ABSTRACT

ROOF BASED ENERGY CONVERSION SYSTEM

A roof based energy conversion system 10 for a building 12 with a roof 13 comprises a roof frame structure 14, a plurality of solar energy converting tile assemblies, and a wind energy conversion system. The solar energy converting tile assemblies may comprise a selection of photovoltaic tile assemblies 100 that convert solar energy into electrical energy and thermal tile assemblies that convert solar energy to thermal energy. Both tile assemblies have substantially the same exterior appearance so as to be visually indistinguishable when laid together on the same roof structure 14. The energy conversion system 10 incorporate a wind energy conversion system 300 having one or more wind turbines supported by the roof frame structure that converts kinetic energy of moving air into electrical energy. Optionally, a hydro-electric system may be included in the energy conversion system. An energy management system 20 may be provided that receives electrical energy from the tiles 100, the wind energy conversion system 300, and optionally the hydro-electric system. The management system incorporates batteries and includes a connection system 30 to enable energy produced by the system 10 to be transferred to a supply grid.

Figure 1