

	Generator Grounding Method	Reactor	Resistor	Distr. Trans. With Secondary Resistor	Grounding Trans.
Generator System	General Comments	Inherently high fault current permits use of grounded-neutral arresters if $X_0/X_1 \leq 3$	Ground fault current restricted to that required for relaying; Ungrounded-neutral arresters required	Ground fault current very low; No current for selective relaying; Ungrounded-neutral arresters required	Provides permanent ground source; Ground fault current restricted to that required for relaying; Ungrounded-neutral arresters usually required
Low Voltage Bus (No low voltage feeders)	No direct exposure to lightning; Ground current for selective relaying required	Satisfactory but fault current high	Preferred	Generally not applicable but may be used if selective ground relaying of machines is not required or if special relaying is used to obtain selectivity	
Low Voltage Bus (Overhead low voltage feeders)	Direct exposure to lightning; Ground current for selective relaying required; Sufficient machines to provide permanent ground	Preferred where lightning exposure is severe; Required for 4-wire systems	Preferred where lightning exposure is slight; May be preferred for very large machines because of desire to restrict fault current	Not suitable due to lack of relaying selectivity	
Low Voltage Bus (Cable Feeders)	No direct exposure to lightning; ground current for selective relaying required; Sufficient machines to provide permanent grounding; desirable to keep dynamic voltages as well as fault current low	Preferred where primary objective is to keep dynamic overvoltage on cable network to minimum	Preferred where primary objective is to keep fault current to a minimum	Not suitable due to lack of relaying selectivity	
Single Machine (Low voltage feeders)	Cannot depend on machine neutral for permanent ground Generator neutral desirable to detect machine faults before synchronizing	Does not provide permanent ground	Does not provide permanent ground	Does not provide permanent ground	Preferred in addition to reactor or distribution transf. Grounding of generator neutral
Unit System	No direct exposure to lightning No selective relaying required	Satisfactory but high ground fault current	Satisfactory but high ground fault current	Preferred	
Step-Up Through Auto-Transformer	No direct exposure to lightning; No selective relaying required; Generator neutral need not be grounded if auto-trans has tertiary and $X_0/X_1 < 10$	Required where auto-trans has no tertiary; Generator and auto-trans should be connected to common ground point.	Impedance undesirably high if used with auto-trans, having no tertiary	Impedance undesirably high if used with auto-trans, having no tertiary	

Figure 1
Summary of Generator Grounding Applications