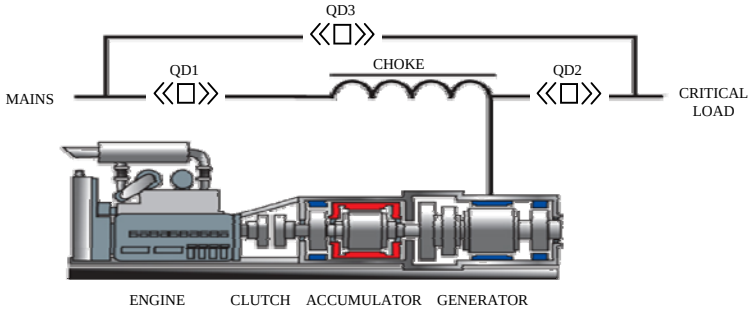
NO-BREAK E1 **Calculated MTBF**

MTBF Calculations Based Upon IEEE Gold Book Standards



Conditioning Mode, Utility available			*failures /yr*	*reference*	*MTBF (hrs)*	*MTBF (yrs)*
Input CB (closed)			0.003000	CB table 3-2, metalclad > 600A	2,920,000	333
OutputCB (closed)			0.003000	CB table 3-2, metalclad > 600A	2,920,000	333
By-pass CB (open)			0.000000		0	0
Control system, bus, wiring			0.017520	based on MTBF 500.000 hrs	500,000	57
Choke coil			0.004380	based on MTBF 2 mln hrs	2,000,000	228
Generator (motor)			0.076200	CB table 3-2, synchronous	114,961	13
Accumulator KS			0.076200	CB table 3-2, machines	114,961	13
Electro-Magnetic clutch			0.014600	based on MTBF 600.000 hrs	600,000	68
Total, normal operation			0.194900		44,946	**5.1**
MTTR (hrs)	8					
MTBF mains (hrs)	100					
Including by-pass operation (mains)	*bypass/yr*	*failures/bypass (failures/hr)*	*failures /yr*	*reference*	*MTBF (hrs)*	*MTBF (yrs)*
Bypass circuitry	0.194900	0.001	0.000195	based on MTBF 1.000 switch operations	44,946,126	5,131
Utility	1.559200	0.01	0.015592	based on MTBF 100 hrs	561,827	64
Total normal + bypass			0.015787		554,890	**63.3**
Diesel starts per year	24					
Average hrs operation per start	1					
Diesel operation	*starts/yr*	*failures/start (failures/hr)*	*failures /yr*	*reference*	*MTBF (hrs)*	*MTBF (yrs)*
Electro-magnetic clutch	24	0.000050	0.001200	based on MTBF 20.000 hrs	7,300,000	833
Diesel engine	24	0.000067	0.001608	based on MTBF 15.000 hrs	5,447,761	622
Dieselengine starter, batteries, auxilliaries	24	0.00075	0.018000	based on MTBF 1.000 start operations	486,667	56
Total, Independent or diesel operation			0.020808		420,992	**48.1**
Conditioning + bypass + diesel operation			*failures /yr*		*MTBF (hrs)*	*MTBF (yrs)*
Total			0.036595		239,378	**27.3**

ADDITIONAL BENEFITS OF THE NO BREAK E1:

Regulation of Output Voltage +/-1% w/ input voltages of ±10% - See E1 Voltage Control

Power Factor Correction and Leading Power Factor Capabilities - See E1 PF Correction

Protection against Harmonics - See E1 Harmonics Filtering.

The Ability to Provide Short Circuit Current Clearing - See E1 Short Circuits

Simplicity of Preventive Maintenance - See E1 Preventive Maintenance