Abstract

Apparatuses and methods for recovering recyclable components of photovoltaic (PV) modules. The apparatuses receiving at least one PV module on one end of one of the conveyor elements; loading one PV module onto the frame removal station by a loading module; separating a frame from the PV module by the frame removal station to recover the frame and obtain a frameless PV module; separating one or more parts selected from the group consisting of a junction box, a back sheet and one or more glass panels, from the frameless PV module by the PV module dismantling station to obtain an encapsulated solar cell unit; heating the encapsulated solar cell unit in the furnace station to obtain a solar cell unit; separating one or more remnant parts selected from the group consisting of metallic bus bars and glass cullets from the solar cell unit by the component separation station to obtain solar cells; and etching of the solar cells by the etching station to obtain the Al compound, Ag, and Si wafers from the solar cells.

Figure 1