How to Avoid the Wrong Power Supply

1. **CLEARANCE**
   - Is There Enough Between Supply & Equipment?
   - If there is not enough clearance, power supply may not be able to transfer heat to the surrounding area.
   - If the supply is too close to equipment, noise, heat, and dust can cause failure. Most of these can be remedied by adding extra parts.
   - The best way to avoid failure is to reference the installation manual and make sure there is enough clearance.

2. **SPACE**
   - Considering Size vs. Cost
   - For a given power level, the smaller the supply, the more expensive it will be.
   - A smaller supply may be needed due to size and weight restrictions, but a larger supply may fit budget restrictions.
   - Larger supplies may be better for budget, but the design will need to compensate for the extra size and weight.

3. **DISTANCE BETWEEN SUPPLY, LOAD, & INPUT POWER**
   - Is There Enough? Is a Harness Needed?
   - If supply and load are too close together, shielding and EMI protection could be needed.
   - If there is too much distance, a harness will be needed to connect the supply to the load.
   - Adding a harness will add extra capacitance and inductance to the input.
   - Remember that inductance can cause extra voltage and slow the current change at the input.
   - The type, size, endings and connections of the harness wires will all affect the supply.
   - The harness needs to be placed in a safe place.

4. **COOLING METHOD**
   - Do I Need Active or Passive?
   - The type of cooling needed will be determined by the amount of heat you need to transfer.
   - If a low amount of heat needs to be transferred, passive cooling can be used.
   - Passive cooling includes cooling by conduction (heatsink) or natural convection.
   - Passive cooling is best for supplies that are more efficient and are big enough to transfer heat by air.
   - Active cooling needs to be used in supplies with large level of heat transfer.
   - Active cooling involves elements that are actively cooling the supply (ex: fan) which can transfer heat faster than the passive method.
   - Active cooling results in lower reliability due to moving parts.

5. **HEATSINK**
   - Is One Needed?
   - If supply is designed to be conduction cooled, adding external heatsink can help transfer heat form the supply.
   - Adding a heatsink can extend life of supply.
   - External heatsinks are usually available for supply.
   - Adding a heatsink makes the supply larger and heavier.