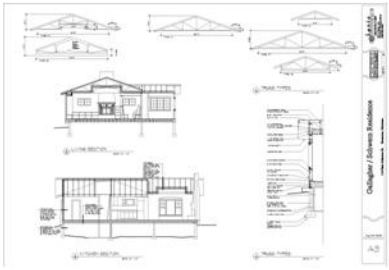
POWER PACKAGES - SIZING A RENEWABLE ENERGY SYSTEM

Step-1



PLANNING IS KEY. Planning your renewable energy driven home requires some departures from conventional wisdom and some outside-of-the-box thinking. Residential power accounts for almost 60% of the energy consumed in the U.S. When designing a renewable energy home, reducing electrical consumption is key to sizing the system, requiring specific energy efficient appliances, heating systems, lighting and water systems be implemented.

Basic factors that determine your electrical usage, size of your system and subsequently, the cost:

1. Refrigeration: Standard refrigerators consume almost 4 times as much energy as some European manufactured units. If you must have a refrigerator with water in the door and ice-maker, it will impact your system cost dramatically. Choose wisely.
2. You cannot use items such as electric stoves, electric water heaters, forced air furnaces (even gas fired) or ground source heat pumps.
3. Use boiler systems for hot water heat, wood stoves, wood boilers or any combination of these.
4. Use a combination boiler/tank system for domestic hot water if you are planning to have a hydronic system which uses either natural gas or LP.
5. Use low energy water supply for well systems. Request that your well driller not drill any deeper than is required for a 2-6 gal. per minute well supply. For a stored water system, 2-6 gal. per minute is all that is necessary.
6. Use low flow toilets and shower heads.
7. Use low energy lighting such as compact fluorescent and halogen task lighting where intensity is required.
8. Insulate your home to the best of your ability and site the home to take advantage of solar gain.

Step-2

Vestfrost Refrigerator

PLAN YOUR ENERGY BUDGET as well as your dollar budget and implement a plan encompassing both aspects. Your electrical usage will dictate the cost of the system. Total your appliance and systems electrical consumption by reading the manufacturer's labels on appliances, estimating run time and then totaling the estimated electrical usage daily. This total will be your daily kilowatt hour energy usage which will determine the size and cost of your system.

Calculating your energy budget (examples):

Vestfrost Fridge	1 amp x 8 hours run time x 120 volts = 960 watt-hours daily
Grundfos SQ-F pump	240 watts x 1.5 hours x 120 volts = 360 watt-hours daily

Step-3

Power Package

BUDERUS Heating System

PLAN YOUR MECHANICAL ROOM. When working on your house plans, don't skimp on the mechanical room and services access as these will become very important in the future. It will only cost you more for installation if you have not allowed enough room for the service you need to install. The normal mechanical room needs to be at least 6' x 10', or about 60 sq-ft. This allows for a boiler, tank, water storage or pressure tank, Power Package system and some room for future expansion. Remember, any gas heating system will require an exhaust or flue and placing the room closer to the perimeter of the home will cost less in venting and combustion air.

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