

Complete Composite Curing System

Out-of-autoclave solutions that meet the most demanding aerospace requirements



Thermal curing is a critical step in manufacturing quality composite materials. Traditionally, most composite parts required autoclaves for proper curing. Today, low cost out-of-autoclave curing of aerospace-grade composite parts is possible using a vacuum bagging system with a walk-in batch oven. The process is precisely controlled and monitored to ensure void-free composite parts.

Despatch provides complete composite curing systems that include a custom configured oven, integrated multi-port vacuum system, and cascade control process controller. The system meets AMS2750, BAC5621, NADCAP and AS9100 requirements and has been utilized by the world's leading aerospace manufacturers.

Airflow is a critical factor in achieving uniformly cured composite parts and no one has more experience with the dynamics of thermal airflow than Despatch. Our ovens are known for exceptional temperature uniformity and our control system can provide the process control, data acquisition and reporting needed for complex composite curing.

FEATURES AT A GLANCE

- ◆ Oven with tight temperature uniformity +/- 5°C or better
- ◆ Jack panel thermocouple arrays to fully monitor product.



Composite Curing Ovens

Industrial process versatility, ruggedness and dependable operation

Many oven models in the Despatch portfolio are suitable for composite curing. These ovens are robust with high up-time and minimal maintenance required.

Despatch composite curing ovens use horizontal recirculating airflow to ensure uniform temperatures throughout the oven. A high-volume fan circulates air through louvered, aluminized steel walls to create a constant horizontal airflow across all sections of the oven. Air is directed to the part being cured and is then recirculated through the heater box and back into the oven for greater energy efficiency. Precise airflow pattern and directionality can be modified for the specific part being cured.

Despatch composite curing ovens provide lead-lag part temperature control to extremely tight tolerances. For the best curing results, the soak time should not begin until the part has reached the desired set point temperature. The process profile can be set up to hold the soak cycle until the thermocouples embedded on the product sense that the set point temperature has been reached.



FEATURES AT A GLANCE

- ◆ Custom airflow to optimize heat transfer to unique molds
- ◆ Precision supply and return airflow adjustment for the best uniformity available
- ◆ Standard size up to 960 cubic feet (27,184 liters)
- ◆ Two maximum temperature ratings available: 260°C and 343°C (500°F and 650°F)
- ◆ Tight temperature uniformity +/-5°C or better
- ◆ Pneumatically actuated list doors or standard double swing doors (pass-through available)
- ◆ Proportioning control valve on gas fired ovens for smooth and precise temperature control
- ◆ Class A to meet NFPA 86 requirements for flammable solvents
- ◆ FM approved oven temperature protection

Integrated multi-port vacuum systems and jack panels

High-tolerance, multi-point vacuum system for process certainty

The Despatch composite curing system offers an integrated, multi-port vacuum system and jack panels to connect the thermocouples and vacuum transducers needed for monitoring the curing process. The Despatch oven can also be used for mold preparation, including preheating, drying and cleaning processes as well as post curing process.

Vacuum pressure is monitored and recorded throughout the cure cycle to detect leaks and ensure a consistent vacuum on the part.

Parts cured in a Despatch composite curing system have been proven to be void-free and meet the highest standards of the aerospace industry.



FEATURES AT A GLANCE

- ◆ Jack panel thermocouple arrays to fully monitor product
- ◆ Vacuum ports can be added for easy connection to the vacuum bag within the oven
- ◆ Vacuum monitoring with data recording throughout cure cycle

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