Steel Belts shine in solar cell applications

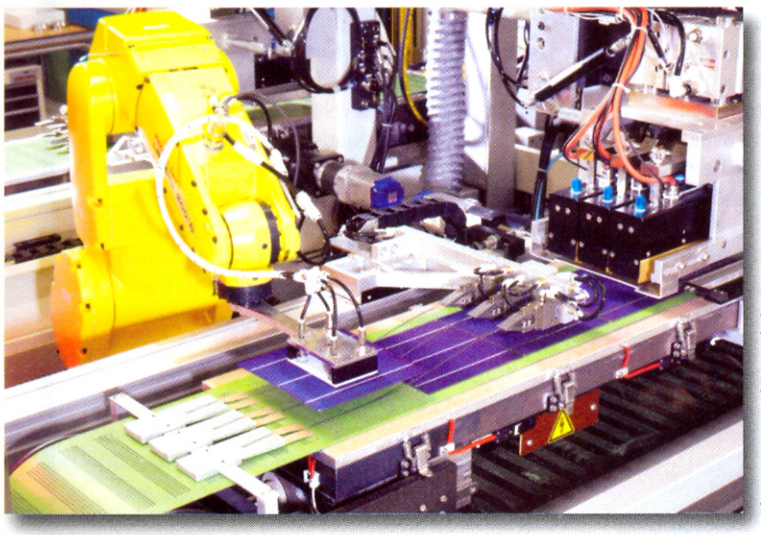

Photo courtesy of Gorosabel

In recent years, the production of solar cells has exploded as the world makes a dash for cleaner, renewable energy sources. As production ramps up, producers are looking at more efficient ways to produce these cells at cheaper prices and more efficiently in volume. Above all, quality and reliability of the cell in application is key to continued growth of sales and consumer confidence.

Steel Belt technology has been at the forefront of this growth. Machinery manufacturers use the belts in the tabber and stringer operations of their automated production machinery. Here, the cells are transported individually, often by vacuum, and welded together on the steel belts to form complete solar panels.

Steel belts are used over other belt options for several reasons. Firstly, they are robust enough to be used as vacuum belts – holes are perforated in the belts and belts are put under vacuum so cells can be precisely moved to the required spot ready for welding. Belts must be able to survive high-speed movement across a vacuum plenum. Accuracy of movement in both the lateral and horizontal planes of 0.1 mm or less is often required. Furthermore, the belts must resist the high temperatures of the soldering operation as the individual cells are assembled using bus ribbons, with the soldering of these ribbons often carried out by laser. Some belts are coated with release coatings such as Teflon to avoid any solder sticking to them. The coatings must have high abrasion resistance and also resist the various fluxes used in the industry.

Sets of up to seven belts between 10 and 30 mm wide are used, some perforated for vacuum, others with coatings and also some without vacuum holes. In such applications, as belts are running in parallel with one another, very tight length tolerances are expected. Alternatively, wider single steel belts with more pronounced vacuum patterns, often over 200 mm wide, can also play a role.

The demands of this high-tech 21st Century business could not be met without the versatility of steel belt technology.

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