How to Avoid the Wrong Power Supply

1  **INPUT VOLTAGE RANGE**
   *Do You Need a Wider Range?*
   - Input ranges are determined based on application
   - If range is not wide enough, supply will not operate properly
   - A wide input voltage range will be needed if:
     - There is a high voltage drop causing wide source voltage swings
     - There is a high hold up time required
     - Supply will be used in foreign countries and universal range of 90~264VAC should be used
   - Using a wider voltage range reduces need for several part numbers

2  **POWER FACTOR CORRECTION**
   *When to Add PFC*
   - Power factor below ideal level for supply
   - More power needed to input
     - PFC can help change perceived power required for a supply
   - Wider input voltage needed
     - PFC can supply universal AC input voltage range of 90~264VAC as well as a fixed DC voltage for supply to operate from
   - Total Harmonic Distortion issues
     - THD causes problems with interface, EMI, and degradation of conductors and insulating materials
     - Non-sinusoidal waveforms that cause THD can be remedied with PFC
   - PFC/THD regulations
   - PFC adds double processing or power resulting in more loss
   - PFC causes more heat from the supply

3  **INRUSH CURRENT**
   *What to Remember*
   - High current needed at startup to power charging element in supply
   - Max inrush current Set by power supplier- *Do Not Exceed!*
   - An inrush current that is too high can result in disconnect from circuit breaker or shorten the life of the supply
   - If inrush current is too low, any interruption of input voltage will result in quick loss of power
   - If supply has too fast a start up time, energy storage capacity needs to decrease in order to lower inrush current
   - If supply requires a slow startup time, it is much easier to lower inrush current