How to Determine What Size Generator I Need

Step 1: List All Appliances and Equipment

Make a List:
- List all appliances, equipment, and systems you want to power with the generator.
- Include everything from essential items like lights and refrigerators to less critical items like computers and entertainment systems.

Step 2: Calculate Power Requirements

Find Wattage Ratings:
- Check the wattage requirements for each item on your list. This information is usually found on the equipment label or in the user manual.
- If wattage is not listed, you can calculate it by multiplying the voltage (V) by the current (A) (Watts = Volts x Amps).

Starting vs. Running Watts:
- Note that some appliances, especially those with motors, have higher starting (surge) wattage than running wattage.
- Air conditioners, refrigerators, and pumps are common examples that require more power to start than to run.

Add Up Wattage:
- Total the running wattage for all the items you plan to run simultaneously.
- Add the highest starting wattage of any single appliance to account for the initial surge.

Step 3: Factor in Additional Considerations

Future Needs:
- Consider any future additions or expansions that may increase your power needs.

Efficiency:
- Generators are most efficient when running at 70-80% of their capacity. Avoid running a generator at full capacity for extended periods.

Fuel Type:
- Determine the type of fuel (diesel, natural gas, propane) and its availability in your area.

Step 4: Use a Generator Sizing Calculator

Online Calculators:
- Use online generator sizing calculators provided by manufacturers or trusted websites. These tools can simplify the process by allowing you to input your appliances and their wattages.

Step 5: Consult with a Professional

Expert Advice:
- Consult with an electrician or a generator specialist who can provide a professional assessment of your power needs.
- They can ensure your calculations are accurate and help you choose a generator that meets local codes and safety standards.

Example Calculation

List Appliances:
- Refrigerator: 700W (running), 2200W (starting)
- Air Conditioner: 1000W (running), 3000W (starting)
- Lights: 300W
- Computer: 200W
- Total running watts: 700 + 1000 + 300 + 200 = 2200W
- Add highest starting watts: 2200W (running total) + 3000W (AC starting) = 5200W

Adjust for Efficiency:
- Optimal generator size: 5200W / 0.8 = 6500W (approximate)

In this example, a 6500W generator would be suitable to handle the running and starting wattage of your appliances.