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 Focal Point 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 proprietary Focal Point Control System has been specifically designed to 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
- Vacuum ports can be added for easy connection
- Focal Point™ fully controls the curing process and documents all process information
Composite curing ovens
Industrial process versatility, ruggedness and dependable operation

The oven used in the Despatch composite curing system are based on our TA line of walk-in ovens. 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 with Focal Point 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. Focal Point can delay timing the soak cycle until the thermocouples embedded on the product sense that the set point temperature has been reached.

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 as many thermocouples as needed for monitoring the curing process. Mold preparation, including preheating, drying and cleaning processes, can also be provided.

Vacuum ports, filters and valves are constantly monitored by the Focal Point controller to detect leaks and ensure a consistent pressure on the part. Vacuum pressure is monitored and recorded throughout the cure cycle.

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

- Custom airflow to optimize heat transfer to unique molds
- Precision supply and return airflow adjustment for the best uniformity available
- Standard sizes from 52 to 960 cubic feet (1,472 to 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 lift doors or standard double swing doors (pass-through available)
- Proportioning gas burners on gas fired models for smooth and precise temperature control
- Class A to meet NFPA 86 requirements for flammable solvents
- FM approved over temperature protection

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
- Vacuum pump and all required components for complete system, including vacuum level regulation
- Stringent vacuum stability tolerances <1" Hg loss per hour at 25"Hg
Despatch composite curing ovens are available with Focal Point™, an intuitive, PC-based process control system that is user friendly and easy to navigate. Focal Point™ fully controls the curing process and documents all process information, providing traceability and validation of part quality.

Focal Point™ offers precise process control with lead-lag temperature control and an advanced recipe editor for programming temperature and vacuum profiles, and for controlling fans and dampers. During the curing cycle, run status and all process values can be monitored from the display panel. Focal Point also allows manual override of recipes to control thermocouple selection, temperature and vacuum set-points, and alarm deviation limits.

Focal Point™ software logs all process data in a secure database, which can be accessed by a plant computer system. Data can be organized into one of Focal Point’s standard reports or any custom report format.
FEATURES AND CAPABILITIES

- Profile recipe entry and storage
- Recipe override to modify temperature and vacuum set-points, ramp rates and alarm limits
- Controlled ramp rates from 1°F/min to 10°F/min
- High-limit control turns off heater if temperature exceeds user-defined limits
- Alarm history saved on PC
- Four levels of password security to control access to screens and functions
- Configurable alarm set-points
- Manual oven and vacuum control for maintenance
- Step-by-step start-up procedure to initiate curing cycle
- Part thermocouples and vacuum transducers can be quickly enabled, disabled, certified or calibrated from the display
- Large touchscreen display
- Graphical indicators show status of heater, fans, dampers and vacuum pump
- Batch information can be entered using bar code scanner

SERVICE AND TECHNICAL SUPPORT

service parts: 1-800-473-7373
international service/main: 1-952-469-8230
service fax: 1-952-469-8193
service@despatch.com
parts@despatch.com

GLOBAL HEADQUARTERS

main phone: 1-800-726-0110
international/main: 1-952-469-5424
sales: 1-800-726-0550
international/sales: 1-952-469-8240
sales@despatch.com

© 2016 Despatch Industries. All rights reserved. Despatch is a registered trademark of Despatch Industries in the U.S. and other countries.  CCS 12-15