

PAINÉIS DE MEDIA TENSÃO

The image displays the Decidix Switchgear software interface, used for designing medium voltage switchgear panels. The main window shows a 2D layout of the switchgear with various components and dimensions.

2D Layout Details:

- Dimensions:** Total width is 1900 mm. Individual panel widths are 640 mm and 920 mm. Vertical dimensions include 2250 mm, 1248 mm, 900 mm, and 1700 mm.
- Components:** Panels are labeled with dimensions like 775 x 340 and 775 x 400. Busbars are labeled #1 through #8. A central area is labeled "Area entrecol".
- Labels:** "Area entrecol" is repeated in two locations. Other labels include "Area entrecol" and "Area entrecol".

Right Panel (Configuration Table):

Group	Conductors	B	x	H	IN (A)	V	X	H
0	2	63,5		10	1250	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1	100		10	1250	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spacers	Subdivisions	Max. distance 2 insulators (mm)	Conductor material
0	1	900	Copper
1	1	370	Copper

Main contacts or joints resistance ohmE-6: 80

3D View (Bottom Right):

The 3D view shows the physical assembly of the switchgear, including busbars, insulators, and panels. The interface includes various controls for visibility and rendering:

- Visibility Toggles:** Make Cotton, See Cotton, See Cover, Make Cover, Make Deflector, See Deflector, Make Environment, See Environment, Compact V0, Compact V1, Compact V2, Compact BT.
- Flaps:** L, R, LR.
- Rendering Controls:** Sphere radius (0.002 to 0.050), MaxDeltaTime (0.001 to 0.02), Sphere velocity (1 to 40), Gravity (9.81), ShowMultiplier (0.0001 to 1.0), Culling (Off, On, NoBack).

Click RESULTS to calculate Check button to see the geometry

Electrodyn Forces Electromag Fields Temperature Rise Internal Arc

- Select the project (click 2 times to see dark bl)
- MP1_CB31_Rel65111
- MP1_CB40_Rel67735
- PRES_CB_25_CB
- PRES_CB_25_TC
- QT1_CB40_fev09
- RVX1_CB40_C1
- RVX2_CB40_C2
- RVX3_CB40_C3
- SW2_CB15_Bulletin7761
- SW2_CB25_Bulletin7761
- SW2_CB31_Bulletin7761
- SW2_CB40_Bulletin7761
- SW2_CB50_Bulletin7761
- SW2_CB63_Bulletin7761
- WGA324_case02_Air_25KA
- WGA324_case22_Air_14_2_KA
- WGA324_case22_SF6_14_2_KA
- WGA324_case24_SF6_14_2_KA
- WGA324_case31_Air_16KA_24KV_3F
- WGA324_case31_SF6_16KA_24KV_3F

Select TYPE OF TEST

Select PROJECT

Create NEW project

Select PROJECT TYPE

Insert BUSBARS, INSULATORS, CURRENTS, VOLTAGES, MATERIALS

Switchgear type: **MVSW1a** MVSW1b MVSW1c

Group	Conductors	B	x	H	IN (A)	V	X	H
0	2	63,5	10	1250	<input type="radio"/> V <input type="radio"/> H			
1	1	100	10	1250	<input type="radio"/> V <input type="radio"/> H			

Spacers	Subdivisions	Max. distance 2 insulators (mm)	Conductor material
0	1	900	Copper
1	1	370	Copper

Main contacts or joints resistance ohmE-6:

Busbars supports: Insulator Both Plate

Busbars covering: Bare Painted

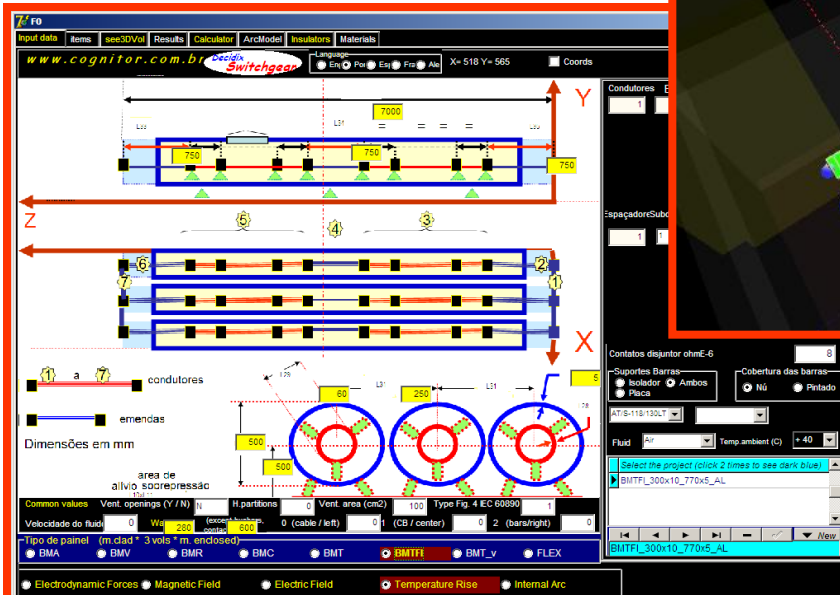
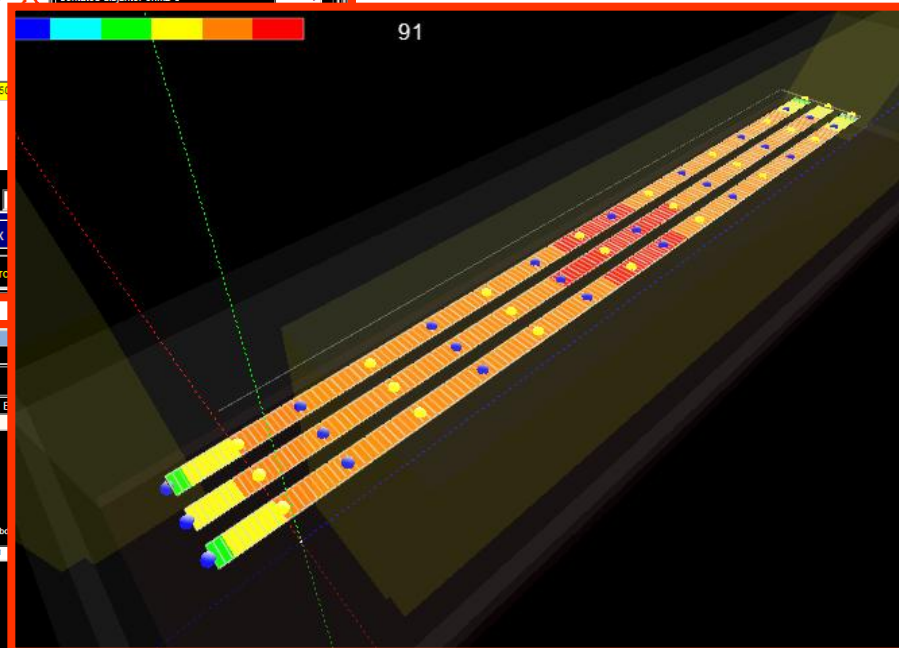
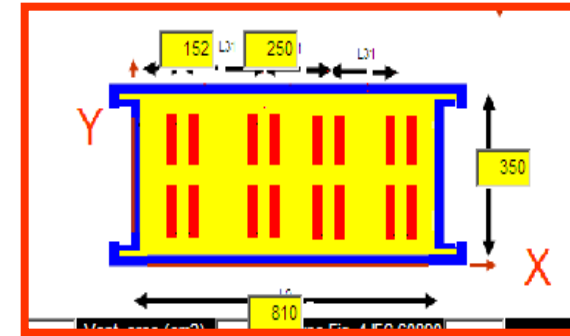
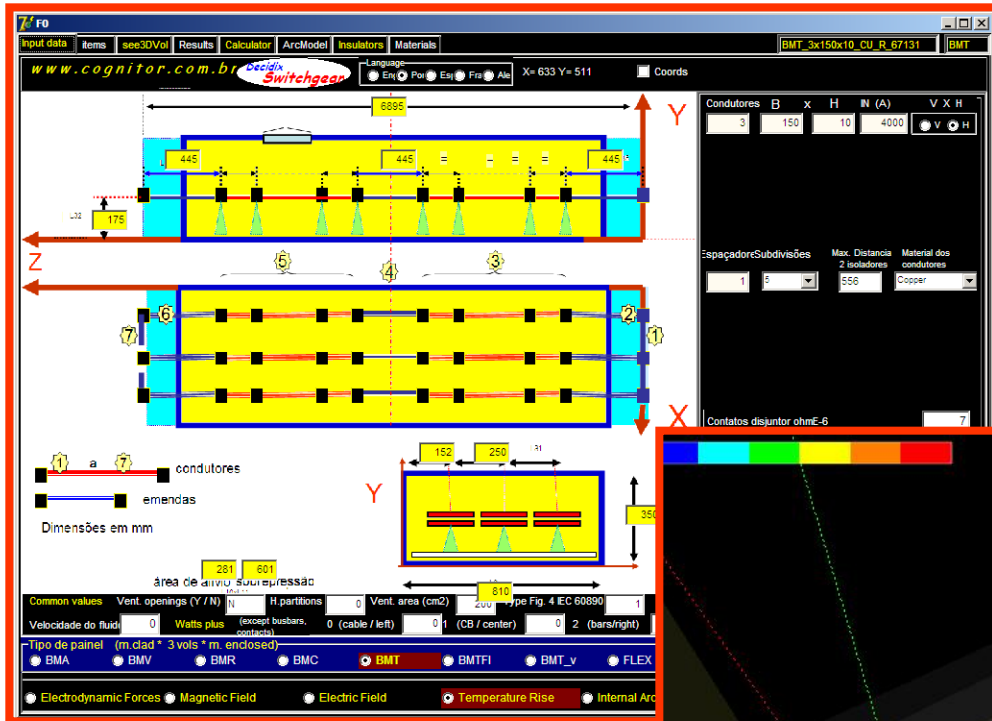
AT/S-72/95 ML PlacaLFP30RG

Crest factor: Enclosure material: Plate (mm):

Fluid: External ambient temperature C:

Rated voltage (V): Hertz: Sym SC current (kArms x s):

BARRAMENTOS



FUSÍVEIS TIPO EXPULSÃO

www.cognitor.com.br Decidix Switchgear

Language: Eng Pot Esp Fra Ale | IblCoordTela | Coords

Input data | Items | see3DVol | Results | Calculator | ArcModel | Insulators | Materials | Elob_05H | Elob_H

Condutores

	B	x	H	IN (A)	V	X	H
1				0,5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1				0,5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1				0,5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1				0,5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

% Icc= 7,1 kA rms Open link

Conductor material

1 .. 2	Copper
3	Nikrotal
4	Tin
5	Nikrotal
6 ... 8	Copper

Condutores

	B	x	H	IN (A)	V	X	H
1				0,5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Common values

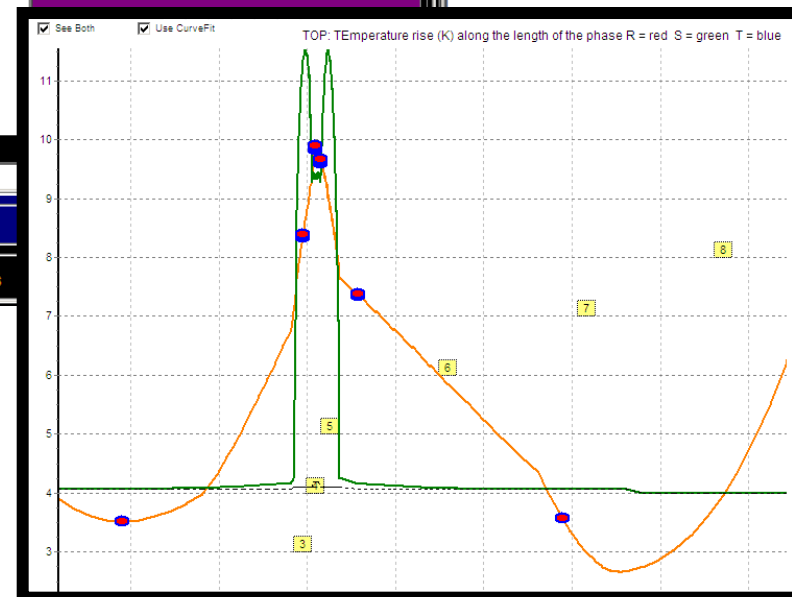
Vent. openings (Y / N) N H.partitions 0 Vent. area (cm²) 100 Type Fig. 4 IEC 60890 1

Velocidade do fluid: 0 Watts plus (except busbars, contacts) 0 (cable / left) 1 (CB / center) 2 (bars/right)

Tipo de painel (m.ciad * 3 vols * m. enclosed)

Elo_H Elo_K Elo_T

Electrodynamic Forces Time x Current Electric Field Temperature Rise Breaking Tests



TRANSFORMADORES DE POTENCIA

www.cognitor.com.br *ascidix Transformers* Language ENG POR ESP FRA ALE Main data Insulators Materials Close Start

The software interface displays a 3D model of a power transformer with various dimensions and parameters. The main model shows a central core with two windings, surrounded by a tank and insulators. Dimensions are indicated in yellow boxes: X=664, Y=551, 1600, 300, 150, 100, 1190, 400, 150, 80, 890, 385, 890, 1100, 585, 1420, 250, 670, 350, 100. The right panel contains the following settings:

Rated voltage (V)	138000	Hertz	60
Symmetrical (kA rms) x duration (s)	1,2	X	1
Crest asymmetry factor	2,5		?
Conductors	B	H virt	Rated current (A)
Bars	1 V x 1 553046 X 888889		70,41
Sec	1 X 028291 X 888889		ed_IN_A
Ohms YY Prim	ed_Ohms_Y	Sec	Edit1
Copper losses	16028	Iron losses	1041
Eddy_other losses (Watts)			1170
Conductors material	Copper		
Busbars cover	<input checked="" type="radio"/> Bare <input type="radio"/> Painted <input type="radio"/> V <input type="radio"/> H <input type="radio"/> VH		
Enclosure material	Plate (mm)	<input type="radio"/> V <input type="radio"/> H <input type="radio"/> VH	
SteelLowCarbon	3	AT/S-72/95 ML	
Spacers / span (if > 1 naCalços)	6		
Subdivisions (mPri + 5)	5	Sec	5
Max. distance each 2 insulators (mm)	0		
#1	2	#2	5
#3	3	#4	4
#5	3	#6	3
Fluid	MineralOil	Temp. Ambient	+40
Select the project (click twice in the line)			
Tipo1_20_1			
Tipo1_20_1			

Best resolution

Switchgear type (metalclad * 3 vols * metal enclosed)

Tipo1 Tipo2 Tipo3

ElectrodynForces Magnetic Field Electric Field Temperature Rise Internal Arc

OUTROS CÁLCULOS E DADOS

www.cognitor.com.br Decidix Switchgear

GEOMETRY

Température rise to compare with test results

Parte	Unidade	IEC62271_1	IEC60943	IEC 60439_1	ANSI_C37-23	Valor utilizado nos "Resultados"
Contato de cobre nu no ar	K	35	35			35
Contato de cobre nu no SF6	K	65	65			65
Contato de cobre nu no oleo	K	40	40			40
Contato prateado ou niquelado no ar	K	65	75			65
Contato prateado ou niquelado no SF6	K	65	75			65
Contato prateado ou niquelado no oleo	K	50	50			50
Contato estanhado no ar	K	50	50			50

See the values in the standards in the blue columns and type in the yellow column te value to be used in the reports

Código	Parte	vol_m3	Quant.
1	Insulator_15kV	0,003	
2	Insulator_36kV	0,004	
3	Isoladores_epoxi	0,004	
4	C_BreakerWallBusshing_15kV	0,006	
5	C_BreakerWallBusshing_36kV	0,008	
6	WallBusshing_15kV	0,006	
7	WallBusshing_36kV	0,008	
8	WallBusshing_others	0,008	
9	C_Breaker_15kV	0,21	
10	C_Breaker_36kV	0,25	
11	C_Breaker_others	0,25	

Click to calculate the volume (m3) == >>

Contact resistances

Contact material: Copper

Contact force (N): 100

Coef. flatness: Copper silver-plated

Tunnel effect surface resistivity (ohm.m²): Copper silver-plated

N = Constriction resistance = resistivity / 2. N.raio =

Raio = Film resistance = tal0 / (N² pi *raio*raio)

CONTACT RESISTANCE (micro-ohm) =

constriction resistance + film resistance =

Order of magnitude of costs (USD)

Condutor (US\$/kg)	Isoladores (US\$/un)	Involucro (US\$/kg)
<input type="text"/>	<input type="text"/>	<input type="text"/>

SELEÇÃO DE ISOLADORES

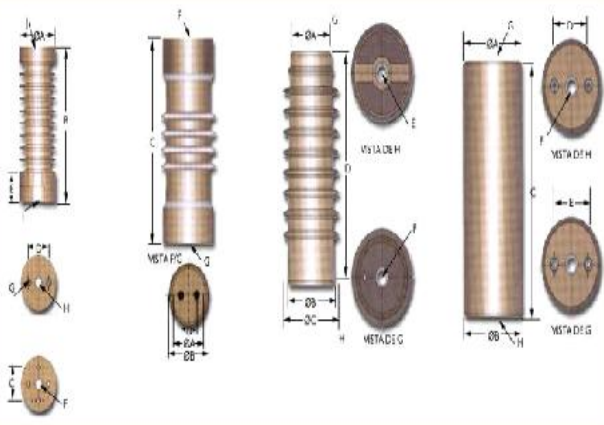
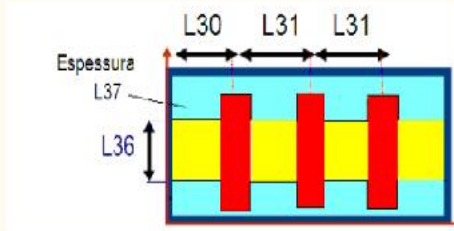
FO

Input data | items | see3DVol | Results | Calculator | ArcModel | Insulators | Materials | Sensitivity | www.cognitor.com.br Decidix Switchgear


Referência: AT/CS-70/175 MAL

ID: 21

Tensão nominal (V)	17.5
Tensão suportavel f.i.	38
Dimensão A (mm)	55
Dimensão B (mm)	70
Dimensão C (mm)	80
Dimensão D (mm)	175
Dimensão E (mm)	
Numero de saias	7
Distancia de escoamento (mm)	244
RoscaTipo (F)	M12
Profundidade da rosca (mm)	15
RoscaTipo (G)	
Profundidade da rosca (mm)	
RoscaTipo (H)	
Profundidade da rosca (mm)	
Peso (kg)	1.12
Resistencia à flexão na altura D1 (N para isoladores)	7500
Distancia D1 acima do topo do isolador onde a força é aplicada (mm)	40
Resistencia à flexão corrigida ao topo do isolador(N)	11250
Resistencia à tração (N)	20000
Resistencia à compressão (N)	60000

SELEÇÃO DE MATERIAIS

FO www.cognitor.com.br 

Input data | Items | see3DVol | Results | Calculator | ArcModel | Insulators | **Materials** | Sensitivity

Numero	Material	Numero	Material	
3	Nitrogen	26	Copper	
4	MineralOil			
5	SiliconOil			
6	Paper			
7	Rubber			
8	XPE			
9	VulcanFiber			
10	SiC			
11	SandOpc			
12	Fenolite			
13	Epoxy			
14	Steatite			
15	Porcelain			
16	Glass			
17	Almelec			
18	Aluminum			
19	Zinc			
20	SteelCast			
21	Tin			
22	SteelLowCarbon			
23	Brass			
24	Bronze			
25	Cadmium			
26	Copper			
27	Niquel			

Densidade (kg / m ³)	8889	Classes de temperatura (C)	
Resistividade (Ohm x M)	1,78E-8	Y 90	
Coeficiente dilatacao (1 / K)	0,00393	A 105	
Condutividade térmica (W / m K)	387	E 120	
Calor específico (J / kg K)	394	B 130 (isoladores de epoxi e placas)	
hCap J / mole K		F 155	
Viscosidade dinamica (Pa s)	1,8E-6	H 180	
Temperatura recozimento (C)	200	enamel: oil base 100	
Calor latente de fusão (J / mol)	13140	synthetic 120	
Temperatura de fusão (C)	1083	Emissividade	0,7
Calor latente de vaporização (J / mol)	300500	Dureza (Pa)	350000000
Temperatura de ebulição (C)	2567	Tensão mecanica Tal 0.2	250000000
Classe de temperatura (C)		Tensão mecanica Tal' 0.2	360000000
Temperatura max Classe	1000	Modulo de elasticidade (Youna)	110000000000
		Peso atomico	63,54