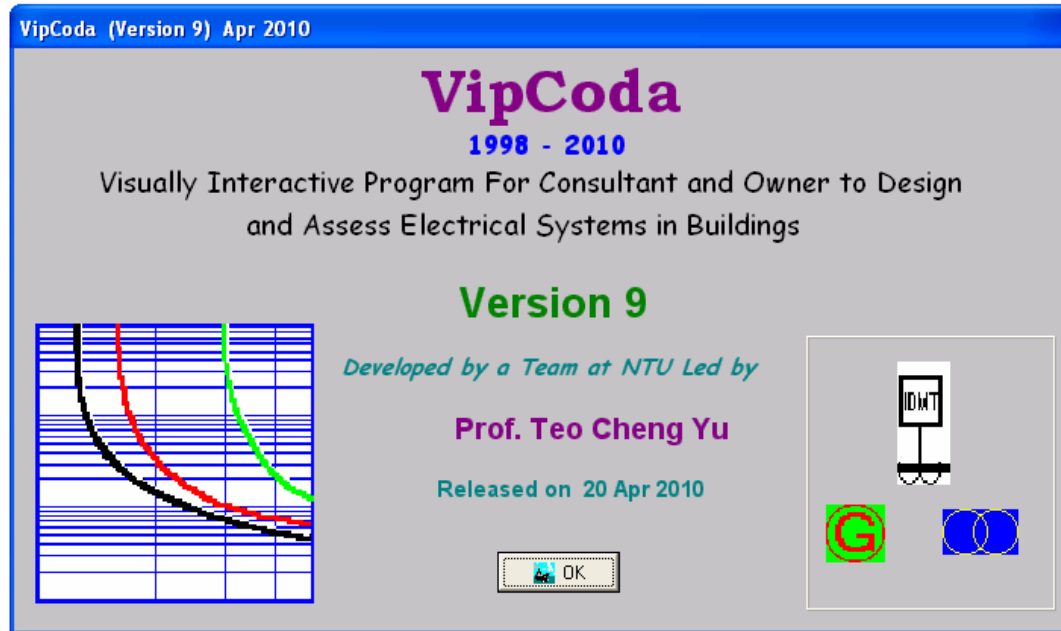


# VipCoda 9



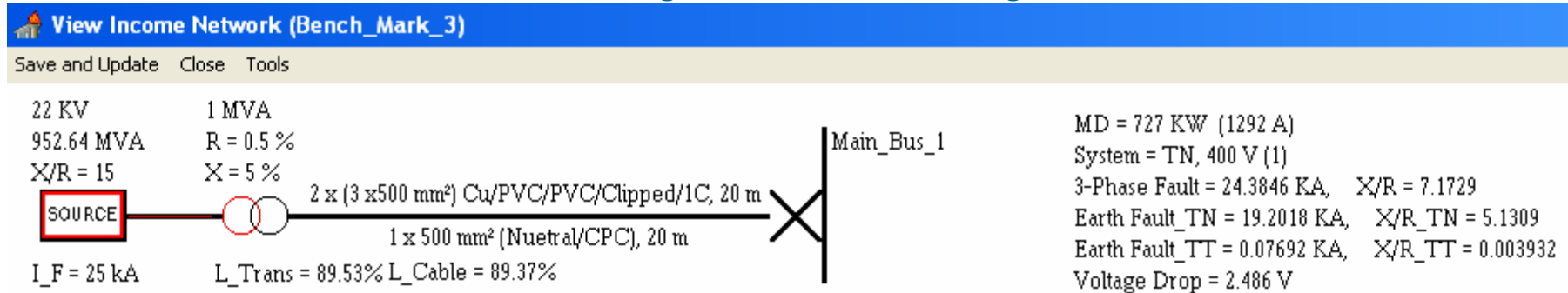
Version	Date Released
1	Sep 1998
2	Jan 1999
3	May 1999
4	Sep 1999
5	May 2000
6	Jun 2001
7	Jun 2002
7A	Jun 2002
8	May 2004
8Y	Jul 2005
9	Apr 2010

We have currently a total of **72 users** and most of them are consulting firms and large energy users such as CPG, Jurong consultants, LTA, Celegec, Keppel Eng, etc. We have also **16 users in Malaysia** and one user in Middle East and one user in Hong Kong.

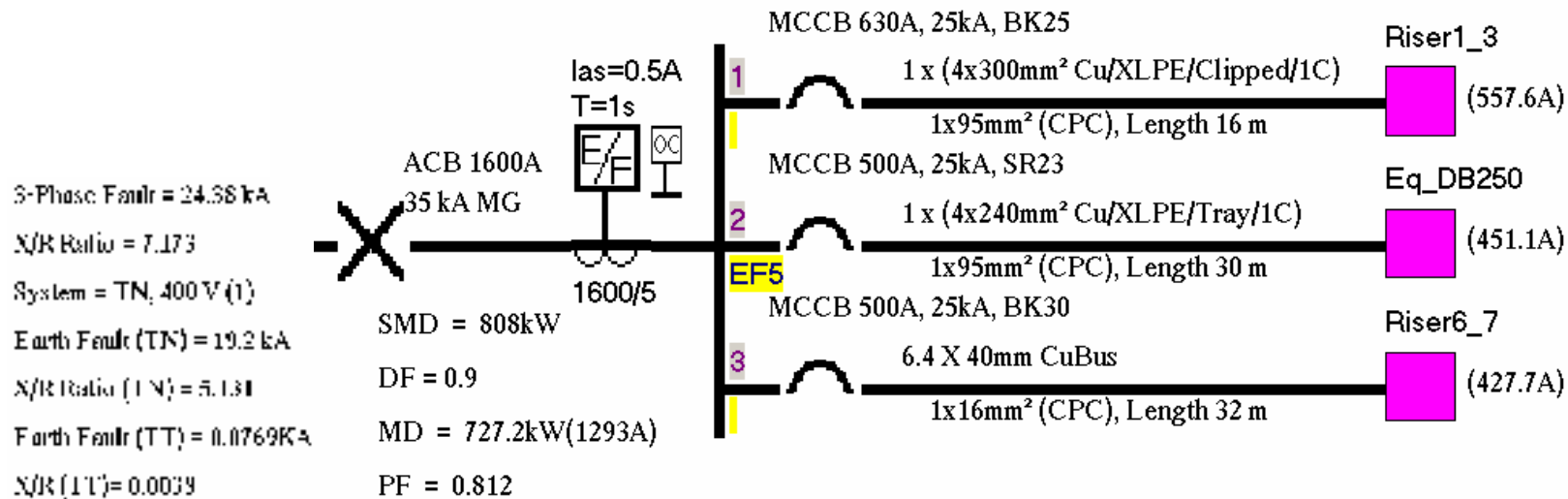
After the user specified the type of load, type of cable, circuit length and voltage drop tolerance, VipCoda provides automated design To obtain **minimum** type and size of breaker and size of cable so that **it meets CP5 requirements and no over design.**

## A Comprehensive Tool

A comprehensive tool for Design, Assessment and training  
of engineers on LV design



**Project: Bench\_Mark\_3 Bus: Main\_Bus\_1**  
**Last Update: 5/8/2004 4:21:22 PM**  
**Designer: IHPT 2001 Consultants**

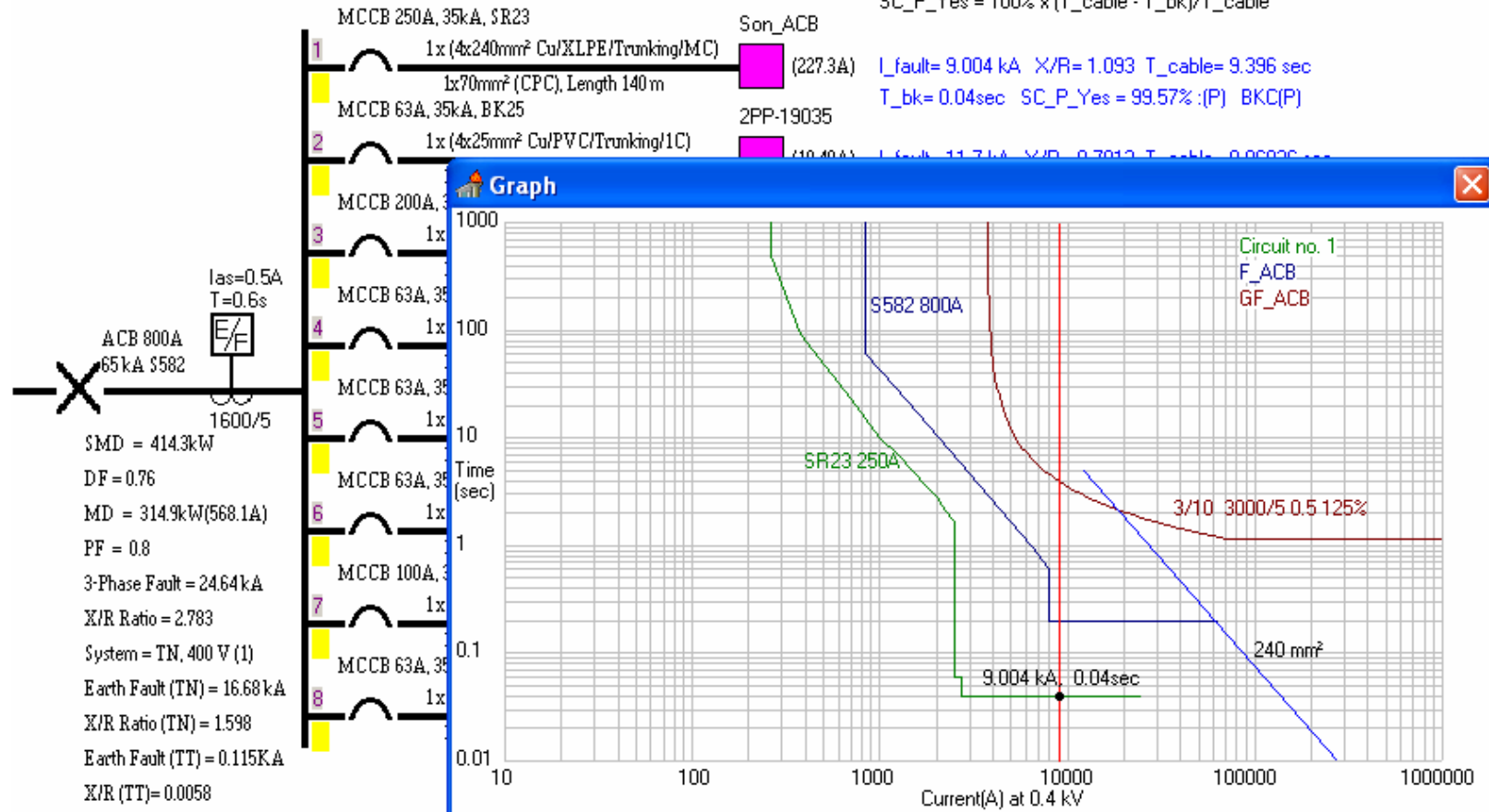


## short circuit analysis

Fault at Circuit 1( Son\_ACB), the fault current is 9 kA and the withstand limit of the 240 mm cable is 9.396 s.  
 The 250-A MCCB tripping curve SR23 is shown together with the 800-A ACB curve S582 and its further upstream 3000-A ACB with IDMT 3/10 curve set at 125%

**Project:** Breaker\_Curves **Bus:** F\_ACB  
**Last Update:** 8/31/2008 2:05:24 PM  
**Designer:** For Illustration

C4: Short Circuit Protection Test  
 $SC\_P\_Yes = 100\% \times (T\_cable - T\_bk) / T\_cable$



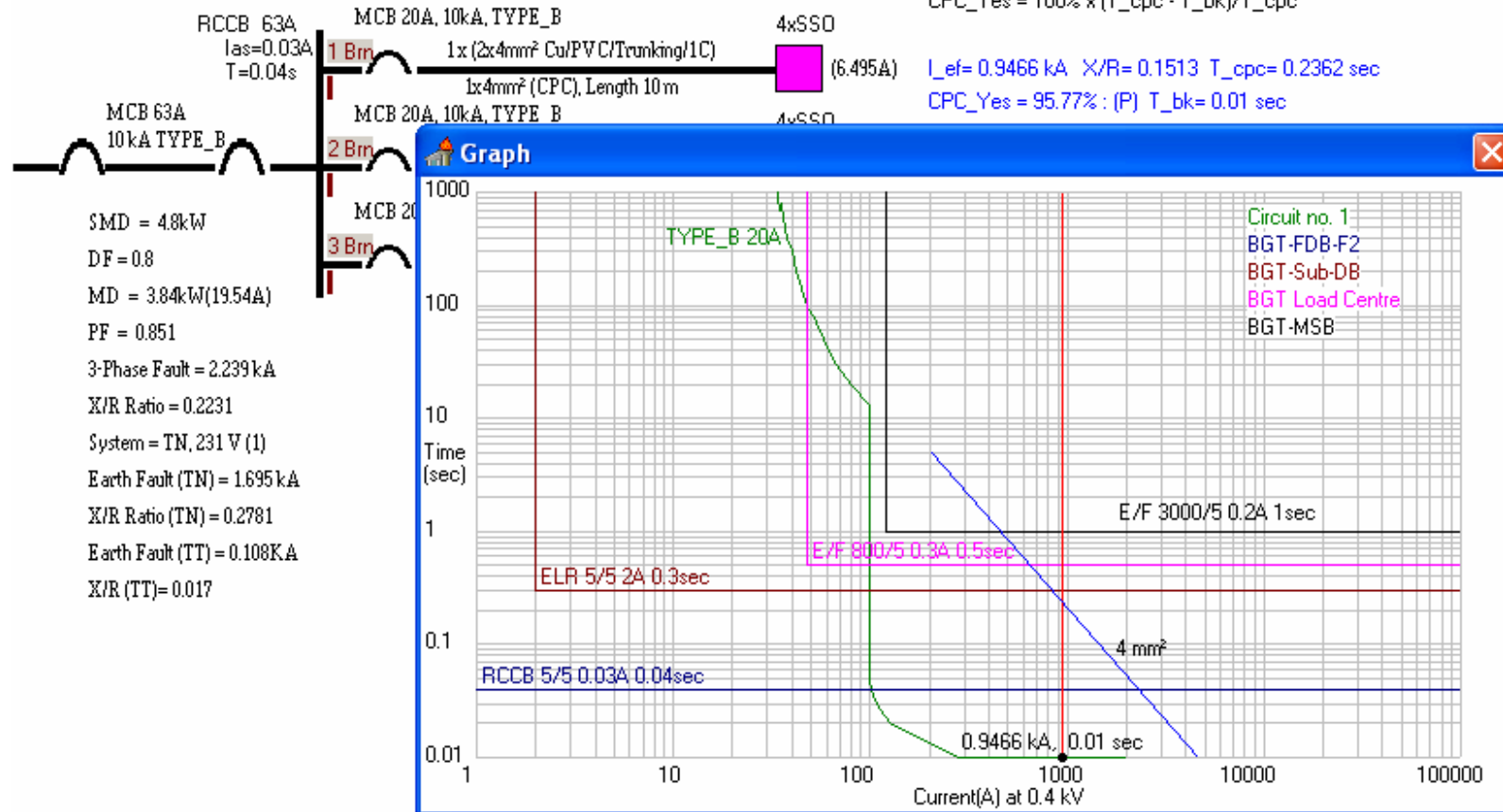
## Earth Fault Analysis

Earth Fault at Circuit 1 (4xSSO), the earth fault current is 946 A and the withstand limit of the 4 mm CPC is 0.236 s.

The 20-A MCB tripping curve at 0.01 s is shown together 63-A RCCB (at FDB-F2) operating in 0.04 s and its upstream ELR (at Sub-DB) in 0.3 s, 800-A MCCB E/F (at Load Centre) at 0.5 s and 3000-A ACB E/F (at MSB) at 1 s

**Project:** Terminal\_BGT    **Bus:** BGT-FDB-F2  
**Last Update:** 4/21/2008 10:19:48 AM  
**Designer:** TCY

C5: Earth Fault & CPC Test  
 $CPC\_Yes = 100\% \times (T\_cpc - T\_bk) / T\_cpc$



SMD = 4.8kW  
 DF = 0.8  
 MD = 3.84kW(19.54A)  
 PF = 0.851  
 3-Phase Fault = 2.239 kA  
 X/R Ratio = 0.2231  
 System = TN, 231 V (1)  
 Earth Fault (TN) = 1.695 kA  
 X/R Ratio (TN) = 0.2781  
 Earth Fault (TT) = 0.108KA  
 X/R (TT) = 0.017

## 7 Critical Tests

The speed test conducts all the 7 critical tests for each circuit and the type of failure will be shown in red color

**VipCoda8Y--(July 2005)--IES\_Demo**

Project Edit ReDesign Speed Test Type of Test Back To Tools View Database Help

Project: IES\_Demo Bu  
Last Update: 8/2/2005 9:  
Designer: Byte Power Consultants

**CRITICAL TEST**  
Non\_Critical Test

- C1: Breaker and Cable Load Test
- C2: Overload Protection Test
- C3: Voltage Drop Test
- C4: Short Circuit Protection Test
- C5: Earth Fault & CPC Test**
- C6: Motor Starting Test
- C7: Electric Shock Protection Test

MCCB 125A, 25kA, BK20  
1x (4x50mm<sup>2</sup> Cu/E  
1x16mm<sup>2</sup> (CPC)  
MCCB 125A, 25kA, BK20

M1\_G

Summary of Failure

1	1x (4x50mm <sup>2</sup> Cu/PVC/PVC/Tray/1C)	(111.6A)	Passed
	1x16mm <sup>2</sup> (CPC), Length 75 m		
	MCCB 300A, 25kA, BK30	Motor 80 kW	
2	1x (4x95mm <sup>2</sup> Cu/XLPE/Trunking/MC)	(160.4A)	L:(F) OverLoad:(OK!)
	1x10mm <sup>2</sup> (CPC), Length 20 m		
	MCCB 160A, 25kA, BK30	Motor 55 kW	
3	1x (4x70mm <sup>2</sup> Cu/PVC/Clipped/MC)	(110.3A)	Passed
	1x6mm <sup>2</sup> (CPC), Length 25 m		
	MCCB 300A, 25kA, BK20	Eq Load 200kW	
4	1x (4x240mm <sup>2</sup> Cu/XLPE/Ladder/MC)	(384.9A)	BK:(F)
	1x70mm <sup>2</sup> (CPC), Length 100 m		
	MCCB 125A, 25kA, BK20	M2_NG	
5	1x (4x70mm <sup>2</sup> Cu/XLPE/Tray/1C/SWA)	(100.2A)	Passed
	1x16mm <sup>2</sup> (CPC), Length 100 m		

Fail for Incoming Breaker Test(F)

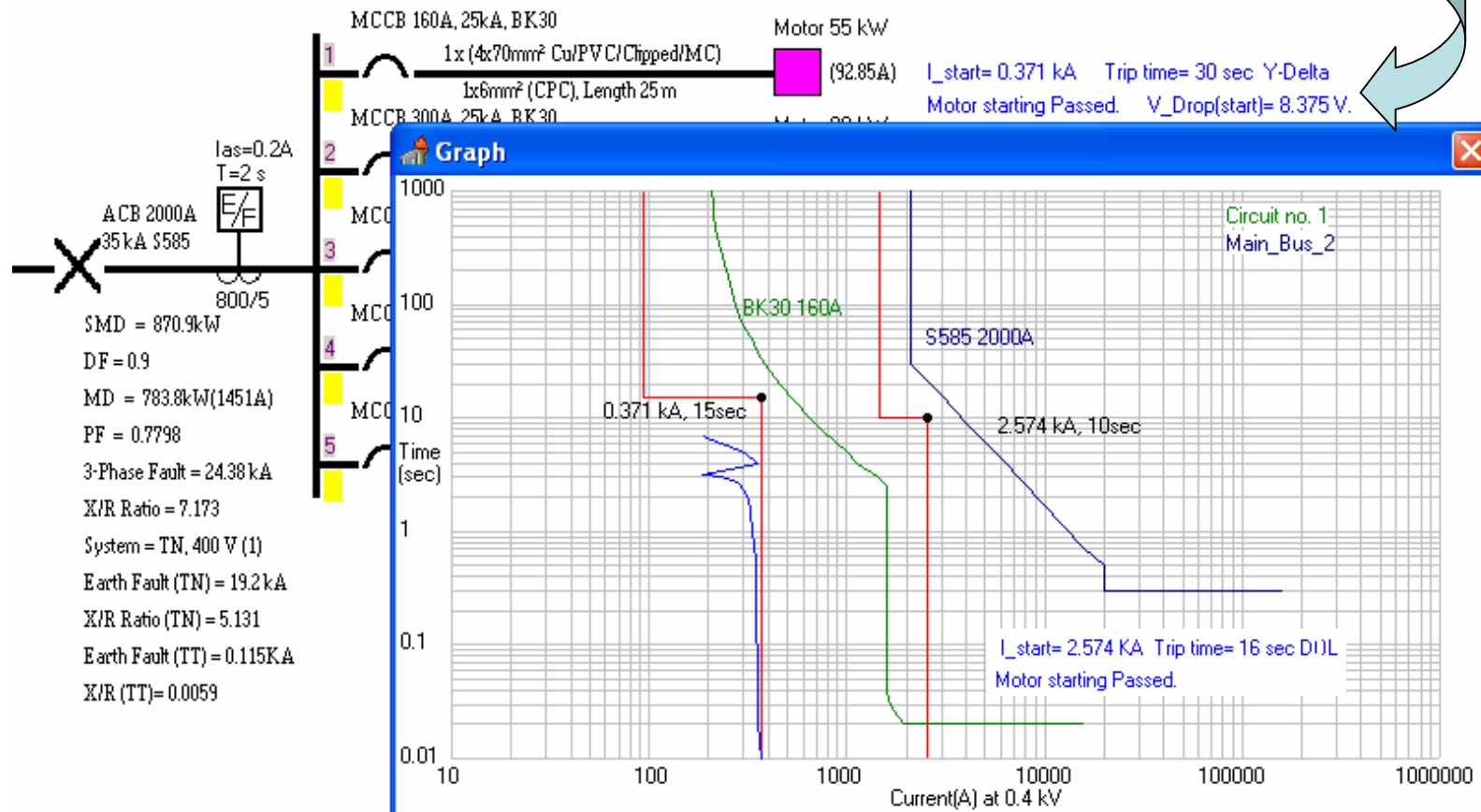
$I_{as}=0.2A$   
 $T=2s$   
 MCCB 630A  
 25 kA BK30  
 800/5  
 SMD = 470.9kW  
 DF = 0.9  
 MD = 423.8kW(779.6A)  
 PF = 0.7846  
 3-Phase Fault = 24.38 kA  
 X/R Ratio = 7.173  
 System = TN, 400 V (1)  
 Earth Fault (TN) = 19.2 kA  
 X/R Ratio (TN) = 5.131  
 Earth Fault (TT) = 0.192KA  
 X/R (TT)= 0.0098

## Motor Starting test for any selected motor circuit

The highest starting current of the 55-kW motor (Y-Delta) is 371 A and the transient voltage drop is 8.375 V.  
 The 160-A MCCB tripping curve BK30 is shown together with the 2000-A ACB curve S585. The design safety margin for circuit 1 is 371 A up to 15 s and the incoming circuit is 2574 A up to 10 s

Project: Coda\_Demo Bus: Main\_Bus\_2  
 Last Update: 9/3/2005 4:00:52 PM  
 Designer: Byte Power Consultants

C6: Motor Starting Test

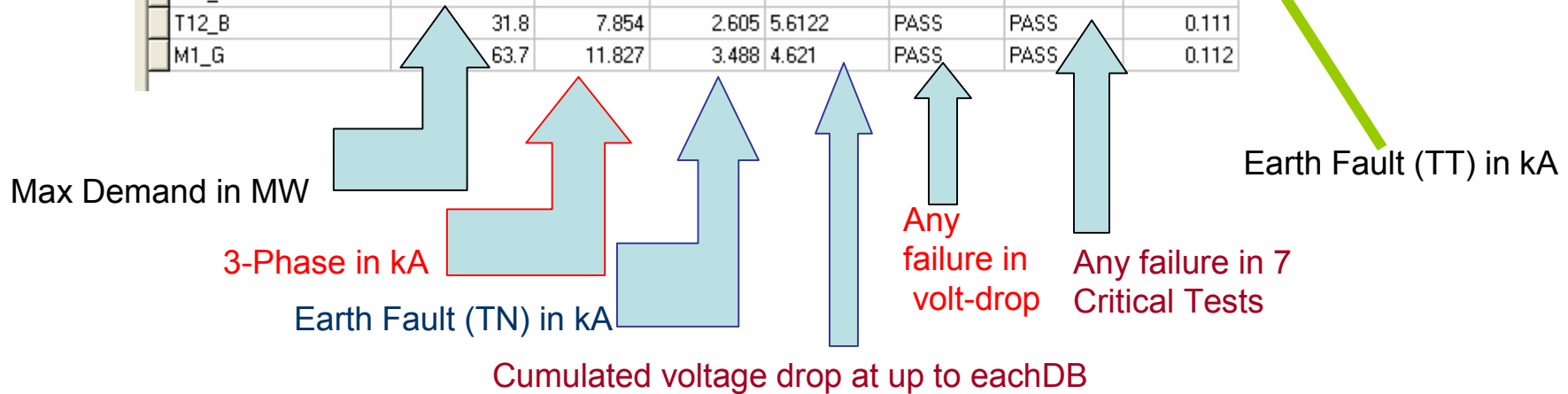


# Technical Summary

For senior engineer to assess and approve all the submitted design networks. Gives full technical summary including the calculation of 3-phase and earth-fault currents and the cumulated voltage drop from the HV incoming up to each distribution board.

**c:\VIP\_PROJ\Bench\_Mark\_1\summary\_Normal.dbf**  
*Rated voltage is 400 V and Volt-Drop is set at 4% i.e. 16.0 V(3-P), 9.2 V(1-P), IEC 909=1.*

BUS_ID	MAX_DEMAND	TP_FAULT	E_FAULT	VOLT_DROP	VOLT_FAIL	TEST7_FAIL	TT_E_F
T21_NG	31.8	5.32	2.566	6.41	PASS	FAIL	0.111
M2_NG	57.2	13.177	6.53	4.115	PASS	PASS	0.114
RISER1	109	24	20	1.917	PASS	PASS	0.115
T22_G	31.8	5.32	2.566	6.41	PASS	PASS	0.111
MAIN_SWITCHB	314	24	20	1.917	PASS	PASS	0.115
T11_UB	39	8.622	2.559	5.5292	FAIL	PASS	0.111
T12_B	31.8	7.854	2.605	5.6122	PASS	PASS	0.111
M1_G	63.7	11.827	3.488	4.621	PASS	PASS	0.112



## Cost Summary of a Project

Cost summary for each DB in this project

BUS_ID	CABLECOST	INSTALCOST	BREAKRCOST	DB	PERUNCOST	CONNECT	TOTALCOST
▶ T21_NG	982.752	3427	58.8	300	4768.552	1	4768.552
M2_NG	543.6	800	329.2	3300	4972.8	1	4972.8
RISER1	4831.98	2480	568	0	7879.98	1	7879.98
T22_G	829.068	3517	61.1	1100	5507.168	1	5507.168
MAIN_SWITCHB	11725.54	3950	3220	8500	27395.54	1	27395.54
GRAND_TOTAL	18912.94	14174	4237.1	13200			50524.04

Cable Bill of material

CABLE_DESC	CABLE_DIM	LENGTH	CABLECOST	INSTALCOST	TOTALCOST
▶ Cu/XLPE/Tray/MC/SWA	50	12	440.4	360	800.4
Cu/XLPE/Tray/MC/SWA	70	10	512.8	300	812.8
Cu/PVC/PVC/Clipped/1C	1.5	172.4	34.48	1724	1758.48
Cu/PVC/PVC/Clipped/1C	2.5	29.6	10.06	296	306.06
Cu/PVC/PVC/Clipped/1C	4	86.6	45.9	866	911.9
Cu/PVC/Clipped/MC	1.5	17	28.9	170	198.9
Cu/PVC/Clipped/MC	6	41.2	201.06	412	613.06
Cu/XLPE/Clipped/MC	16	90	1053	900	1953
Cu/XLPE/Clipped/MC/SWA	16	50	755	500	1255
Cu/FR/Clipped/1C	70	24	3072	240	3312
Cu/PVC/Trunking/1C	1.5	32.4	6.48	648	654.48
Cu/PVC/Trunking/1C	4	41.4	21.94	828	849.94
Cu/PVC/PVC/Tray/1C	70	40	298.4	1200	1498.4
Cu/XLPE/Tray/MC	120	50	4200	1500	5700
Cu/FR/Tray/1C	70	60	7680	1800	9480
Cu/PVC/PVC/Clipped/1C	10	100	123	1000	1123
Cu/PVC/PVC/Clipped/1C	16	40	75.6	400	475.6
Cu/PVC/PVC/Clipped/1C	25	72	222.48	720	942.48
Cu/PVC/PVC/Clipped/1C	35	31	131.44	310	441.44
GRAND_TOTAL			18912.94	14174	33086.94

Breaker Bill of material

BREAK_TYPE	IRATING	BK_CAP	BREAKER_NO	COST
▶ MCB	6	4.5	1	5.5
MCB	6	6	2	11
MCB	16	6	2	11
MCB	20	6	1	5.5
MCB	25	6	1	5.5
MCB	32	6	1	5.5
MCB	16	10	4	22
MCB	25	10	1	5.5
MCB	40	10	1	9.5
MCB	63	15	2	45.2
MCCB	125	25	2	568
MCCB	160	25	2	910
MCCB	200	25	2	910
MCB	50	10	1	16.3
MCCB	125	15	1	284
MCB	63	6	1	22.6
MCCB	630	25	1	1400
TOTAL_COST				4237.1