Improving speed and quality with warm applied solar panel edge sealant

CASE STUDY

Challenge

A solar thin film panel manufacturer was having quality control and production output problems with their existing method of applying a warm applied edge sealant material around the panel perimeter. The extruded bead profile was inconsistent causing rejected panels. The flow rate was too slow to meet production requirements. The challenge was to integrate a positive displacement system to an existing edge seal automated cell where space and robot payload was limited and to do so with limited production interruption.

Solution

To improve both the bead profile and the application speed, a Graco PGM™ Metering System with tandem Therm-O-Flow® 200 was installed on the existing edge seal automated cell. Due to limitations of payload capacity and space from the existing automation cell, the PGM 20 was remote mounted to the machine frame. A six foot long heated material hose connected the PGM 20 to the EnDure® dispense valve.

Results

The Graco PGM Metering System improved bead profile consistency to resolve quality control issues. The increased flow rate created by the PGM improved production line speeds to meet production requirements. The net result was more panels per hour without quality issues related to the dispensed edge seal.

Therm-O-Flow 200 Bulk Melt System

The Graco PGM Metering System provides precision gear metering and ultimate control for smooth, consistent bead and ribbon dispensing. Shown here without hood for better detail.

SPECIFICATIONS

MATERIAL SUPPLIER

ADCO Kömmerling Solar

INDUSTRY

Solar Photovoltaic

APPLICATION

Bonding and sealing photovoltaic and solar thermal panels

MATERIAL SPECS

- Adco Kömmerling PVS-107

HelioSeal® PVS-107 is a synthetic, polymer-based sealant designed to be used as the primary moisture barrier in solar glass laminations

Typical Properties

- Single-component warm applied edge sealant
- 100% solid compound
- Application temperature: 212°F – 265°F (100°F – 130°C)
- Specific gravity: 1.08 g/cm3
- Color: Black

GRACO EQUIPMENT*

- Graco Therm-O-Flow® 200
- Graco PGM™ Metering System

CONFIGURATION

- Part number:
  - TOF200B-6A3H84TE3NN1ZCNN
  - TOF200B-6A3H84SE3NN3ZCTN

Therm-O-Flow models offer:

- 70:1 Power ratio
- Mega-Flo™ Platen
- Hydraulic power pack
- Dynamic air regulator
- High flow heated manifold
- Heated material hoses

Graco PGM Metering System PG2231 with:

- PGM™ 20 precision gear meter
- Controller
- Direct mount Endure® Dispense Valve
- Automation I/O cable
- Ribbon nozzle

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