

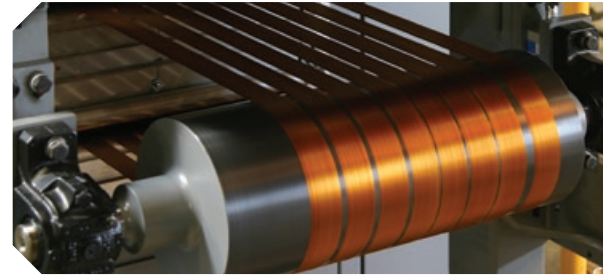
# Despatch

Thermal Processing Technology

TW EAE

## Split-Zone Oxidation Technology

Reduces oxidation cycle time by 35% or more  
and cuts the cost of operation in half



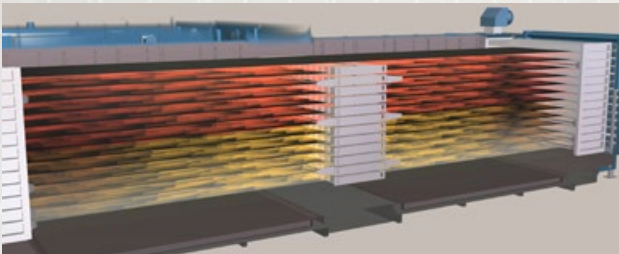
**SPLIT OXIDATION** **NOVARIANCE™**  
**ZONE OXIDATION** **TECHNOLOGY**

# The world's leading carbon fiber oxidation technology

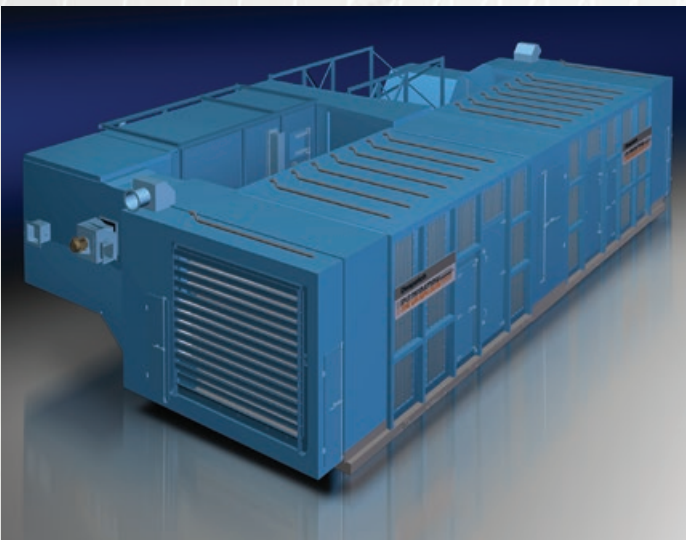
## Reinventing oxidation technology for next generation performance

Despatch invented the world's leading carbon fiber oxidation technology which has become an industry standard. Now Despatch has reinvented the oxidation oven with revolutionary advancements to its pioneering center-to-ends technology.

The Split-Zone™ Oxidation Oven with Novariance™ Technology allows you to aggressively push the oxidation rate, reduce oxidation cycle time, and lower the cost of high quality oxidized fiber.

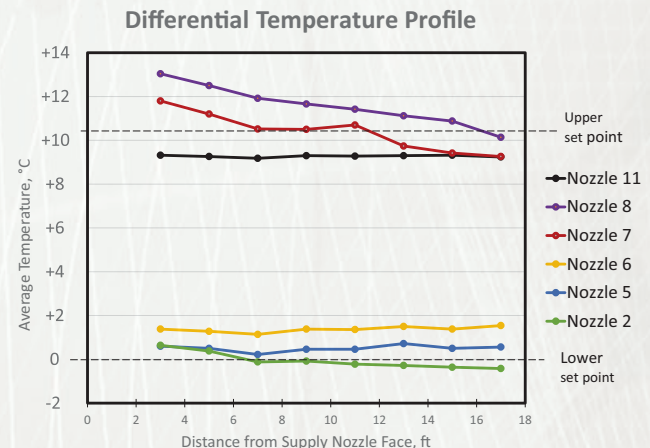


Split-Zone™ control (patent pending) provides two discrete thermal profiles for the upper and lower half of the chamber. Separate plug fans and controls allow you to increase the temperature in the upper half of the oven by several degrees, advancing the rate of oxidation of the fiber. Because each oven is now split into two zones, the number of ovens required to properly oxidize the fiber can potentially be reduced. This results in a needle-moving reduction in capital expenditure and greater than 50% reduction in annual operating costs.



Novariance™ Technology provides extremely uniform airflow across the entire width of the tow-band and throughout the process chamber. Patent-pending orifice-plate nozzle structures eliminate the side-to-side and directional variance inherent in conventional nozzle designs. Airflow is also directed into the gap between the center supply plenums which eliminates an area of low to no airflow.

The elimination of variance allows you to safely increase the oven temperature, accelerating oxidation without losing control of the exothermic reaction. Improved uniformity and split-zone control allow you to push the temperature in the oven, reducing oxidation cycle time by 25% or more.



**Temperature can be increased in the upper half of the Split-Zone oven, increasing the rate of oxidation.**

*Oxidation is the most critical process step in the production of carbon fiber. It consumes the most energy, has the largest factory footprint, and is the largest capital investment in a carbon fiber line. Technology improvements to this step have a huge impact on the cost and quality of carbon fiber.*

**The Split-Zone™ oven was designed to dramatically reduce maintenance requirements:**

- ◆ A sophisticated Pressure Balance System minimizes fugitive emissions to the plant, maintains a stable internal process environment and minimizes energy loss from cold air ingress.
- ◆ Improved heat exchangers in the Split-Zone oven can drastically reduce silica oxide build-up that can affect uniformity.
- ◆ Any maintenance that is still required can all be done from one side of the oven with zero disturbances to the fiber. Removable nozzles in the supply and return receivers mean you never have to enter the chamber for cleaning.



**The Split-Zone™ oven integrates additional energy saving features and productivity improvements:**

- ◆ Patented adjustable end louvers automatically adjust to significantly reduce heat loss and open for fast and easy threading.
- ◆ Rapid cool-down and heat-up capability minimizes time to restart production



Despatch offers a sophisticated PLC-based software system that can replace a traditional, cumbersome distributed control system (DCS), and allows operators unmatched process control of every aspect of the line and comprehensive data logging and reporting capabilities.



# Integrated Carbon Fiber Line Software Control System

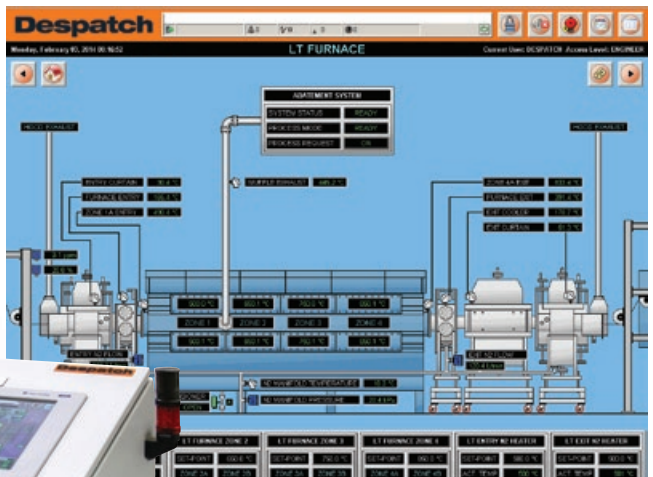
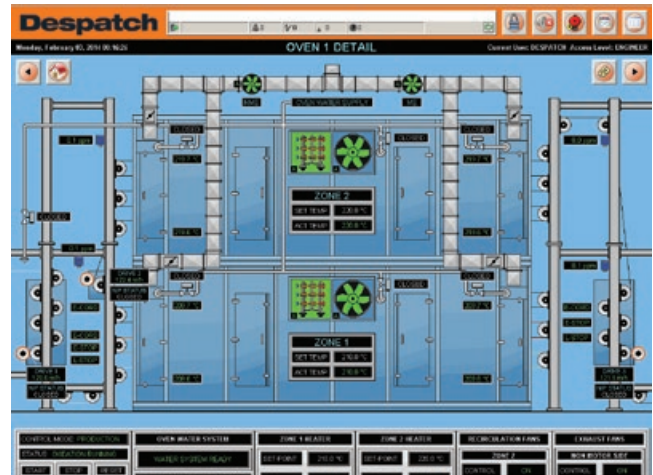
Industry specific PLC control system for precise control and flexibility of production lines

Despatch's integrated process control software system offers differentiated technology and control functionality not available from any other carbon fiber equipment provider. Despatch's integrated PLC control system software is written by industry experts with more than fifteen years of experience writing code for systems specifically designed to run carbon fiber production lines. Applying this knowledge and insight to create the control software allows Despatch to offer a carbon fiber specific integrated system that is tightly tied to the critical needs of the customer.

## Features of the integrated control system include:

- ◆ Individual HMI consoles at key locations for convenient access
- ◆ Full system diagnostics to aid troubleshooting
- ◆ Comprehensive alarm system
- ◆ Data logging of all real time process parameters and variables
- ◆ Clear and intuitive HMI display screens
- ◆ Reporting and data logging capabilities
- ◆ User access control for operational security

The control system is capable of isolating each equipment subsystem in the line to precisely monitor and control temperature, speed, ramp rates, liquid solution levels, and many more specific performance metrics.



## SERVICE AND TECHNICAL SUPPORT

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