

Volts per Hertz Relay: Overexcitation



- Overexcitation of a generator or any transformers connected to the generator terminals will occur whenever:
 - The ratio of the voltage to frequency (V/Hz) applied to the terminals of the equipment exceeds 105% (generator base) for a generator.
 - And 105% (transformer base) at full load, 0.8 pf or 110% at no load at the secondary terminals for a transformer.
 - When these volts/hertz (V/Hz) ratios are exceeded:
 - May cause severe overheating in the generator or transformer and eventual breakdown in insulation.
 - The field current in the generator could also be excessive.

Volts per Hertz Relay: **GVPHZIT** and **GVPHZFT**



- **Two** new Overexcitation relay models:
 - Single or dual fixed time V/Hz relay: **GVPHZFT**
 - Inverse time V/Hz relay: **GVPHZIT**

Volts per Hertz Relay: **GVPHZFT**



- **Single or dual fixed time V/Hz relay**
- **Model Inputs:**
 - Time Delay 1 (sec.)
 - Pickup 1, per-unit (V/Hz, p.u.)
 - Time Delay 2 (sec.)
 - Pickup 2, per-unit (V/Hz, p.u.)
- **Example:**
 - Set the first fixed time at 118% to 120% to alarm and to trip in 2 to 6 seconds.
 - Set the second fixed time at 110% V/Hz to alarm and to trip in 45 to 60seconds.

Volts per Hertz Relay: **GVPHZIT**



- Inverse time V/Hz relay will unite ir link together the specifications of the ABB, GE and Basler relays.
 - They have similar inverse time equations
 - Easy to change from manufacturer relay with the user inputs

Volts per Hertz Relay: **GVPHZIT**

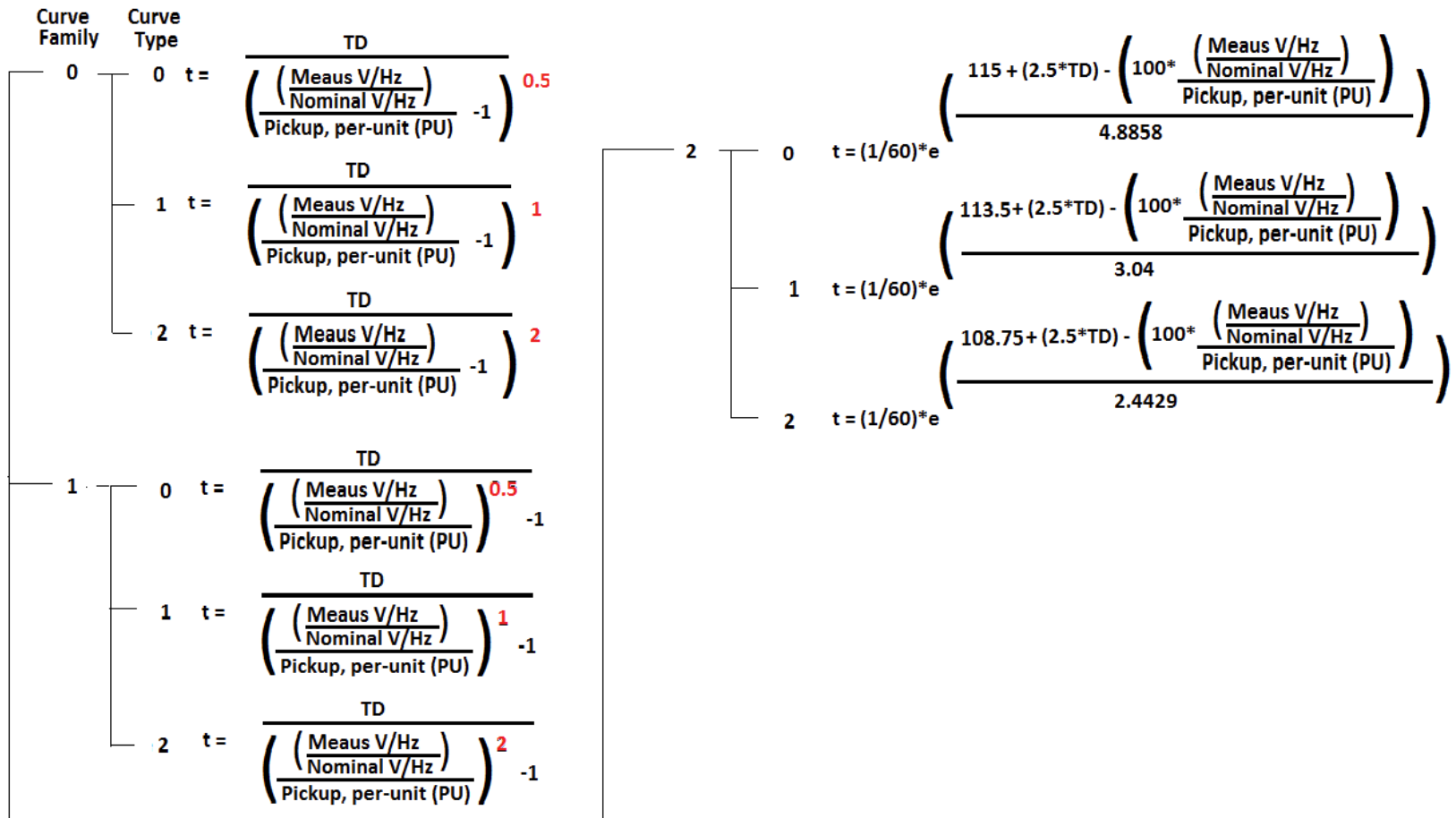


- Inverse time V/Hz relay will unite ir link together the specifications of the ABB, GE and Basler relays.
 - They have similar inverse time equations
 - Easy to change from manufacturer relay with the user model inputs
- **Model Inputs:**
 - Curve Family: 0, 1, 2
 - Curve Type: 0, 1, 2
 - Pickup, per-unit (V/Hz, p.u.)
 - Breaker Delay (sec.)
 - Time Dial

Volts per Hertz Relay: GVPHZIT



- Inverse time V/Hz relay different curves:**



Volts per Hertz Relay: GVPHZIT



- Generator Stability Dialog:

Power and Voltage Control Costs Fault Parameters Owner, Area, Zone, Sub Custom Stability

Machine Models Exciters Governors Stabilizers Other Models Step-up Transformer Terminal and State

Insert Delete Gen MVA Base 100.0 Show Block Diagram Create VCurve

Type Active - GVPHZIT (Relay Model) ☒ Active Set to Defaults

Relay Model

Parameters

PU values shown/entered using device base of 100.0 MVA

curvef 0

curvet 0

VHZpickup 1.0000

tdial 0.0000

bdelay 0.0000

Curve Family: 0, 1, 2
Curve Type: 0, 1, 2
Pickup, per-unit (V/Hz, p.u.)

Breaker Delay (sec.)
Time Dial

OK Save Cancel Help