Cable HV Software complies with IEC Standards.

INSTALLATION METHOD: BURIED IN DUCTS

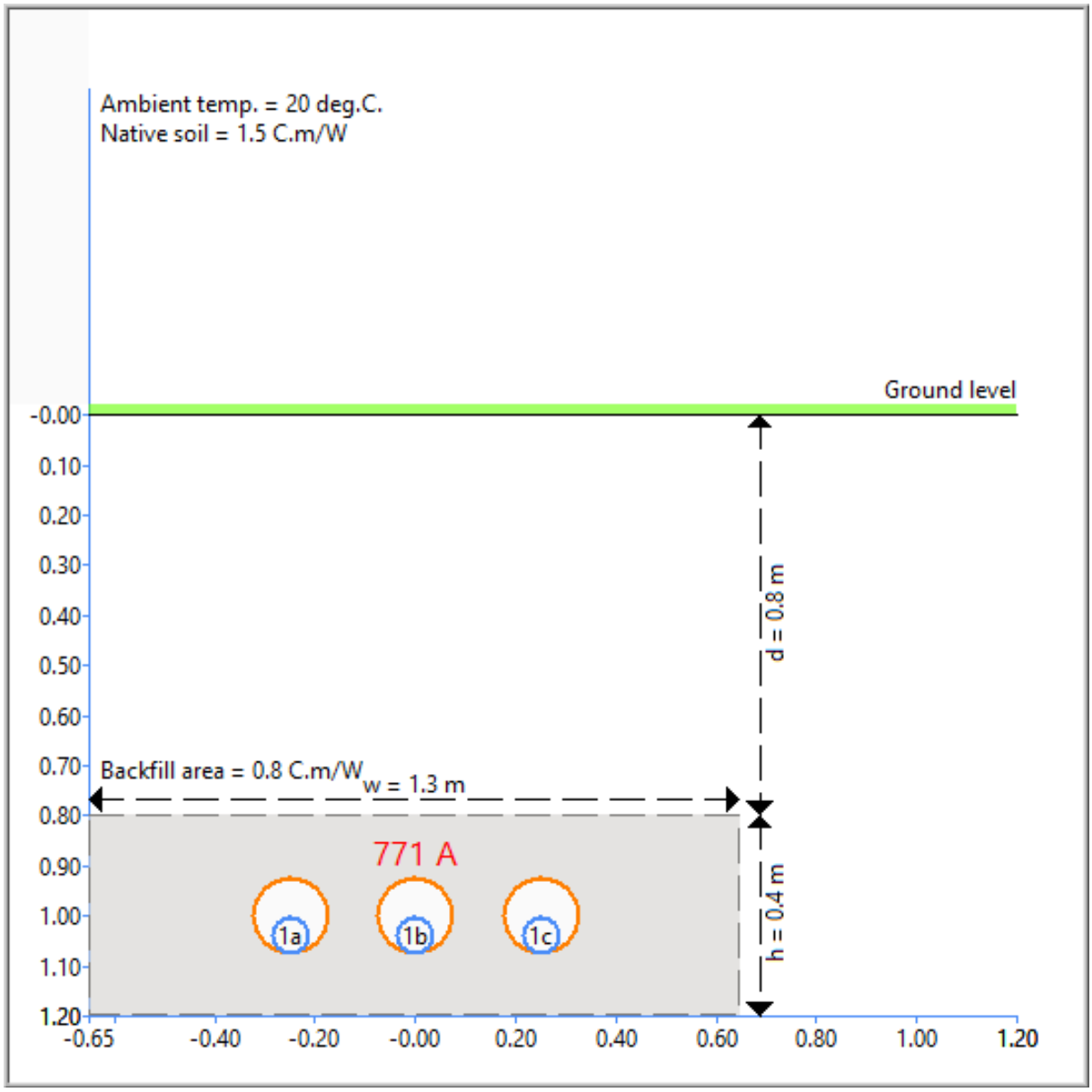

Figure 1 Buried installation arrangement (m)

SUMMARY OF RESULTS FOR ALL CIRCUITS

CIRCUIT NO.	CABLE MODEL NO.	CONDUCTOR TEMPERATURE (deg. C)	CURRENT RATING (A)
1	1	90	770.51

CIRCUIT 1 DATA	
SUMMARY OF RESULTS	
CURRENT RATING OF CIRCUIT 1 (A)	770.51
No. of iterations	3
Cable model no.	1
Cable model title	Case 1 Validation
Bonding	Single point bonded
Conductor operating temperature (deg.C.)	90
Grouping calculation method	Equally loaded
Native soil thermal resistivity (C.m/W)	1.5
Ambient soil temperature (deg.C.)	20
Sheath/Conc. neutral standing voltage (V/m)	0.046613
CABLE COORDINATES	
X (m)	-0.25
Y (m)	1
X (m)	0
Y (m)	1
X (m)	0.25
Y (m)	1
BACKFILL	
Backfill thermal resistivity (C.m/W)	0.8
X, centre of backfill (m)	0
Y, centre of backfill (m)	1
Height of backfill area (m)	0.4
Width of backfill area (m)	1.3
DUCTS	
Duct arrangement	Separate duct per phase
Duct material	Polyethylene
Thermal resistivity (C.m/W)	3.5
Outside diameter (m)	0.16
Inside diameter (m)	0.15
TOTAL LOSSES PER CABLE (W/m)	**28.87**
CONDUCTOR LOSSES	
AC resistance (Ohms/m)	4.84464E-5
DC resistance (Ohms/m)	4.66687E-5
Skin effect factor, ys	0.0366557
Proximity effect factor, yp	0.00143648
Skin effect coefficient, ks	1
Proximity effect coefficient, kp	1
Conductor loss (W/m)	28.761946

DIELECTRIC LOSSES	
Insulation relative permeability, epsilon	2.5
Insulation loss factor, tan-delta	0.001
Insulation capacitance (F/m)	1.6278E-10
Dielectric loss, Wd (W/m)	0
SHEATH LOSSES	
Sheath circulating current loss factor, Lamda1'	0
Sheath resistance (Ohms/m)	0.000363914
Sheath reactance (Ohms/m)	0.000120777
Sheath eddy current loss factor, Lamda1''1 (outer cable carrying lagging phase)	0.00360865
Sheath eddy current loss factor, Lamda1''2 (other outer cable)	0.00360865
Sheath eddy current loss factor, Lamda1''m (middle phase)	0.00360865
Sheath loss (W/m)	0.103792
CONCENTRIC NEUTRAL/SHEILD LOSSES	
Concentric neutral circulating current loss factor, Lamda1n	0
Concentric neutral resistance (Ohms/m)	0.000522734
Concentric neutral reactance (Ohms/m)	0.000121208
Concentric neutral loss (W/m)	0
CABLE THERMAL RESISTANCES	
T1, between conductor and sheath (K.m/W)	0.553756
T2, between sheath and armour (K.m/W)	0
T3, outer covering (K.m/W)	0.0673507
T3 scaling factor	1
T4, external surroundings (K.m/W)	1.80591
T4', duct filling medium (K.m/W)	0.333009
T4'', duct (or pipe) itself (K.m/W)	0.0359507
CABLE TEMPERATURES	
Conductor temperature (deg.C.)	90
Sheath/concentric neutral temperature (deg.C.)	74.07
Armour temperature (deg.C.)	74.07
Jacket/serving temperature (deg.C.)	72.13
Exterior/Duct temperature (deg.C.)	61.48

CABLE MODEL 1 DATA	
GENERAL	
Title	Case 1 Validation
Description	
Path	C:\Users\jpatr\OneDrive\Desktop\Cable HV\Validation\CYMCAP and Cableizer\Case 1\Cable model files\Case 1 cable file.xml
Frequency (Hz)	50
Phases	Three phase
Cores	Single core
Voltage, phase-to-phase (V)	110000
CONDUCTOR	
Cross-sectional area (mm2)	500
Class	Class 2 stranded conductors for single or multicore cables
Material	Copper, plain wires
Type	Copper_Round, stranded_Dried & impregnated
Resistivity (Ohm.m at 20 deg.C.)	3.66E-5
Electrical temp. coeff. of metal (per K at 20 deg.C.)	0.00393
Nominal conductor diameter (mm)	26.2
CONDUCTOR SHIELD	
Nominal thickness (mm)	1.3
Nominal diameter (mm)	28.8
INSULATION	
Type of insulation	XLPE_Unfilled_greater than 18/30 (36) kV
Thermal resistivity (C.m/W)	3.5
Insulation relative permeability, epsilon	2.5
Insulation loss factor, tan-delta	0.001
Maximum operating temperature (deg.C.)	90
Nominal thickness (mm)	19.4
Nominal diameter (mm)	67.6
INSULATION SCREEN	
Material	Semi-conductor screen
Nominal thickness (mm)	1.6
Nominal diameter (mm)	70.8
CONCENTRIC NEUTRAL/SCREEN	
Material	Copper
Construction	Round wires
Resistivity (Ohm.m at 20 deg.C.)	1.7241E-8
Electrical temp. coeff. of metal (per K at 20 deg.C.)	0.00393
Nominal thickness (mm)	0.92
Nominal diameter (mm)	72.64
Length of lay (mm)	1000
No. of wires	74

SHEATH	
Type of sheath	Copper
Resistivity (Ohm.m at 20 deg.C.)	1.7241E-8
Electrical temp. coeff. of metal (per K at 20 deg.C.)	0.00393
Construction	Non-corrugated
Nominal thickness (mm)	0.25
Nominal diameter (mm)	73.14
JACKET/SERVING	
Material	Polyethylene
Thermal resistivity (C.m/W)	3.5
Nominal thickness (mm)	4.7

CABLE MODEL 1 IMAGE