

Honeycomb matrix compact dryer combines dehumidifying plastic resin and conveying into a single unit.

Comet's CCD series combines three functions into one compact unit: loading the drying hopper, dehumidifying and drying the plastic resin, and loading the dry resin into the processing machine. The CCD series is suitable for drying hygroscopic plastic materials such as PA, PC, PBT, and PET.

Standard Features

- Equipped with a honeycomb rotor to achieve stable, dry air dewpoint of -40°F (-40°C)
- Combines dehumidifying, drying and two-stage conveying into a single unit.
- Two models are available: fully integrated and semi-open.
- Feeding system equipped with a shut-off valve to ensure no material is left in the conveying line.
- Insulated drying hopper utilizes a down blowpipe design with cyclonic air exhaust to avoid heat loss and improve drying efficiency.
- Equipped with a microprocessor control.
- Double water cooler ensures a lower return air temperature and dewpoint value.



Optical CCD-OP Series Features

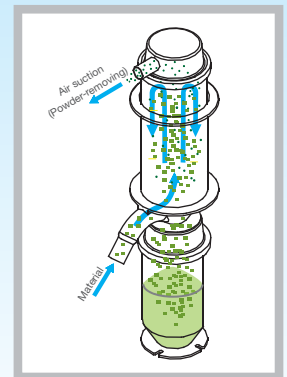
- CCD-OP coupled with a powder-removing hopper helps prevent defects and contamination when producing optical products.
- Mirror-polished surfaces where material comes in contact with the unit.
- High-efficiency particle absorbing HEPA filter strains minute ions of 0.3 μm with a 99.97% filter ratio.
- Prevents contamination and moisture regain when combined with a closed-loop conveying system.



High Efficiency Particle Absorbing Filter



Powder-Removing Hopper



Working Principle of Powder-Removing Hopper

CCD Series

What is a Honeycomb Rotor?

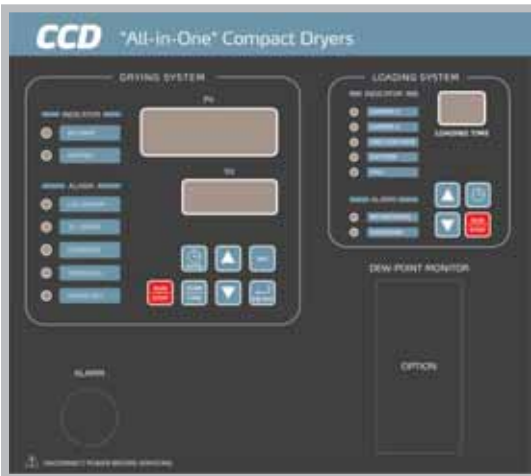


A honeycomb rotor is superior to common desiccant or rotary molecular sieves because over time, desiccant beads

will produce dust in the processed air to the drying hopper and contaminate the plastic material.

The main section of the honeycomb rotor is made of ceramic fiber and organic additives that are sintered under a high temperature with a molecular sieve and silica gel acting as the bonding material binding it to the inside of the honeycomb, forming the honeycomb-like structure. The moisture of the return air is quickly absorbed by molecular sieves when passing through the numerous holes (matrix) within the honeycomb rotor. When it comes out of the rotor, it forms a low dry air dewpoint. Regenerating and dehumidifying have a similar principle and run simultaneously. The only difference is that the two process blowing actions are in opposite directions.

The honeycomb rotor is easy to clean and has a long service life. It does not saturate like molecular sieves that require regular replacement.

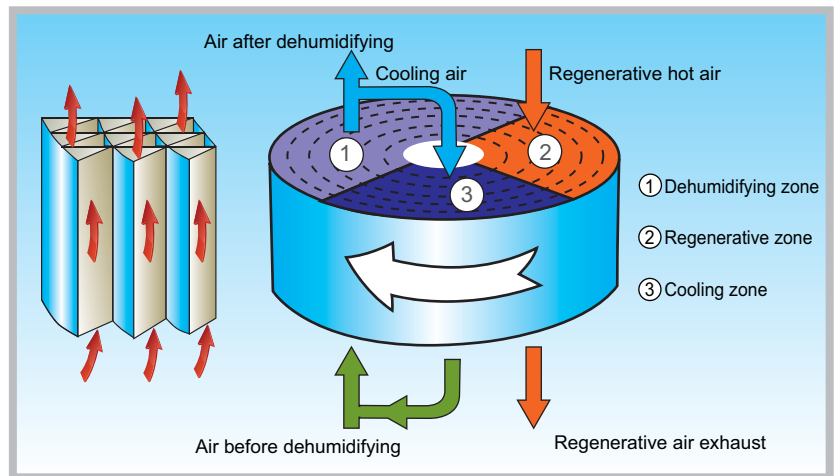
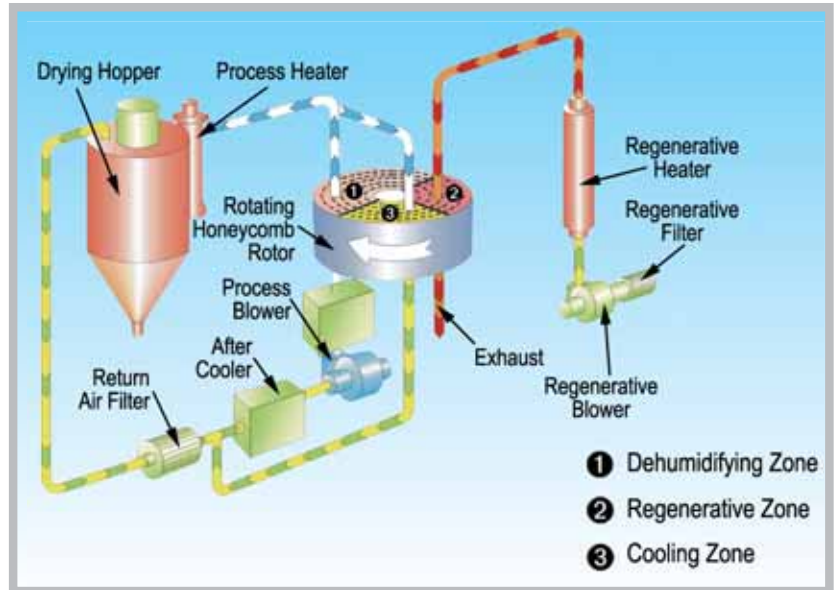


Control Panel with Dewpoint Monitor



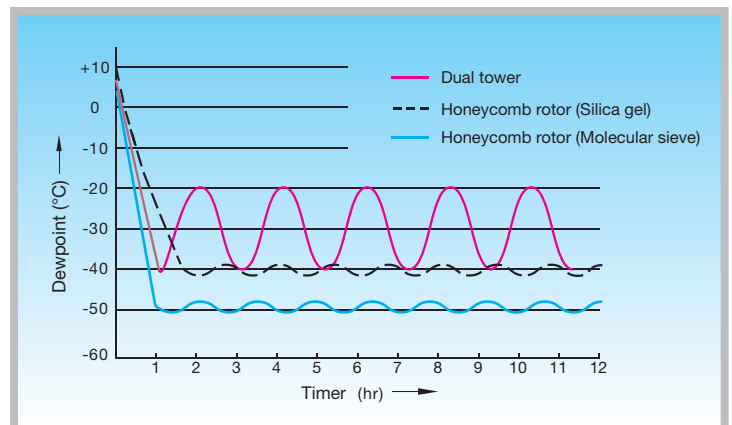
Shutoff Suction Box

System Flow Chart



Honeycomb Principle

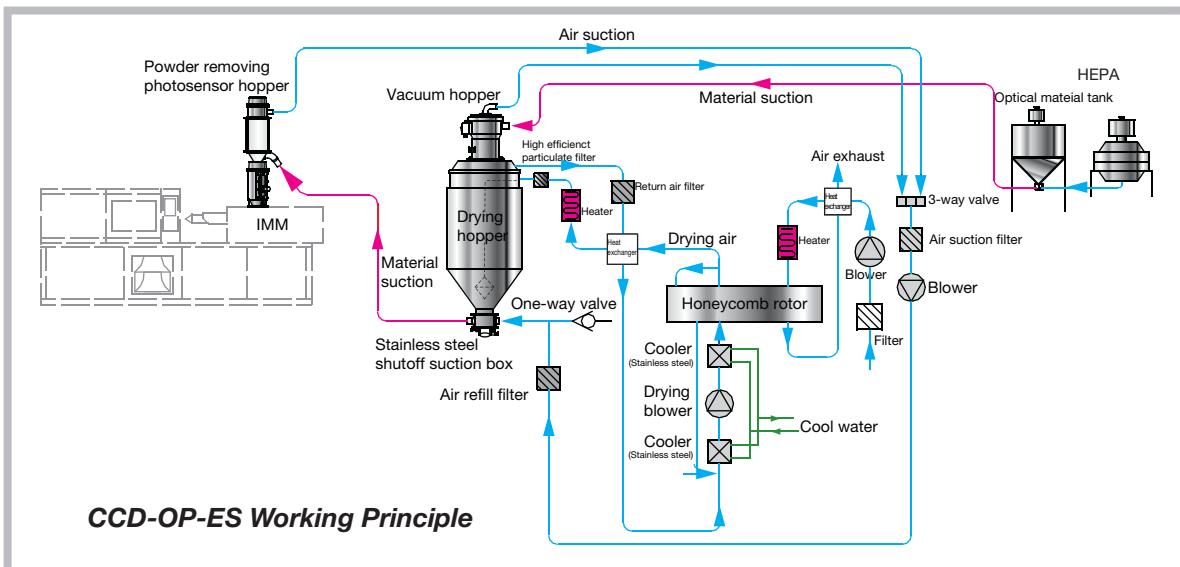
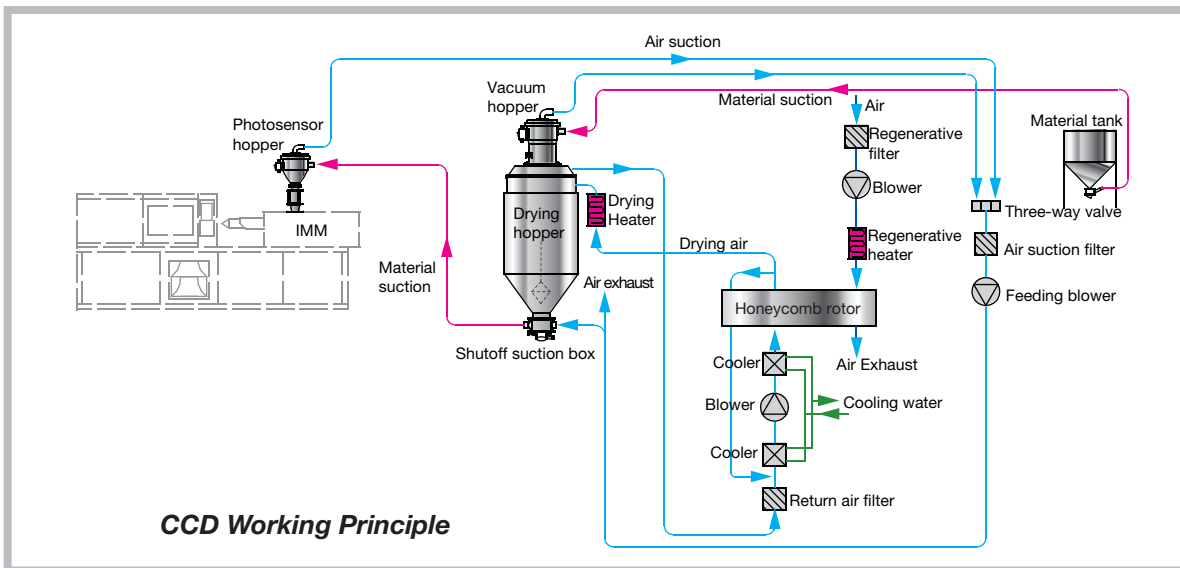
Dewpoint Curves



Working Principle

Honeycomb Rotor Dehumidifier: The honeycomb rotor is divided into three zones; dehumidifying, regenerative and cooling. As humid, ambient air flows in the dehumidifying zone, moisture content deposits on the silica gel surface of the rotor, the dry air is delivered by the fan to the outlet. When the dehumidifying zone becomes saturated, it very slowly rotates at a rotation speed optimum for the condition set by a gear motor. Saturated air is drawn into the honeycomb matrix of the rotor through the return air filter by the process blower. When the air passes through the matrix, moisture in the air is absorbed and dry air is discharged from the process outlet. The absorbed moisture is rotated by the rotor into the dehumidifying zone. At the same time, cool air is drawn from the opposite side through the regeneration filter, heated, and enters the regenerative zone of the rotor and exhausted to the outside. The continuous cycle of dehumidifying, regeneration and cooling make it possible to create a steady dehumidifying effect.

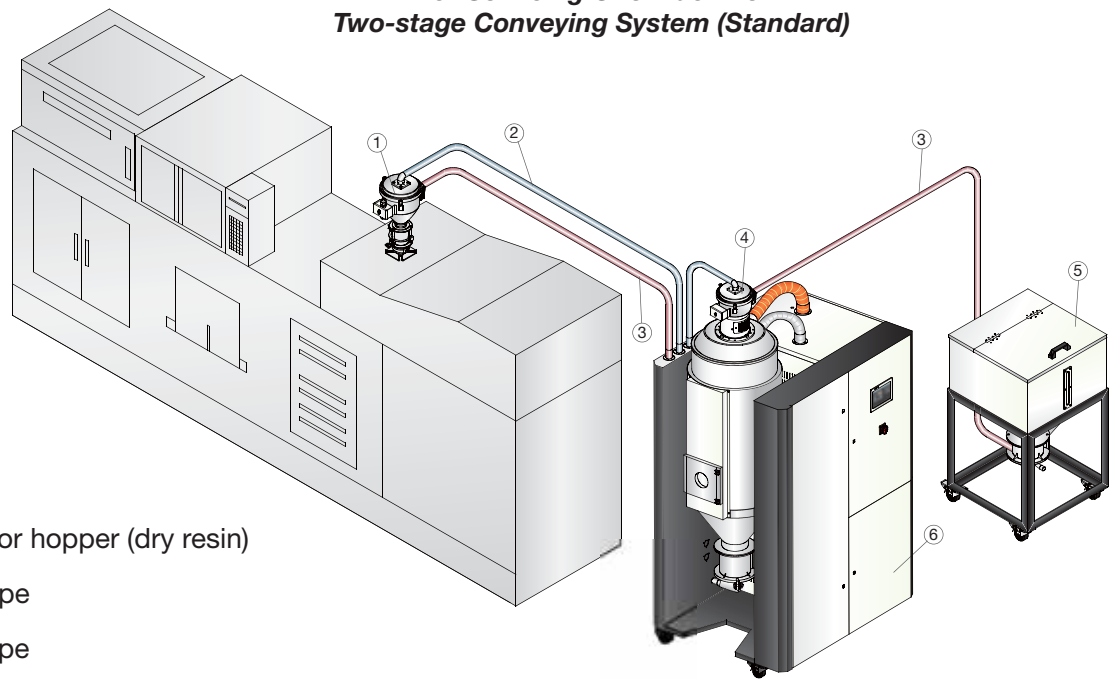
Suction: Material is drawn into the dryer from a storage bin or other container. When the magnetic reed switch detects there is no material, the suction motor runs to produce a vacuum inside the vacuum hopper. Raw material in storage bins is drawn into the hopper loader due to the difference in air pressure. When the material suction is complete, the motor stops. Gravity causes the raw material to drop into the drying hopper barrel. After drying, the raw material is removed to the hopper via a photosensor installed on the molding machine or hopper loader.



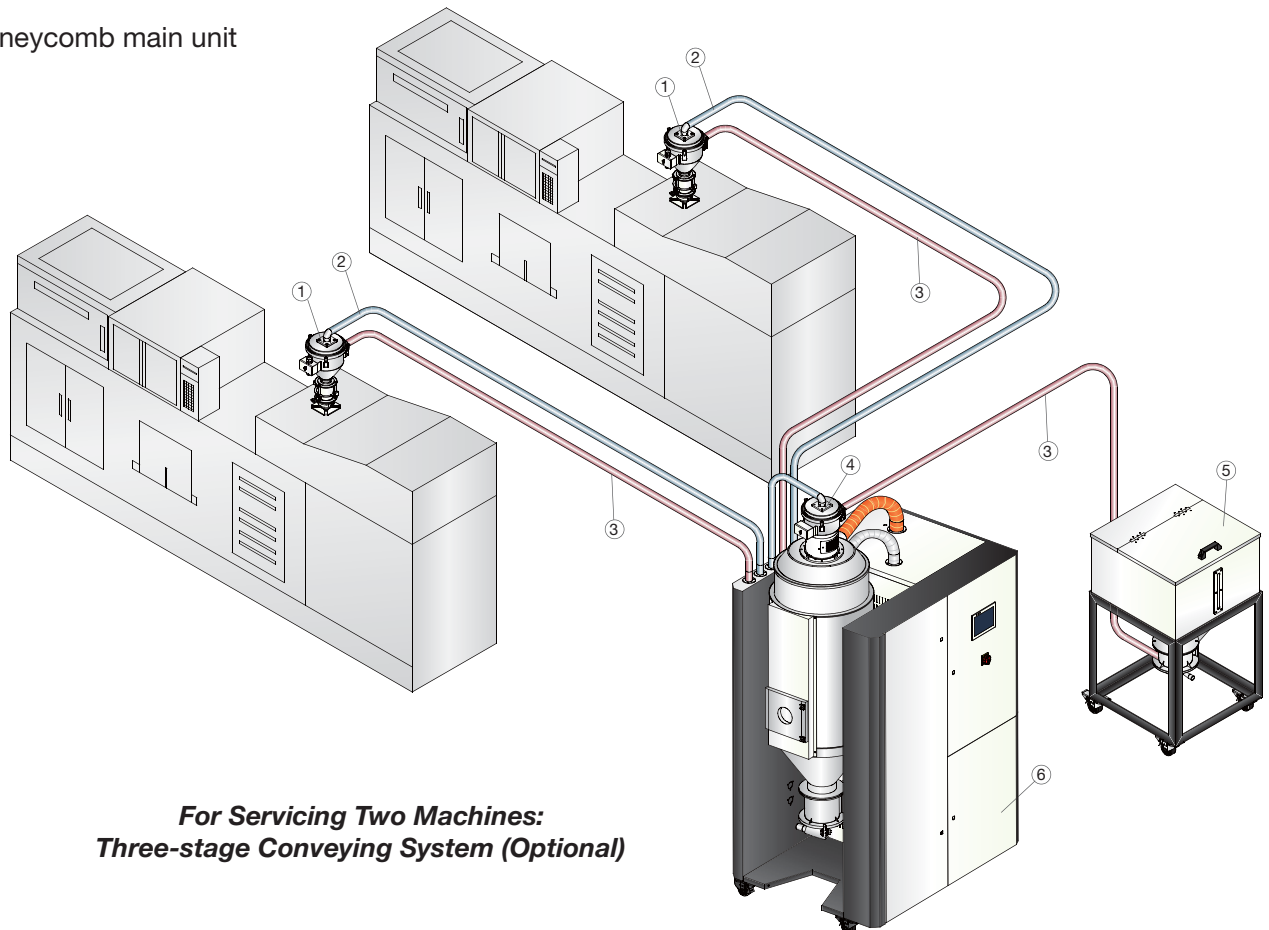
CCD Series

Application

For Servicing One Machine: Two-stage Conveying System (Standard)



1. Photosensor hopper (dry resin)
2. Vacuum pipe
3. Material pipe
4. Vacuum hopper on dryer hopper
5. Material tank
6. CCD honeycomb main unit



For Servicing Two Machines: Three-stage Conveying System (Optional)

Optional Accessories

- Siemens PLC control and HMI touchscreen for convenient operation on machines running on automatic.
- Dewpoint monitor to monitor the dewpoint value at all times.
- HEPA and optical storage hopper to ensure no air contamination gets into the raw material.
- Regenerative plate heat exchanger that can save 0~19% of total power consumption.
- Regenerative plate heat exchanger for the CCD-ES series saving up to 3~6% power consumption.
- For CCD-ES series, dewpoint values can be set between -40°F (-40°C) to 50°F (10°C) based on the requirements of the plastic material, saving up to 0~10% of total power consumption.
- For CCD-ES series, automatic air volume and consumption adjustment control. Set the name of the plastic material to be dried and volume used per hour (can be set up to 20~100% drying capacity) to maximize drying and avoid over-drying which affects the physical and mechanical properties of the plastic resin.



Plate Heat Exchanger



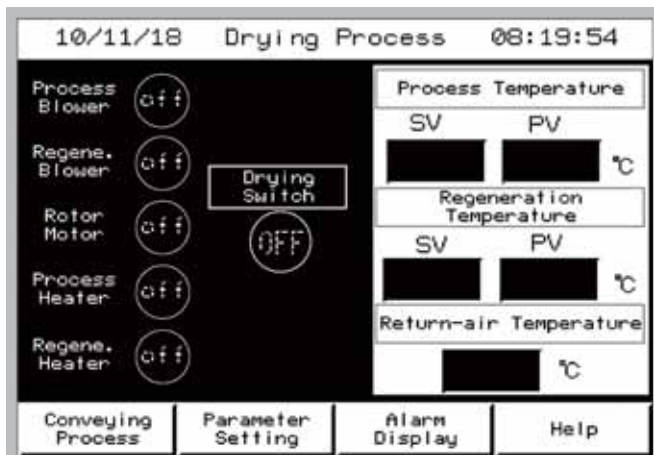
Optical Material Tank (5 μm)



Optical Powder Removing Hopper

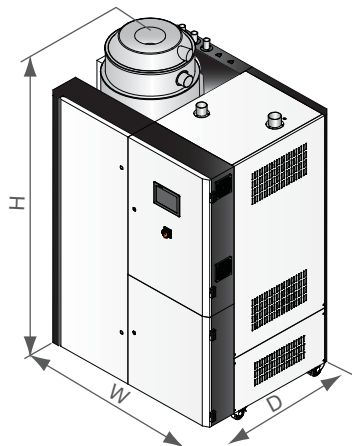


HEPA High Efficiency Particle Absorbing Filter (0.3 μm)

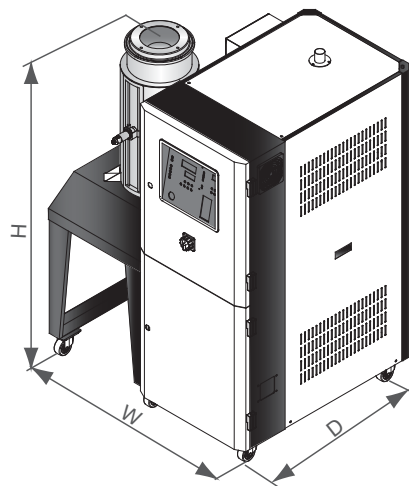


HMI Touchscreen

CCD Series



CCD Hermetic



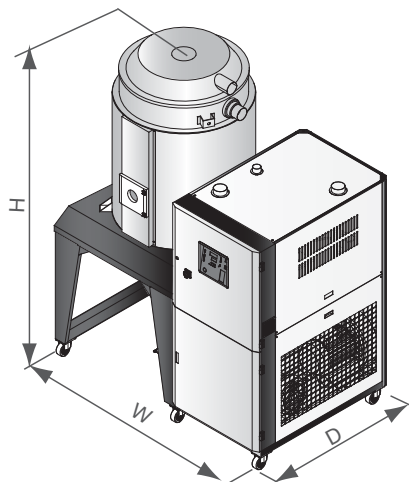
CCD-OP

Specifications (Fully Integrated)

CCD Model	20U/30H (-OP)	40U/30H (-OP)	80U/50H (-OP)	120U/80H (-OP)	40U/ 50H	160U/ 80H	160U/ 120H	230U/ 120H	300U/ 200H	450U/ 200H
Drying System										
Drying Heater Power (kW)	3	3	3.9	6	3.9	6	6	6	12	12
Drying Blower Power (kW)	0.2	0.2	0.4	0.75	0.4	0.75	0.75	0.75	1.5	1.5
Hopper Capacity (L)	20	40	80	120	40	160	160	230	300	450
Dehumidifying System										
Regenerative Heater Power (kW)	3	3	3	3	3	3	3	3	4	4
Regenerative Blower Power (kW)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4
Dehumidified Air Quantity (m ³ /hr)	30	30	50	80	50	80	120	120	200	200
Feeding System										
Feeding Blower Power (kW)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Dia. of Material Pipe (inch)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
CHR-U-E Hopper (L)	3	3	6	6	3	6	6	12	12	12
CHR-U Hopper (L)	3	3	6	6	3	6	6	12	12	12
Dimensions										
H (mm)	1490 (1400)	1550 (1500)	1800 (1670)	1990 (1710)	1550	1860	1860	2070	2160	2350
W (mm)	1000 (1050)	1040 (1050)	1105 (1240)	1105 (1240)	1040	1190	1190	1190	1460	1460
D (mm)	875 (900)	875 (900)	875 (1000)	875 (1000)	875	875	875	875	1020	1020
Weight (kg)	280 (235)	325 (280)	325 (330)	340 (385)	335	385	505	515	565	595

Note: Power: 3Ø, 230/400/460/575VAC, 50/60Hz

We reserve the right to change specifications without prior notice.



CCD Semi-Open

Specifications (Semi-Open)

CCD Model	600U / 400H	750U / 400H	900U / 700H	1200U / 700H
Drying System				
Drying Heater Power (kW)	18	18	24	24
Drying Blower Power (kW, 50/60Hz)	3.75 / 4.5	3.75 / 4.5	5.5 / 6.3*	5.5 / 6.3*
Hopper Capacity (L)	600	750	900	1200
Dehumidifying System				
Regenerative Heater Power (kW)	7.2	7.2	10	10
Regenerative Blower Power (kW, 50/60Hz)	0.75 / 0.9	0.75 / 0.9	1.5 / 1.8	1.5 / 1.8
Dehumidified Air Quantity (m ³ /hr, 50/60Hz)	400 / 450	400 / 450	700 / 780	700 / 780
Feeding System				
Feeding Blower Power (kW)	1.5 / 1.8	1.5 / 1.8	2.4 / 2.9	2.4 / 2.9
Dia. of Material Pipe (inch)	1.5	1.5	2	2
CHR-U-E Hopper (L)	12	12	24	24
CHR-U Hopper (L)	12	12	24	24
Dimensions				
H (mm)	2380	2610	2640	3070
W (mm)	1745	1745	2140	2140
D (mm)	1255	1255	1380	1380
Weight (kg)	64-	690	850	900

Note: 1. * Hopper receiver
2. Power: 3Ø, 230/400/460/575VAC, 50/60Hz

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Drying Capacity

Raw Material	Drying Temp. (°C)	Drying Time (Hr.)	Specific Heat (J/kg °C)	Material Specific Gravity (kg/dm³)	Moisture Content Before Drying (%)	Moisture Content After Drying (%)	Drying Capacity (kg/hr)										
							CCD-50H	CCD-80H	CCD-120H	CCD-200H	CCD-400H	CCD-700H	CCD-1000H	CCD-1500H	CCD-2000H	CCD-3000H	CCD-4000H
ABS	80	2-3	0.34	0.6	0.3	0.02	18	27	35	105	210	355	425	710	1065	1500	1600
CA	75	2-3	0.5	0.5	1	0.02	15	22	30	90	180	295	355	590	885	1200	1330
CAB	75	2-3	0.5	0.5	0.8	0.02	15	22	30	90	180	295	355	590	885	1200	1330
CP	75	2-3	0.6	0.6	1	0.02	18	27	35	106	210	355	425	710	1060	1500	1600
LCP	150	4	0.6	0.6	0.04	0.02	13	20	27	80	160	265	320	530	800	1150	1200
POM	100	2	0.35	0.6	0.2	0.02	27	40	53	160	320	530	640	1060	1600	1800	2400
PMMA	80	3	0.35	0.65	0.5	0.02	19	29	38	115	230	383	460	767	1150	1530	1730
IONOMER	90	3-4	0.55	0.5	0.1	0.04	11	17	22	66	133	220	265	442	663	750	1000
PAG / 6.6 / 6.10	75	4-6	0.4	0.65	1	0.05	10	14	19	58	115	192	230	383	575	960	1040
PA11	75	4-5	0.58	0.65	1	0.05	12	17	23	69	138	230	275	460	690	780	1150
PA12	75	4-5	0.28	0.65	1	0.05	12	17	23	69	138	230	275	460	690	780	1150
PC	120	2-3	0.28	0.7	0.3	0.01	21	31	41	124	250	413	495	826	1238	1400	1860
PU	90	2-3	0.45	0.65	0.3	0.02	19	29	38	115	230	383	460	767	1150	1530	2080
PBT	130	3-4	0.3-0.5	0.7	0.2	0.02	15	23	31	93	186	310	372	620	930	1100	1600
PE	90	1	0.55	0.6	0.01	<0.01	53	80	106	318	637	1062	1275	2125	3185	3600	4800
PEI	150	3-4	0.6	0.6	0.25	0.02	13	20	27	80	160	265	320	530	800	1030	1370
PET	160	4-6	0.3-0.5	0.85	0.2	0.05	13	19	25	75	150	250	300	500	750	1150	1360
PETG	70	3-4	0.6	0.6	0.5	0.02	13	20	27	80	160	265	320	530	800	1030	1370
PEN	170	5	0.85	0.85	0.1	0.05	15	23	30	90	180	300	360	600	900	1150	1360
PES	150	4	0.7	0.7	0.8	0.02	15	23	30	90	180	300	360	600	900	1050	1400
PMMA	80	3	0.65	0.65	0.5	0.02	19	29	38	115	230	385	460	765	1150	1530	1730
PPO	110	1-2	0.4	0.5	0.1	0.04	22	33	44	133	265	440	530	885	1330	1730	2660
PPS	150	3-4	0.6	0.6	0.1	0.02	13	20	27	80	160	265	320	530	800	1030	1370
PI	120	2	0.27	0.6	0.4	0.02	27	40	53	160	320	530	640	1060	1600	1800	2400
PP	90	1	0.46	0.5	0.1	0.02	44	66	88	265	530	885	1060	1770	2655	3500	4000
PS (GP)	80	1	0.28	0.5	0.1	0.02	44	66	88	265	531	885	1062	1770	2655	3500	4000
PSU	120	3-4	0.31	0.65	0.3	0.02	14	22	29	85	173	290	345	575	865	1300	1485
PVC	70	1-2	0.2	0.5	0.1	0.02	22	33	44	135	265	442	530	885	1330	1730	2660
SAN (AS)	80	1-2	0.32	0.5	0.1	0.05	22	33	44	135	265	442	530	885	1330	1730	2660
TPE	110	3	0.7	0.7	0.1	0.02	18	30	40	125	250	413	495	826	1238	1650	1860

Notes: 1. Use separated drying hopper.
2. Moisture content lower than 0.005% after drying when in 68°F (20°C) ambient temperature and 65% relative humidity.



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