PSDB POWER STUDIES DATABASE 2015©

PSDB is an easy to use database program designed to assist facility owners and maintenance personnel to comply with **OSHA, NEC,** and **NFPA 70E** regulations and standards.   The database program stores not only your electrical distribution system equipment nameplate data but the power system study results. This enables the user to obtain study results and equipment information without searching multiple files and report binders.

This program will enable you to:
❖ Display and print
  o Short Circuit results
  o Arc Flash study results
  o Protective device settings
  o Time Current Curve device number and curve discussions
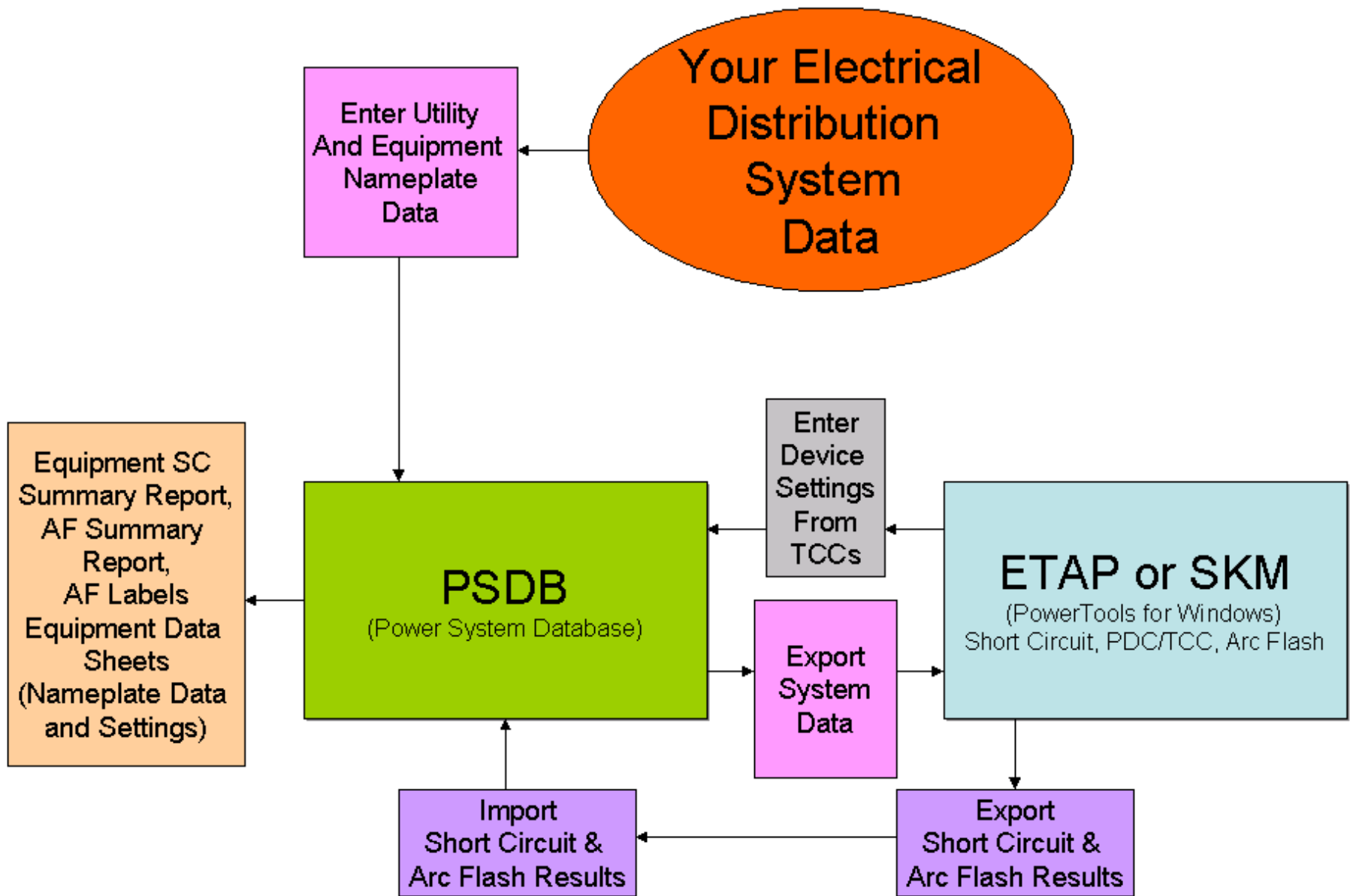❖ Equipment nameplate data for

Motors	**Transformers**	**Transfer Switches**	**Generators**	**Panelboards**
Switchboards	**Motor Control Centers**	**Circuit Breakers**	**Fuses**	**Relays**
Switchgear	**Substations**	**Disconnect Switches**	**Power Distribution Units**	**Variable Speed Drives**

❖ Print multiple copies of the Arc Flash Labels

This Access Database program will enable you to quickly and easily look up short circuit, arc flash study values, protective device settings, and equipment nameplate data for various locations in your facility. This will reduce future engineering research and data gathering costs for facility additions and renovations.

We will get you set up based on your facilities needs and unique design. Once you're up and running, this program can be made available for you to make updates as you encounter improvements or additions to your electrical distribution system.

The flow chart on the next page shows the flow of equipment nameplate data and study results into and out of the PSDB program.

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                                    ┌─────────────────────────────┐
┌──────────────────┐                │     Your Electrical         │
│  Enter Utility   │ ◄──────────────│     Distribution            │
│  And Equipment   │                │     System                  │
│  Nameplate       │                │     Data                    │
│  Data            │                └─────────────────────────────┘
└──────────────────┘
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Your Electrical Distribution System Data

Enter Utility And Equipment Nameplate Data

Equipment SC Summary Report, AF Summary Report, AF Labels Equipment Data Sheets (Nameplate Data and Settings)

Enter Device Settings From TCCs

PSDB (Power System Database)

ETAP or SKM (PowerTools for Windows) Short Circuit, PDC/TCC, Arc Flash

Export System Data

Import Short Circuit & Arc Flash Results

Export Short Circuit & Arc Flash Results

The following pages are brief discussions and screen prints of the PSDB program.

Short Circuit Results

The PSDB program allows the importation of the short circuit calculation results from ETAP or SKM. The short circuit summary list will allow you to compare the calculated available fault current to your equipment short circuit rating. Any equipment that is underrated will be flagged on the right side of the report.

SC Import Adjustment: 100%
Scenario 1: Normal
Scenario 2: Emergency

Low Voltage Equipment Short Circuit Summary List

Node ID	Node Name	Volts	Type of Device	Cat	Equip Rating With	Equip Rating Int	X/R Ratio	1/2 Cycle Sym (KA) (ACComp)	1/2 Cycle Asym (KA)	MF	1/2 Cycle Sym (KA) X MF	S#	Type Of Fault	Equipment Underrated? With	Equipment Underrated? Int
DWBH	DISHWASH BOOST	208	N/A				0.97	6.6	6.6			1	3 Phase		
	Comment:														
GEN	GENERATOR	208	N/A												
	Comment: Kohler; 500kW - Unable to access nameplate. Cover locked and key not available.														
GEN-BUS	GEN BUS	208	MCCB	2		100.0	7.16	14.3	19.4	1.083	15.5	2	3 Phase		
	Comment:														
PNL-EP	PANEL EP	208	MCCB				0.57	9.1	9.1			1	3 Phase		
	Comment: UPS/INVERTER UNIT WITH 70/1 BREAKER														
PNL-KA	PANEL KA	208	MCCB	2		22.0	1.07	8.2	8.3	1	8.2	1	3 Phase		
	Comment:														
PNL-KB	PANEL KB	208	MCCB	2		22.0	1.82	10.1	10.4	1	10.1	1	3 Phase		
	Comment:														
PNL-KC	PANEL KC	208	MCCB	2		22.0	1.68	15.3	15.6	1	15.3	1	3 Phase		
	Comment:														
PNL-KD	PANEL KD	208	MCCB	2		22.0	0.77	6.7	6.7	1	6.7	1	3 Phase		
	Comment:														

Arc Flash Study Results

With the arc flash study reports you have the option to view the results by worse case or list out the calculated results for each operating scenario individually for each location. Below is an example of worse case based on combined scenarios.

Job Number: 1409035 Title: Yuba County Water Agency, Bullards Bar

Maximum Arc Flash Energy AC (US) – All

Bus Name	Scenario	Protective Device Name	Bus Volt (v)	Bus Bolted Fault (kA)	Prot Dev Bolted Fault (kA)	Prot Dev Arcing Fault (kA)	Trip/ Delay Time (sec)	Breaker Opening Time (sec)	Ground	Equip Type	Gap (mm)	Arc Flash Bndry (in)	Work Dist (in)	Incident Energy (cal/cm2)	Notes
30HP-BUS (30 HP BUS)	3	TO 30HP-BUS	480	1.24	1.13	1.01	2.00	0.000	Y	PNL	25	45	18	5.40	(*N9)
5.5HP-BUS (5.5 HP BUS)	3	TO 5.5HP-BUS	480	1.20	1.18	0.90	0.28	0.000	Y	PNL	25	12	18	0.63	(*N3)
AC-UNIT (AC UNIT)	3	TO AC-UNIT	208	1.97	1.97	1.18	2.00	0.000	Y	PNL	25	18	18	1.20	(*N3) (*N9) (*N15)
ATS (ATS)	2	TO ATS	208	2.46	2.46	1.38	0.14	0.000	Y	PNL	25	11	18	0.56	(*N3) (*N15)
BFV-VALVE (BFV VALVE)	3	TO BFV-VALVE	480	1.89	1.84	1.30	0.26	0.000	Y	PNL	25	15	18	0.90	(*N3)
BYPASS-VLV1 (BYPASS VALVE 1)	1	TO BYPASS-VLV1	208	1.50	1.50	1.15	0.02	0.000	Y	PNL	25	3	18	0.06	(*N15)
BYPASS-VLV2 (BYPASS VALVE 2)	3	TO BYPASS-VLV2	208	0.99	0.99	0.73	0.13	0.000	Y	PNL	25	7	18	0.26	(*N3) (*N15)
DISC-45KV (DISC 45 KVA XFMR)	1	TO TAP-1	480	0.55	0.52	0.52	2.00	0.000	Y	PNL	25	18	18	1.23	(*N5) (*N9) (*N11)
DISC-45KV (DISC 45 KVA XFMR) (DISC-45KV FUSE LineSide)	1	TO TAP-1	480	0.55	0.52	0.52	2.00	0.000	Y	PNL	25	18	18	1.23	(*N9) (*N11)
DISC-FS-2 (DISC FS-2)	1	MaxTripTime @2.0s	12,470	12.17	12.11	11.71	2.00	0.000	Y	SWG	153	1011	36	30.67	(*N2) (*N9)
DISC-FS-2 (DISC FS-2) (FS-2 FUSE LineSide)	3	SW-AIR-53 FUSE	12,470	0.07	0.07	0.07	2.00	0.000	N	SWG	153	31	36	0.91	(*N9) (*N11)
DISC-H20INFL (DISC H20 INF PMP)	1	TO DISC-H20INFL	480	3.42	3.40	2.61	0.02	0.000	Y	PNL	25	5	18	0.14	
DISC-MCC-LFT (DISC MCC LEFT)	1	DISC-MCC-LEFT	208	0.88	0.79	0.71	2.00	0.000	Y	PNL	25	18	18	1.20	(*N9) (*N15)
DISC-MCC-LFT (DISC MCC LEFT) (DISC-MCC-LEFT LineSide)	1	FS-4A FUSE	208	0.88	0.79	0.71	2.00	0.000	Y	PNL	25	18	18	1.20	(*N5) (*N9) (*N15)
ECB-MAIN (ECB MAIN)	3	XFMR-25KV FUSE	208	1.30	1.30	1.04	0.95	0.000	Y	PNL	25	18	18	1.20	(*N15)
GEN-FISHHYD (GEN FISH HYD BUS)	1	MaxTripTime @2.0s	480	8.08	1.97	1.63	2.00	0.000	Y	PNL	25	64	18	9.57	(*N2) (*N9)
GEN-FISHHYD (GEN FISH HYD BUS) (GEN-FISHHYD MAIN LineSide)	1	GEN-FISHHYD MAIN	480	8.08	1.97	1.33	2.00	0.000	Y	PNL	25	65	18	9.72	(*N9)

Arc Flash Labels

Since all of your results are already entered into the PSDB program, printing additional labels will be simple for you. Here is an example of the labels you will have the capability to print as needed for your facility.

⚠ **WARNING**

Arc Flash and Shock Hazard

0 Ft 5 In	Flash Hazard Boundary
0.1	cal/cm² Flash Hazard at 1 Ft 6 In
	Arc Rated Clothing Required (See NFPA 70E-2015 H.3(b) for additional PPE)
208 VAC	Shock Hazard when cover is removed
00	Glove Class
3 Ft 6 In	Limited Approach (Fixed Circuit)
Avoid Contact	Restricted Approach

05/12/2015	IEEE 1584-2002/2004a/2011b & NFPA 70E-2015
Equipment ID (Name):	PNL-A (PANEL A)
Protective Device:	FDR TO PNL A

Scenario 1 - MAXIMUM FAULT CURRENT

Study Performed By PowerStudies, Inc. (253) 639-8535

Protective Device Settings

Our setting sheets will clearly list the manufacturer, type, circuit amps and settings of the devices within a substation, switchboard, panelboard or any other equipment that contains protective devices. Also shown on the setting sheets are the time current curve numbers and the device reference. Any time current curve that has the device plotted will be listed. This enables you to quickly locate protective devices and determine which time current curve that they appear on. The setting sheets can be easily printed and given to test technicians and electricians to use for testing and maintenance of the equipment.

Job Number: 0909012 Title: Ft. Lewis Building 12430, Ft. Lewis, WA

Equipment Group	Vault Number	Building Number	Column	Floor
BUILDING 12430	#1	12430		

Equipment Name: Switchboard

Node ID	Node Name	Manufacturer	Type	Assumed Data	Comments
SBK1-SB3	SBK1 SB3	CHALENGE		☐	

Voltage	Main Amp	Sect Amp	Ntrl Amp	Interrupting Rating	Withstand Rating	LV DeviceType	Serial or Shop #	Year Installed
208	400	400	400	65.0	65.0	MCCB	123456789	2010

SBK1-SB3 Low Voltage Circuit Breaker Data

Circuit Description	Position	Man or Elec	Mfg., Type	Frame Amps	Int Amps	Circt Amps	Abbreviated Trip Type	Mag Trip or Curr Sens Rating	Sens Tap or Rating Plug	Current Setting	Long Time Pkup	Long Time Delay	Short Time Pkup	Short Time Delay	Short Time I2T	Instantaneous Pkup	Instantaneous Delay	Grnd Fault Sensr	Grnd Fault Pkup	Grnd Fault Delay	Grnd Fault I2T	Assumed Data
DISHWASHER BOOSTER HEATER			CHALENGE CED	225	65000	175	THERMAL MAGNETIC	175	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FIXED	FIXED	N/A	N/A	N/A	N/A	☐
Other: CHALLENGER CED3175 FIXED																						
PANEL EP			CHALENGE T/M CF	150	65000	60	THERMAL MAGNETIC	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FIXED	FIXED	N/A	N/A	N/A	N/A	☐
Other: CHALLENGER CF3060 T/M FIXED																						
PANEL KA			CHALENGE CED	225	65000	200	THERMAL MAGNETIC	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	FIXED	FIXED	N/A	N/A	N/A	N/A	☐
Other: CHALLENGER CED3200 FIXED																						
PANEL KB			CHALENGE T/M CKS/CK	400	65000	300	THERMALMAGNETIC	300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10	FIXED	N/A	N/A	N/A	N/A	☐

Device#: 6 TCC#(s): 1, 2 Other: CHALLENGER CKT33W INST-100%

Equipment Nameplate Data

Generator Data

Utility Source Information

Equipment Group Entry/Edit ✕

Equipment Group Name	BUILDING 12430	Vault	#1	Bldg	12430

Col [ ]   Floor [ ]   Comment [UTILITY SERVICE]

Go To
◉ Equip Group   ○ Node   ○ Transformer
[▼]

Generator
Manual Transfer Switch
Motor
Other
Panelboard
Switchboard
Switch-Pad Mount or Main Switch
Transformer
Utility

Node ID	Node Name	Voltage	Connected To	Assumed Data
NF2	NF2	13800	NFV-12E ▼	☐

	Three Phase	Line To Line	Line To Ground
SCAMP:	2931	2538	2057
X"/R(+):	2.43000		
X"/R(0):	2.82000		
X"/R(-):	2.43000		

Comments
[ ]

Conductors

[Incoming] [Outgoing] [All]

From Node	Connection Location	To Node	Connection Location	Branch Code	Name	Description
▶ NFV-12E ▼	▼	XFMR-3333-P ▼	▼	F ▼	TO XFMR-3333	2-15KV ▼
∗ ▼	▼	▼	▼	▼		▼

[Change Equipment Type]   [Field Notes]   [Copy Node]

Record: |◀ ◀ [1] ▶ ▶| ▶∗ of 1

[Add Equipment]   [Remove Equipment]   [Print Data Sheet]   [Create New Group]   [Copy To New Group]   [Delete Group]

Record: |◀ ◀ [1] ▶ ▶| ▶∗ of 1

Transformer Data

Equipment Group Entry/Edit

Equipment Group Name: BUILDING 12430   Vault: [ ]   Bldg: 12430

Go To: ● Equip Group ○ Node ○ Transformer

Col: [ ]   Floor: [ ]   Comment: [ ]

Generator
Manual Transfer Switch
Other
Panelboard
Switchboard
Switch-Pad Mount or Main Switch
Transformer
Utility

Primary	Secondary	Name	Type	Serial #	Manufacturer	KVA (Air)	KVA (Fans)	KVA (Pumps)
XFMR-3333-P	XFMR-3333-S	XFMR 3333	500-3-L			500		

Cool	Temp Rise	Pri. Voltage	Connection	Sec. Voltage	Connection	Primary Ifl	Second. Ifl	No. of taps	Impedance %
OA Oil Air		13800	Delta	208	Y Solidly Grour				4.54

HV BIL | LV BIL | Net Weight | Gallons of Oil | Year Instlld | Assumed Data ☐ | Comments: FEED-THRU

Device#: 3 TCC#(s): 1

Primary Switches | Secondary Low Voltage Circuit Breakers | Secondary Relays | Fuses | Conductors

	Manufacturer, Type, Voltage	Cont. Amps	Int. Amps	Moment Amps	Max Fuse Amps	Serial Number	Year Installe
▶	GE Unknown 13800	600	600	40000			1995
✳							

Field Notes   Copy Transformer

Record: ◀◀ ◀ [1] ▶ ▶◀ ▶✳ of 1

Add Equipment   Remove Equipment   Print Data Sheet   Create New Group   Copy To New Group   Delete Group

Record: ◀◀ ◀ [1] ▶ ▶◀ ▶✳ of 1

Switchboard Data

Equipment Group Entry/Edit

Equipment Group Name: BUILDING 12430   Vault: [ ]   Bldg: 12430

Go To: ● Equip Group ○ Node ○ Transformer

Col: [ ]   Floor: [ ]   Comment: [ ]

Equipment list:
- Generator
- Manual Transfer Switch
- Other
- Panelboard
- **Switchboard**
- Switch-Pad Mount or Main Switch
- Transformer
- Utility

Node ID: SBK1-SB1   Node Name: SBK1 SB1   Manufacturer: CHALENGE   Type: [ ]   Voltage: 208   Main Amp: 1600   Sect Amp: [ ]   Ntrl Amp: [ ]   Interrupting Rating: [ ]

Withstand Rating: 100.0   LV DeviceType: MCCB   Serial or Shop #: [ ]   Year InstlId: [ ]   Assumed Data: ☐

Comments:
The settings for these breakers have been modified as part of the protective device coordination study. Please update in the field.

Low Voltage Circuit Breakers | Relays | Fuses | Conductors

	Circuit Description	TCCs	Pos.	Man or Ele	Mfg., Type, Volt., Inst., Frame Amps	Interrupt Amps
▶	GEN BREAKER	Device#: 8 TCC#(s): 2			Cut/Ham SPB-100M 240 Yes 5000	100000
	SBK BREAKER	Device#: 4 TCC#(s): 1			Cut/Ham SPB-100M 240 Yes 5000	100000
*						

[Change Equipment Type] [Field Notes] [Copy Node]

Record: |◄ ◄ [1] ► ►| ►* of 2

[Add Equipment] [Remove Equipment]   [Print Data Sheet]   [Create New Group] [Copy To New Group] [Delete Group]

Record: |◄ ◄ [1] ► ►| ►* of 1

Motor Data

These were just a few examples of the reports and options that will become available to you. If you would like to see a detailed demonstration of the program, please feel free to contact us at 253-639-8535 or fuhr@powerstudies.com.