

◆ CFR - Carbon Fiber Research

A complete carbon fiber line in a micro-scale package



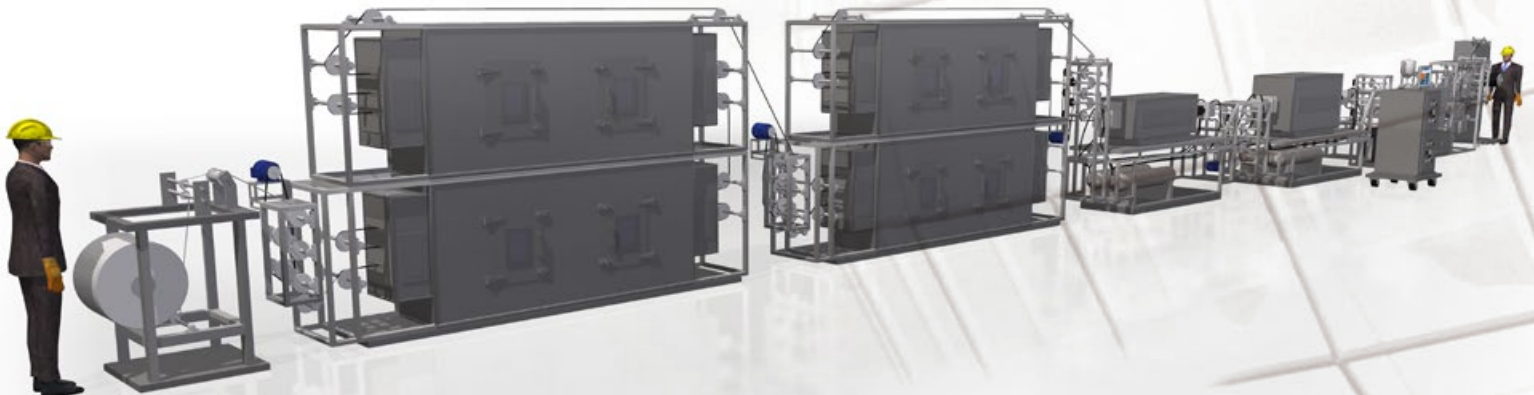
The Despatch CFR Series is a complete carbon fiber production line in a micro-scale package. The CFR Series allows users to run trials to study and test fibers and processes with the same quality of a full-scale production line. The flexibility, functionality and size of the CFR make it an ideal solution for universities, laboratories, new market entrants and existing manufacturers.

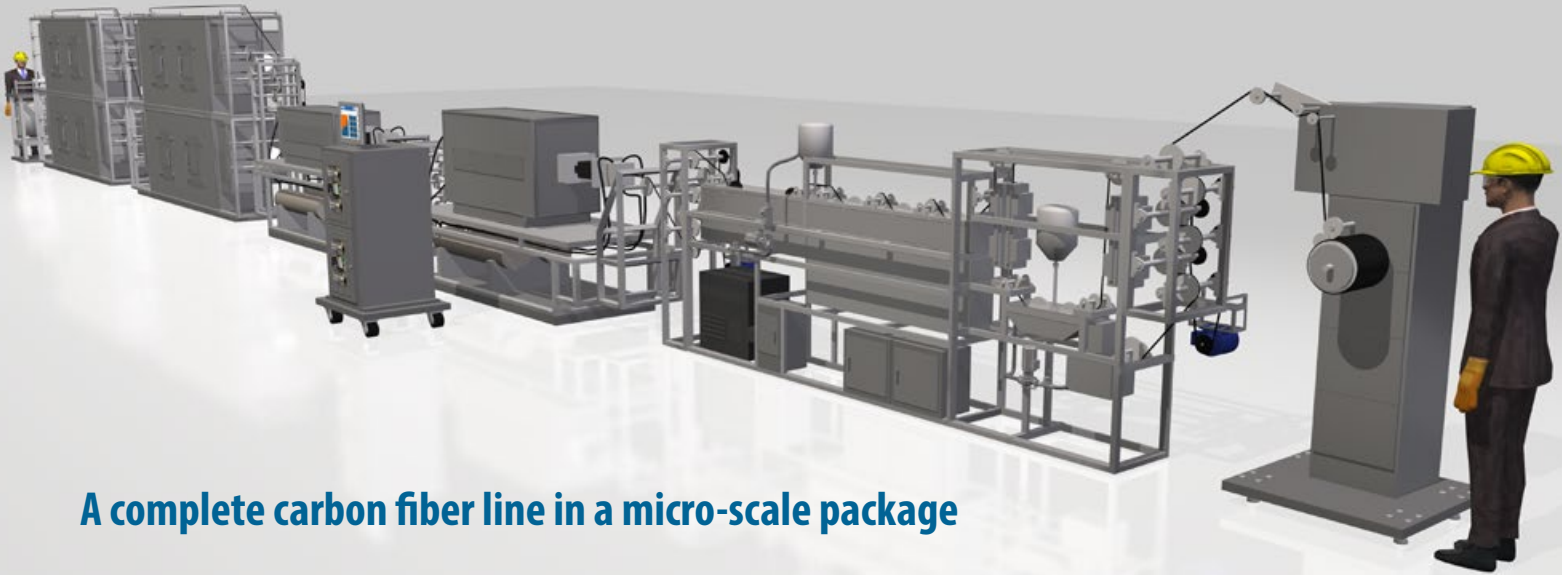
The CFR is available as a complete continuous production line or as independent subsystems. Despatch offers world-leading center-to-ends oxidation ovens, energy efficient LT and HT furnaces designed for ease of operation with quick access to the muffle interior for easy cleaning. The Despatch surface treatment process provides uniform electro-chemical etching. A minimum amount of fresh water and base electrolyte is used due to effective recirculation systems. A sizing system provides uniform and constant distribution of size on the fiber. Fluid concentration and levels are PLC controlled and size fluid is continually circulated and filtered while in use. After surface treatment and sizing, non-contact dryers deliver uniform, low velocity airflow with variable temperature control.

The integrated control system allows for accurate, centralized control of temperature and transport drive speeds, higher levels of automation, and increased flexibility of the production line. The integrated control system includes full data-logging and trending capabilities and enables the line to run at peak performance.

EQUIPMENT

- ◆ Center-to-ends oxidations ovens
- ◆ Abatement systems
- ◆ Input creel
- ◆ Rolls, stands and drives
- ◆ Pre-carbonization furnace
- ◆ Carbonization furnace
- ◆ Surface treatment equipment
- ◆ Sizing equipment
- ◆ Non-contact drying system
- ◆ Take-up winders
- ◆ Integrated control system with SCADA interface

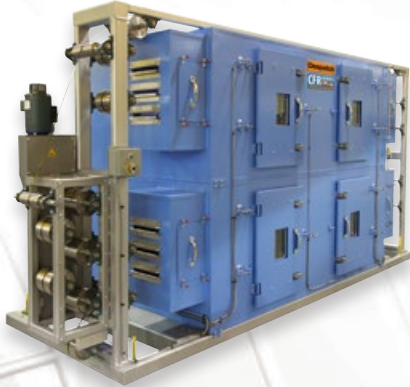




A complete carbon fiber line in a micro-scale package

OXIDATION OVENS

- ◆ Center-to-ends airflow
- ◆ Industry's finest airflow and temperature uniformity resulting in uniform oxidized density across the entire tow-band
- ◆ Maximized heated zone size provides for high performance fiber production
- ◆ Energy efficient design



LT & HT FURNACES

- ◆ Quick access to muffle interior
- ◆ Automated heat up and cool down programs
- ◆ Energy efficient design
- ◆ Uniform sealing of internal atmosphere
- ◆ Balanced furnace atmosphere

SURFACE TREATMENT

- ◆ Uniform electro-chemical etching
- ◆ Minimal usage of fresh water and base electrolyte
- ◆ Electrolyte solution efficiently removed from the fiber

SIZING

- ◆ Size fluid continually circulated and filtered while in use
- ◆ Uniform and constant distribution of size on the fiber
- ◆ Easy access for cleaning

DRYING SYSTEMS

- ◆ Non-contact dryer with uniform low velocity air



MATERIAL HANDLING

- ◆ Precise speed control
- ◆ Designed for safe operation
- ◆ Damage resistant roller surfaces

INTEGRATED CONTROL

- ◆ PLC with SCADA interface
- ◆ Centralized control of temperature and transport drive speeds
- ◆ Full data logging and trending



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