11.5.1 Amonix

Amonix, Inc. and SunPower Corporation are the two companies that licensed the high-efficiency point-contact solar cell from EPRI. This cell was developed at Stanford University under EPRI funding. Amonix has developed a 20-kW point-focus Fresnel lens array intended for the utility market. It has an innovative integral-backplane module design that greatly reduces the number of parts by incorporating the wiring and cell package as a part of the module back [34]. Systems have been installed at PVUSA and the Arizona Public Service's STAR facility. They recently announced that five more systems are under order. Figure 11.38 shows a recent Amonix array.

11.5.2 Australian National University

Australian National University (ANU) is developing a linear trough concentrator system. They are also developing a novel, rather simple silicon concentrator cell, which is expected to have 22 to 23% efficiency with only one nonaligned photolithography step. The cells are designed for operation at 30X concentration. Work is under way on a 2-kW demonstration at Spring Valley, Australia. They expect the system to have a 15% overall efficiency [71].

11.5.3 BP Solar and the Polytechnical University of Madrid

A 480-kW concentrator project (the largest ever) has been built recently in Tenerife, Canary Islands [50]. It is called the Euclides Project and is part of the European Joule program. Euclides is composed of 14 one-axis tracking reflective parabolic troughs, each 84 m long, with specially designed PV receiver modules built by BP Solar using buried contact solar cells operating at 38X geometric concentration. The reflector is a very lightweight and innovative space-frame design developed at the Polytechnical University of Madrid. The system uses passive cooling, accomplished with another innovative concept – heat sinks built of compression-bonded, thin aluminum fins. The system has approximately 13% overall efficiency and is projected to produce power at 23 cents per kWh, half the cost of power from a crystalline flat-plate plant. This cost is projected to

Figure 11.38 Amonix 100-kW high-concentration Fresnel lens array at the Glendale, California Airport