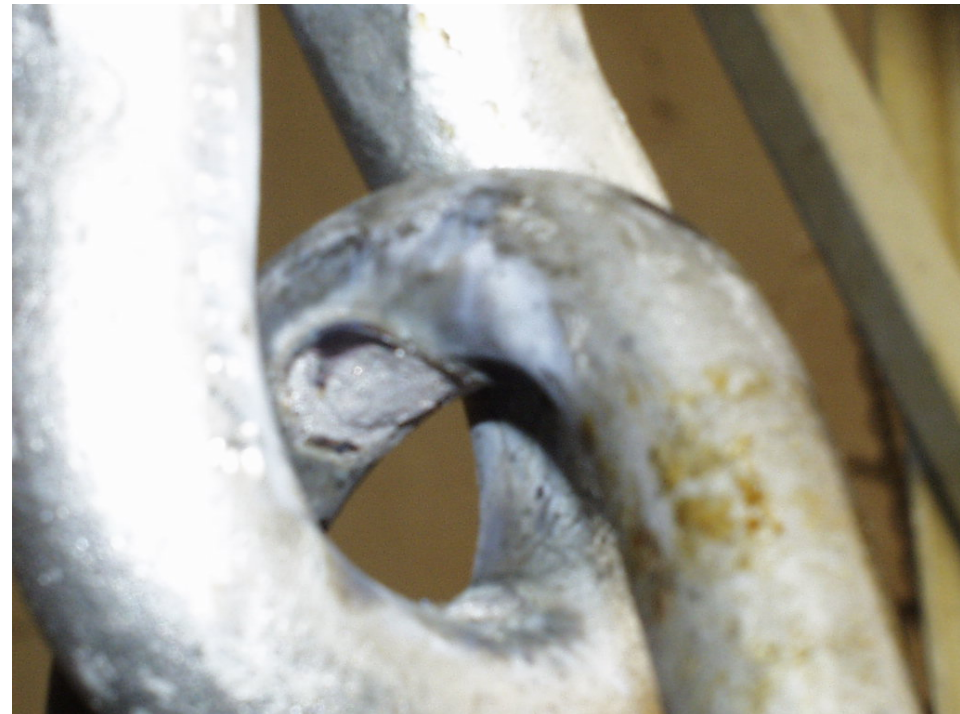


**T-derivation ->
Corona if $U_n > 245\text{kV}$**

Sensitive topics – clamps arrangements

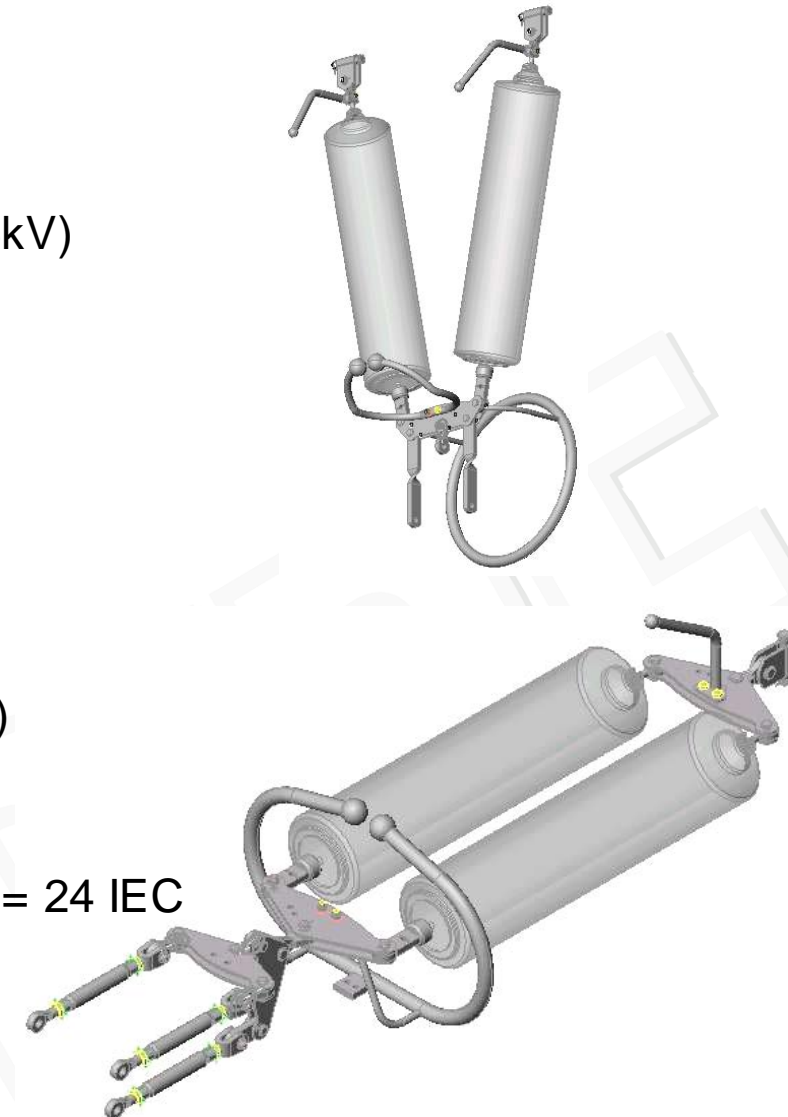


Sensitive topics – short circuit currents



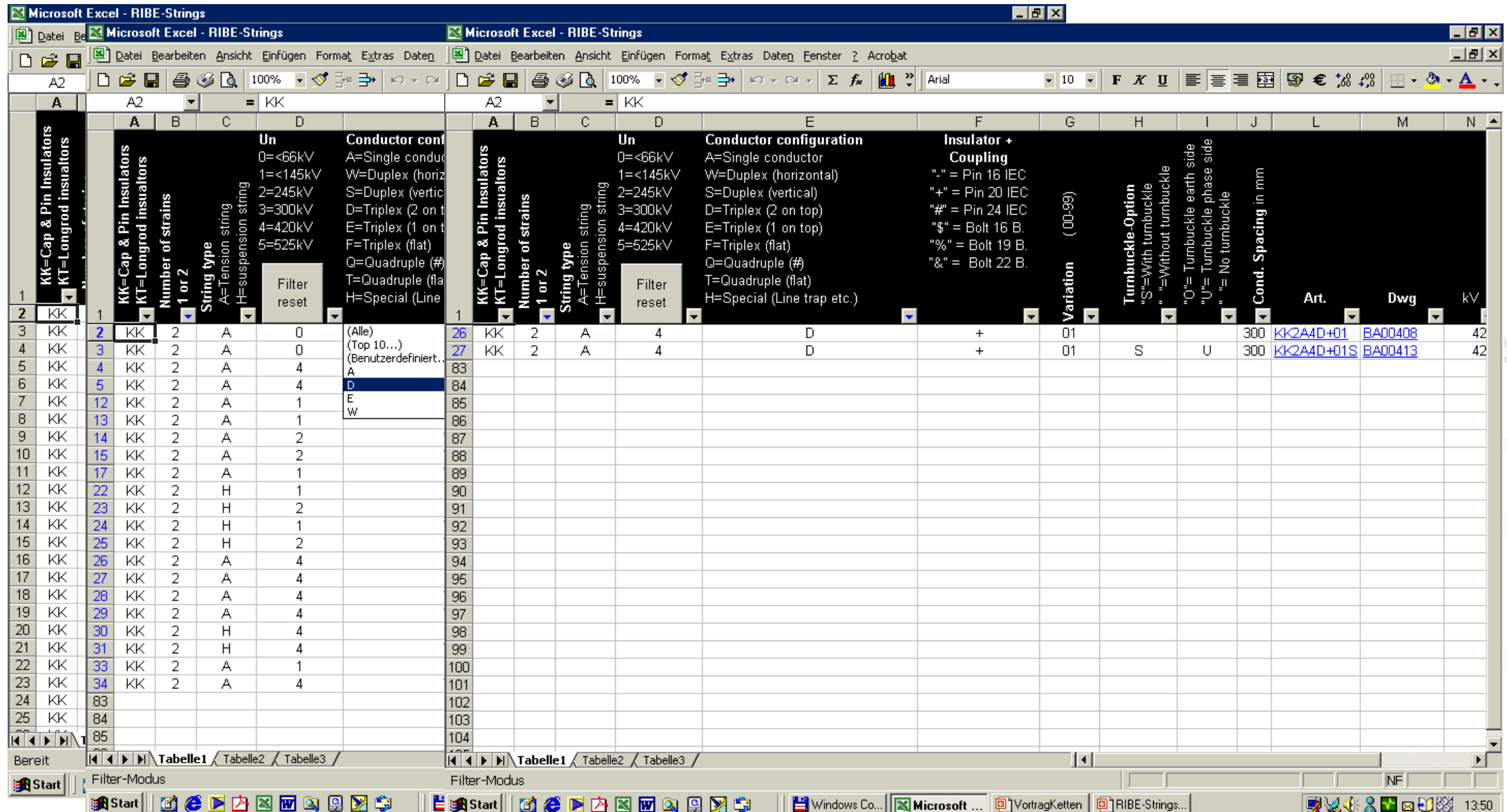
Numbering system for insulator strings

Seq.	Value	Description
1+2	KK KL	String for cap and pin insulators String for longrod insulators
3	1, 2	Number of insulator strains
4	A , H	String type: A=tension , H=suspension
5	0, 1, 2, 4, 5	Voltage levels (0=<66kV, 1=<150kV, 2=245kV,4=420kV,5=525kV)
6	A W S D E F Q T H	Conductors and their arrangement "A" = single conductor "W" = Duplex cond.in horizontal plane "S" = Duplex cond.in vertical plane "D" = Triplex cond. (2 on top) "E" = Triplex cond. (1 on top) "F" = Triplex cond. (flat arrangement) "Q" = Quadruple cond. (rectangular arrangement) "T" = Quadruple cond. (flat arrangement) "H" = Special arrangement (line traps)
7	"-" "+" "#"	Cap and pin size: "-"= 16 IEC, "+"= 20 IEC, "# "= 24 IEC
8+9	00 - 99	Varianion
10	S	Optional for tension strings with turnbuckles



Catalogue – RIBE-Strings.xls (1)

- Use the filter – option to find the string

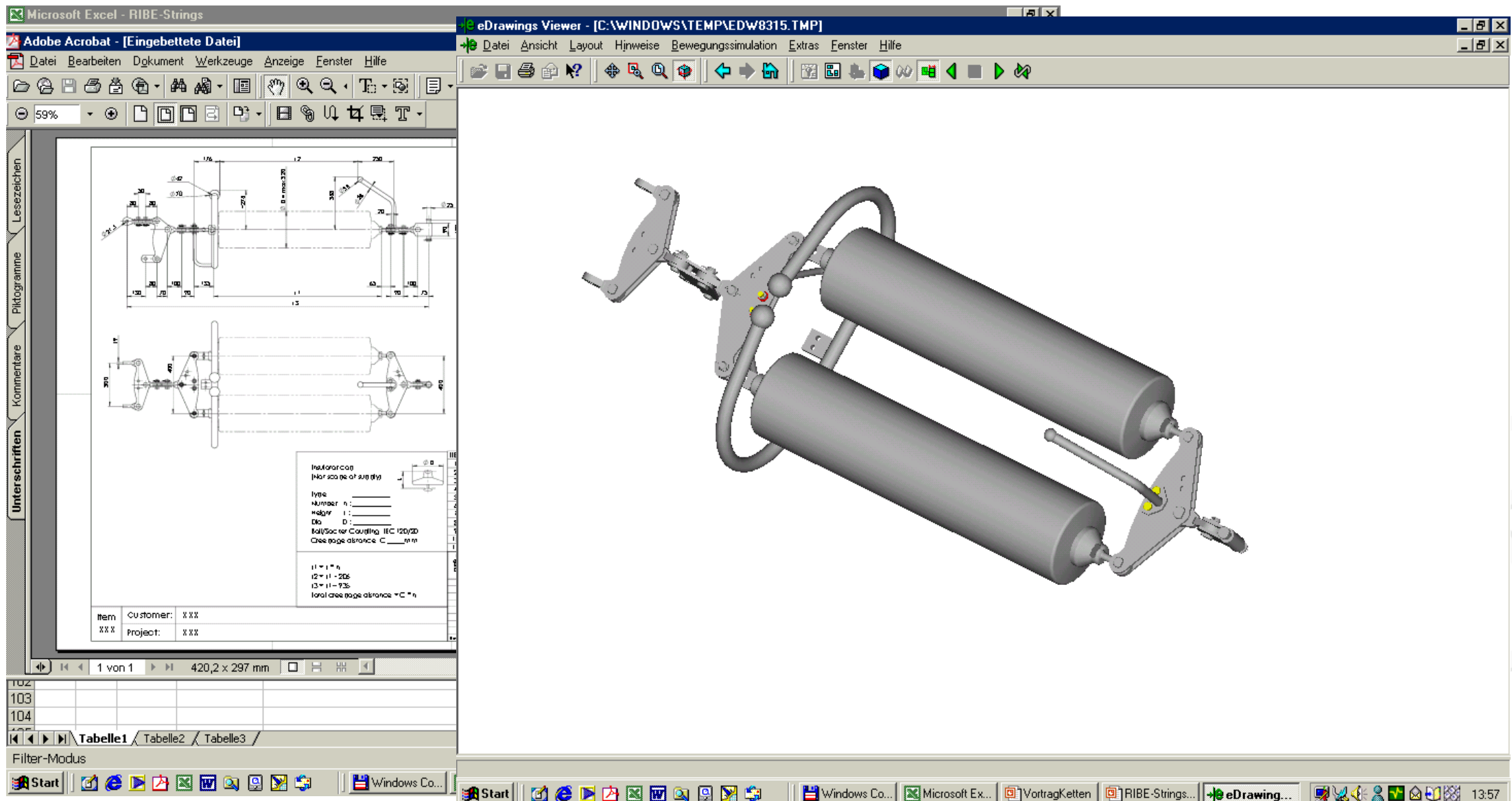


The screenshot shows a Microsoft Excel spreadsheet titled "RIBE-Strings". The spreadsheet is divided into two panes. The left pane shows a list of strings with columns A through D. The right pane shows a detailed view of the string configuration with columns A through N. A filter is applied to the "String type" column in the right pane, showing a dropdown menu with options: (Alle) (Top 10...), (Benutzerdefiniert...), A, D, E, and W. The data in the right pane includes columns for "Conductor configuration", "Insulator + Coupling", "Variation", "Turnbuckle-Option", "Cond. Spacing in mm", "Art.", "Dwg", and "kV".

String No.	KK	KT	Number of strains	String type	Un	Conductor configuration	Insulator + Coupling	Variation	Turnbuckle-Option	Cond. Spacing in mm	Art.	Dwg	kV
26	KK	2	2	A	4	D	+	01		300	KK2A4D+01	BA00408	42
27	KK	2	2	A	4	D	+	01	S	300	KK2A4D+01S	BA00413	42

Catalogue – RIBE-Strings.xls (2)

- Click for 2D / 3D - preview



The screenshot displays a Windows desktop environment. On the left, the Adobe Acrobat window shows a 2D technical drawing of a mechanical assembly with various dimensions and a table at the bottom. The table contains the following information:

Item	Customer:	Project:
XXX	XXX	XXX

Below the table, there are labels for 'Tabelle1', 'Tabelle2', and 'Tabelle3'. The right window, eDrawings Viewer, displays a 3D perspective view of the same mechanical assembly, showing two cylindrical components and a bracket-like structure. The Windows taskbar at the bottom shows the Start button and several open applications, including Microsoft Excel, VortragKetten, RIBE-Strings..., and eDrawing... The system clock in the bottom right corner shows 13:57.