

### ◆ Safire 3.0 Firing Furnace with DriTech Dryer

The tools you need for process perfection



The new Safire 3™ is designed and built on a foundation of high throughput and mass production with the features needed for process separation, stability, high uptime and the ability to tailor thermal profiles. The redesigned heating/cooling sections and belt movement system ensures the greatest degree of firing repeatability and capability for cell efficiency optimization in a high throughput platform. The system has been updated to accommodate all major solar cell dimensions (166x166, 182x182 and 210x210mm).

The Safire's dual independent chamber design eliminates lane-to-lane loading influence. Microzone™ Technology provides the ability to precisely tailor the burn-out interval, the time above melting temperature and peak firing. SolectFire™ enables independent temperature control of top and bottom zones for optimal frontside and backside firing.

The Safire is integrated with the DriTech™ dryer which decouples VOC removal from the burn-out process. The new oxidizer ensures ultra high VOC destruction efficiency without clogging and prevents furnace and facility contamination.

**Updated to accommodate new larger solar cell sizes**

**99% uptime  
9,000 wafers/hour**



#### FEATURES AT A GLANCE

- ◆ Uniform, stable and repeatable cavity temperature (+/- 2°C)
- ◆ Dual independent chambers with no lane to lane influences
- ◆ Accommodates 166x166, 182x182 and 210x210mm Solar cell dimensions
- ◆ Uninterruptible power supply
- ◆ Rapid thermal ramping (up to 250°C/sec)
- ◆ Enhanced thermal cooling (up to 200°C/sec)
- ◆ Up to 15,000 mm/min belt speed
- ◆ Edge contact belt with Ti alloy coating
- ◆ Master production control interface
- ◆ Enhanced Microzone™ Technology for precise thermal profile control
- ◆ Enhanced SolectFire™ Technology for top/bottom temperature control
- ◆ Data logging and data trending
- ◆ DriTech™ Dryer with integrated VOC Thermal Oxidizer
- ◆ Hot swappable lamps on furnace





The high-performance Safire 3 firing furnace has segmented and optimized critical components of the cell process for maximum control and stability. Burn-out is separated from firing for proper binder removal, a contamination-free firing zone and a stable, repeatable thermal experience.

The advanced features and technology designed into the integrated Safire and DriTech offer a complete solution capable of achieving process perfection with all materials and architectures. Additional options such as the in-situ belt cleaner and PowerLock LID prevention bring even more value to the system.

### OPTIONS

- ◆ Profiling systems
- ◆ CE compliance
- ◆ In-situ belt cleaner
- ◆ Intermediate exhaust oxidizer
- ◆ PowerLock LID prevention



*PowerLock™ LID Prevention minimizes the effect of light induced degradation.*

*Notes: Specifications are subject to change without notice. Contact Despatch Industries for the most updated specification. \* Front-side printed last. Throughput dependent on belt speed, paste type, solvent load etc.*

### SERVICE AND TECHNICAL SUPPORT

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## SAFIRE WITH DRITECH

PRODUCT CONFIGURATION	
Overall length	1280.9 cm (504 in)
Width at widest point	175.2 cm (69 in)
Height to top of thermal oxidizer	312 cm (122.8 in)
Standard entrance/exit table	60 cm (23.6 in)/ 99.2 cm (39.1 in)
Open inspection area	46 cm (18 in)
Conveyor type	Lightweight balance spiral weave, friction drive with stand-offs
Conveyor height above floor	93 cm (36.6 in)-100 cm (39.4 in)
Conveyor width (x2)	25.4 cm (10 in)
Net weight	6,125 kg (13,491 lbs)
Lane-to-lane pitch	35 cm (13.8 in)
Belt configurations (4 versions)	156-166; 180-185; 210-230 (may change to suit cell size)

## SAFIRE FIRING

## DRITECH DRYER

PRODUCT CONFIGURATION		
Overall length	813.7 cm (320.3 in)	467.2 cm (183.9 in)
Overall width	175.2 cm (69 in)	165.3 cm (65.1 in)
Overall height (without oxidizer)	193.5 cm (76.2 in)	312 cm (122.8 in)
Net weight	34,000 Kg 8,810 lbs)	2,125 kg (4,680 lbs)

ELECTRICAL REQUIREMENTS		
Voltage	380 V -5%, +5%/ 3-Phase/50-60 Hz	380 V -5%, +5%/ 3-Phase/50-60 Hz
Connected load	250 amps (95 kVA)	150 amps (57 kVA)
Typical operating load	175 amps (66.5 kVA)	125 amps (47.5 kVA)

WATER REQUIREMENTS		
Typical flow	two for 46 slpm each	NA
Pressure (above back pressure)	3.1 Bar (45 psi)	NA
Maximum back pressure	<1.4 Bar (20 psi)	NA
pH level	7.2-7.6	NA
Recommended inlet temperature	10-20°C (50-68°F)	NA

EXHAUST		
Process exhaust	3 connections	1 connection
VOC Oxidizer exhaust	NA	2040 m3/hr
Cabinet exhaust	Two for 850 m3/hr each	NA

PROCESS ATMOSPHERE		
Clean dry air (CDA) (Typical)	880 lpm	NA

PROCESS CAPABILITIES		
Maximum temperature	1000°C	400°C
Conveyor speed range	1,500-15,000 mm/min (59 -590 ipm)	
Conveyor speed accuracy	± 0.5%	± 0.5%
Throughput (6x6in/156x156mm wafers *)	up to 9,000 wafers/hour	up to 9,000 wafers/hour