



**Figure 17.14** “AC coupling” at an example of a three-phase stand-alone power supply system (Source: ISET Kassel)

costs may be lowered compared to the single-house supply option. Today, as more and more electric utilities enter the off-grid market, their interest is to lower the cost as much as possible for operation, maintenance, money collection and so on, which is needed to assure a durable energy service. Experience and reports from those having been involved in PV dissemination programmes for rural electrification confirm that technical problems in the village supply are not the main barrier preventing lasting success. Rather, an appropriate introduction method, user involvement at various levels and planning that allows flexible reaction to the situation as it develops are necessary to achieve optimal joint use of the limited resource.

Today there are technical components, like the inverter, the charge controller, the energy management systems, available in various countries, which are much better suited than they were in the early demonstration projects. The R&D efforts in the development of village power supply systems are now focused on the fair distribution of the energy available, and a suitable limitation of the power consumed by each individual household. Prepayment schemes or energy limiters are in development and demonstrated in several companies and international pilot programs. These systems meter system energy consumption in each individual household and cut the load if the pre-set values or the energy budget has been consumed. A typical representative is the village Llavería, where SEBA, a Spanish user association, together with the Spanish company TTA are operating a hybrid system (Figure 17.15).