



◆ **DCF Integrated, In-line Diffusion System**
High volume phosphorus doping and diffusion of solar cell wafers.

Despatch's Integrated, In-line Diffusion System was designed to meet the advanced needs of today's solar cell manufacturers. The DCF System offers manufacturers an in-line doper that features simultaneous top and bottom phosphorus coating, an infrared furnace design that provides tight temperature uniformity, an ECN process technology license and a fully comprehensive software system.

This combination of innovative technologies and design delivers manufacturers highly consistent and repeatable phosphorus diffusion results and enables manufacturers to increase cell efficiencies, maximize manufacturing yield and reduce the cost of ownership.

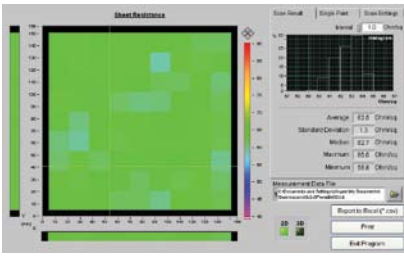
FEATURES AT A GLANCE

- ◆ ECN process technology license
- ◆ High volume production
- ◆ Simultaneous top and bottom wafer coating
- ◆ Closed loop temperature controls
- ◆ Advanced graphical user interface
- ◆ Safe, simple chamber accessibility
- ◆ High production up-time
- ◆ Ease of maintenance

OPTIONS

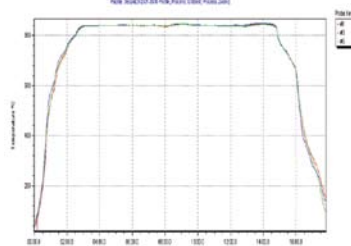
- ◆ Water-cooled heat exchanger
- ◆ Failed element monitor
- ◆ Master production control interface
- ◆ Profiling systems
- ◆ Ultrasonic belt cleaner/dryer
- ◆ Uninterruptible power supply
- ◆ Extended process profiles
- ◆ Conveyor table extensions
- ◆ Wafer loading options:
 - Buffering tool
 - Direct connection to in-line texturing tool and/or PSG glass removal tools
 - Manual load
- ◆ CE Compliance





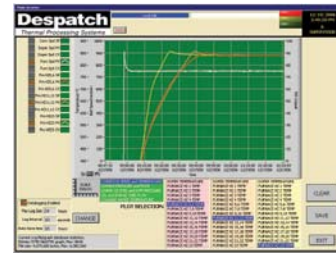
IN-LINE PHOSPHORUS DOPING

- ◆ Simultaneous top and bottom phosphorus coating
- ◆ Dopant chamber environmental control
- ◆ Direct connect dopant facility supply connection
- ◆ Variable speed control
- ◆ Adjustable phosphorus application



IN-LINE DIFFUSION FURNACE

- ◆ Tight temperature control for maximum process window
- ◆ Maximum up-time for higher yields
- ◆ Process profiles for high efficiency solar cells



INTEGRATED PROCESS CONTROL SYSTEM

- ◆ Doper/Furnace recipe creation
- ◆ Process window monitoring with audible and visual alarming
- ◆ Real-time process window display
- ◆ Data logging
- ◆ Process repeatability – 8 minutes, 8 hours, 8 day

	DCF 1000	DCF 3615	DCF 3625	DCF 3630
PRODUCT CONFIGURATION				
System size (length x width x height)	6,477 x 1,270 x 1,651mm	13,639 x 1,828 x 1,651mm	16,916 x 1,820 x 1,750 mm	17,830 x 1,870 x 1,750 mm
Standard entrance table	457 mm (18 inch)	914 mm (36 inch)	914 mm (36 inch)	914 mm (36 inch)
Maximum number of heated zones	9	19	21	23
Cooling zones	2	4	4	4
Standard exit table	457 mm (18 inch)	914 mm (36 inch)	914 mm (36 inch)	914 mm (36 inch)
Conveyor type: Doper	Multilane lane, multistage O-Ring (all models)			
Conveyor type: Furnace	Lightweight balance spiral weave, Nichrome V material, friction drive (all models)			
Conveyor height above floor	97 cm ± 3.2 cm (38.25 in ± 1.25 in) all models			
Conveyor width	356 mm (14 inch)	914 mm (36 inch)	914 mm (36 inch)	914 mm (36 inch)
PROCESS CAPABILITIES				
Maximum temperature	1000°C	1000°C	1000°C	1000°C
Maximum heating rate	900°C/min	900°C/min	900°C/min	900°C/min
Maximum cooling rate in controlled cooling zone	350°C/min	350°C/min	350°C/min	350°C/min
Maximum cooling rate in convection cooling zone	500°C/min	500°C/min	500°C/min	500°C/min
Wafer throughput (156 x 156 mm)	250 wafers/hr	800 wafers/hr	1,200 wafers/hr	1,450 wafers/hr
Conveyor speed range	5–50 cm/min (2-20 ipm)	10–100 cm/min (4-40 ipm)	10–100 cm/min (4-40 ipm)	10–100 cm/min (4-40 ipm)
Conveyor speed accuracy	± 0.5%	± 0.5%	± 0.5%	± 0.5%
Conveyor speed control	Closed loop feedback	Closed loop feedback	Closed loop feedback	Closed loop feedback
Wafer size	All models - 100x100, 125x125, 156x156 mm (4, 5, 6 inch) <i>Option for 210 x 210 mm (8 inch) support</i>			
Sheet resistance	40-80 ohm/sq configurable	40-80 ohm/sq configurable	40-80 ohm/sq configurable	40-80 ohm/sq configurable

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

GLOBAL HEADQUARTERS

phone: 1-888-DESPATCH (1-888-337-7282)
international/main: 1-952-469-5424
fax: 1-952-469-4513

info@despatch.com
 www.despatch.com

8860 207th Street West
 Minneapolis, MN 55044 USA

Despatch
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