Load Characteristic LDELEC

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Electronic Load Model

The input parameters for the electronic load model are as follows:

- Vd1 - Upper voltage cutoff, power is constant for voltages above this, linearly decreasing if below (pu)
- Vd2 - Lower voltage cutoff, power is zero for voltages below this value, linearly increasing if above (pu)
- Frcel - Fraction of load that is restarted when the voltage recovers
- pfel - Power factor of electronic load. 0 - indicates to use the Q value from the load record directly. A positive value indicates positive Mvars; a negative value indicates negative Mvars.

Notes:

- Load must present in the working case with non-zero constant active power.
- If load bus voltage is greater than Vd1, the electronic load model is constant P and Q.
- If load bus voltage is between Vd1 and Vd2, the P and Q are linearly reduced to zero.
- frcel is a fraction of electronic load. If frcel is greater than zero, the frcel which was tripped will be reconnected linearly as the voltage recovers.

The logic for the electronic load model low voltage tripping is as follows:

```
If ( V < Vmin )  Vmin = V          [Initially, Vmin = Vo]
If ( Vmin < Vd2 ) Vmin = Vd2   [Vmin tracks the lowest voltage during the simulation but not below Vd2]
If ( V < Vd2 )
        Fvl = 0.0                  [All load is tripped for V below Vd2]
else if ( V < Vd1 )
        if ( V <= Vmin )           [While decreasing between Vd1 and Vd2]
                Fvl = (V – Vd2) / (Vd1 – Vd2)
        else                       [While recovering above Vmin, partial reconnection]
                Fvl = ( (Vmin – Vd2) + frcel * (V - Vmin) ) / (Vd1 – Vd2)
        endif
else
        if ( Vmin >= Vd1 )
                Fvl = 1.0          [If V has not gone below Vd1]
        else                       [V has been below Vd1 but has recovered]
                Fvl = ( (Vmin – Vd2) + frcel * (Vd1 - Vmin) )/ (Vd1 – Vd2)
        endif
endif
Pel = Fvl * Pel0
Qel = Fvl * Qel0
```