

## Hybrid Composite Workcell Supports Thermoset and Thermoplastic Production



Radius Engineering, Salt Lake City, UT, a leading equipment and tooling supplier for closed-mold aerospace structures, is featuring its Hybrid Composite Workcell to support both thermoset and thermoplastic processes. The Hybrid Composite Workcell will produce composites with the following processes:

- Thermoset Processes
  - Resin Transfer Molding (RTM)
  - Same Qualified Resin Transfer Molding (SQRTM)
  - Compression Resin Transfer Molding (CRTM)
  - Compression Molding
- Thermoplastic Processes
  - Consolidation
  - Stamp Forming

This unique versatility is accomplished with a Double Acting - Distributed Pressure System (DA-DPS™) Press, Multi-Component (Multi-K) Injection System, a thermal oil temperature control unit, and Radius' Insights™ control system.

The DA-DPS™ Press uses servo-electric actuation for fast upper bolster closing speeds of 2.5 in/sec and positional accuracy of  $\pm 0.001$ ". The up-acting lower bolster utilizes Radius' DPS™ provides even pressure of  $\pm 1$  psi on tools up to 4ft x 6ft, with clamping up to 325 tons. The press can be configured in six standard sizes for tooling as small as 2ft x 2ft and as large as 4ft x 12ft.

The “Multi-K” Injection System operates with either premixed single-component resins or two-component resin systems and a heated mixing system. Resin volumes to 31 liters can be rapidly degassed to less than 1 torr in the system prior to injection at temperatures up to 350°F (180°C) and pressure up to 160 PSI (11 bar).

The temperature control unit (TCU) provides 144 kW of heating with a maximum operating temperature of 650°F, (470°C.) and a 100 kW heat exchanger to achieve tool heating rates greater than 5°F/2.8°C min.

The Workcell is controlled and monitored by Radius’ Insights™ control system. Insights™ is a Supervisory Control and Data Acquisition (SCADA) system that acts as the brain of your Workcell to control all process parameters, provide instructions to operators for manual actions, log data continuously, and analyze the data for verifying the cure cycle meets all quality requirements. Insights™ can interface with factory ERP systems and material tracking systems to delivery Industry 4.0 capabilities.