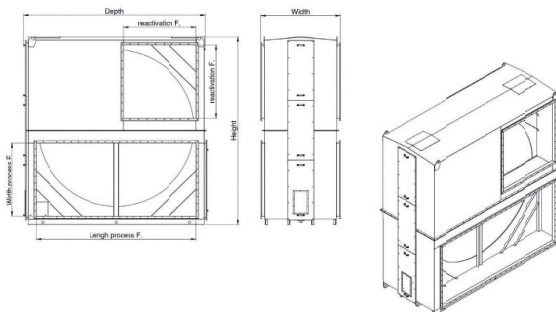


Dimensions

DESSICA DIA systems are composed of the DIA drying unit itself (dimensions below) and related modules such as : preparation air process section (filtration, cooling), final filtration section, reactivation air section (filtration, post-heating), fans, duct connections and electrical cabinet. Each of these related modules is defined and built for each project.



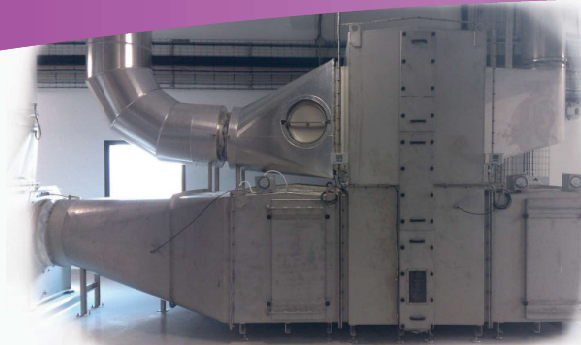
Units Size	Width		Height		Depth		Reactivation flanges		Process flanges	
	mm	in	mm	in	mm	in	kgs	lbs	H mm	H in
DIA-122	1250	49	1730	68,11	1620	63,78	620 x 620	24 x 24	1230 x 620	48 x 24
DIA-124	1450	57	1730	68,11	1620	63,78	620 x 620	24 x 24	1230 x 620	48 x 24
DIA-142/152	1250	49	2035	80,12	1925	75,79	620 x 620	24 x 24	1535 x 620	60 x 24
DIA-144/154	1450	57	2035	80,12	1925	75,79	620 x 620	24 x 24	1535 x 620	60 x 24
DIA-172/192	1450	57	2440	96,06	2340	92,13	925 x 925	36 x 36	1840 x 925	72 x 36
DIA174/194	1650	65	2440	96,06	2340	92,13	925 x 925	36 x 36	1840 x 925	72 x 36
DIA-222	1450	57	2690	105,91	2590	101,97	925 x 925	36 x 36	2145 x 925	84 x 36
DIA-224	1650	65	2690	105,91	2590	101,97	925 x 925	36 x 36	2145 x 925	84 x 36
DIA-252	1450	57	2960	116,54	2850	112,20	1230 x 1230	48 x 48	2450 x 1230	96 x 48
DIA-254	1650	65	2960	116,54	28850	112,20	1230 x 1230	48 x 48	2450 x 1230	96 x 48
DIA-272	1450	57	3210	126,38	3100	122,05	1230 x 1230	48 x 48	2755 x 1230	108 x 48
DIA274	1650	65	3210	126,38	3100	122,05	1230 x 1230	48 x 48	2755 x 1230	108 x 48
DIA+292-312	1450	57	3610	142,13	3500	137,80	1535 x 1535	60 x 60	3060 x 1535	120 x 60
DIA-294/314	1650	65	3610	142,13	3500	137,80	1535 x 1535	60 x 60	3060 x 1535	120 x 60
DIA-332-352	1450	57	4010	157,87	3900	153,54	1535 x 1535	60 x 60	3365 x 1535	132 x 60
DIA-334/354	1650	65	4010	157,87	3900	153,54	1535 x 1535	60 x 60	3365 x 1535	132 x 60
DIA-382	1450	57	4230	166,54	4200	165,35	1840 x 1840	72 x 72	3670 x 1840	144 x 72
DIA-384	1650	65	4230	166,54	4200	165,35	1840 x 1840	72 x 72	3670 x 1840	144 x 72
DIA-402	1450	57	4430	174,41	4400	173,23	1840 x 1840	72 x 72	3975 x 1840	157 x 72
DIA-404	1650	65	4430	174,41	4400	173,23	1840 x 1840	72 x 72	3975 x 1840	157 x 72
DIA-422	1450	57	4800	188,98	4650	183,07	2145 x 2145	84 x 84	4280 x 2145	169 x 84
DIA-424	1650	65	4800	188,98	4650	183,07	2145 x 2145	84 x 84	4280 x 2145	169 x 84
DIA-452	1450	57	4930	194,09	4900	192,91	2145 x 2145	84 x 84	4585 x 2145	181 x 81
DIA-454	1650	65	4930	194,09	4900	192,91	2145 x 2145	84 x 84	4585 x 2145	181 x 84

Dimension sections are handed during project phase.

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DIA product range

Sterile air dehumidification systems for the food processing industry



Modular and adaptable

Hygienic and solid construction

Made with food contact materials

Easy access with maintenance doors

Patented Energy Saving System

Description

DESSICA DIA systems are **modular** and **adaptable** air dehumidification units specially designed to meet the requirements of users in the food processing industry :

- **hygienic & solid construction** made of AISI 304L or 316L stainless steel sheet, 0.12-inch-thick, smooth and non-sticky inside panel
- made with food contact material (**ANIA certificate**) for all parts in contact with process air
- easy access with dedicated maintenance doors

These systems include the latest innovations for absorption desiccant rotors and use **the new energy saving system (Dessica's patent)**. This new feature optimizes the rotation speed of the desiccant rotor in correlation with the evolution of the temperature and humidity conditions of the air to be treated.

DESSICA DIA systems offer a complete solution including filtration, heat exchangers and a control system. The third generation PPS and PPX silica gel desiccant rotors mounted on our air dryers contains a high active silica gel component. It provides a high dehumidification performance and reduce energy consumption compared to other silica gel desiccant rotors of the same dimensions.

The DIA boxes are connected to each other by rectangular flanges (0.12-inch folded sheet or 0.20-inch welded) and EPDM seals.

Applications

DESSICA DIA systems supplies dry air to feed drying, production processes in packaging or storage environments. **Dairy, food ingredients, meat processing and seafood products** are among the many segments where DIA systems provide dry and sterile air.

Operating principle



DESSICA systems uses two independent and counter-current air flows through the desiccant rotor, with a slow and continuous pace :

- the main air flow (process air) is dried
- the secondary air flow (reactivation air), of lesser volume, is used to evacuate the moisture retained by the desiccant rotor

Two fans set in motion both air streams.

Silica gel is a high- performance hygroscopic material able to retain the moisture content from ambient air. By floating through the rotor, the humid air loses its moisture captured by the silica gel material. The dry air is then totally usable.

Reactivation air purpose is to evacuate the moisture captured by the silica gel in the rotor. The air is brought to an approximate temperature of 210°F to 320°F (100°C to 160°C) and then crosses the rotor against the wet air flow to remove the moisture retained in the silica gel. The moist reactivation air leaves the dehumidifier to be evacuated outside the building or any other premises.

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les techniques de l'air sec

Benefits of the solution DESSICA

1) Drying towers, ovens, fluid bed :

Most drying systems operate depending on outdoor climatic conditions : the production capacity is higher in cold weather when the air is dry and it is greatly reduced in hot weather when the absolute humidity of the air is at a high level.

For example, a flow rate of 100 tons/h of air introduced into a drying system (for example, an spray drying tower), this represents more than 1 ton/h of additional water introduction or less depending on the time of the year! Besides being responsible for the drop-in production, humidity is also a challenge for the staff to find the right settings to operate the tower to its maximum capacity preventing several days of production disruption due to clogging.

The main benefits of the DESSICA solution are the following :

- the production capacity of the drying system is constant and maximized and the residual moisture in the product stabilized throughout the year by air conditions without significant variation in all seasons
- clogging and bulking of pulverized products is eliminated
- the energy consumption is optimized : dehumidification is an exothermic phenomenon, it increases the temperature from the dry air and therefore reduces the heating of the upstream air in the process. Precooling by condensation can be eliminated or limited to periods of very high humidity by a regulated system giving priority to the dehumidification operation by the desiccant rotor. The energy saving system (DESSICA's patent) significantly increases the energy efficiency of the system.

The ROI, particularly on a Spray drying tower, is quick for the following reasons :

- increase in production volume over the year
- predictable production volume regardless of climatic conditions
- Easy to adjust operating parameters; reducing staff intervention
- quality of the finished product, which is constant, drier and therefore more value-added
- less production disruption due to clogging

2) Production environments...

In production, packaging or storage environments, dry air allows :

- prevention of physical (particle) or microbiological contamination
- retention of the original product characteristics
- hygiene, safety and working conditions improvements
- reduction of the post-wash drying process (increase in productivity and absence of post-contamination)

Configuration

In addition to the air-drying system, DESSICA DIA units can integrate the following equipment and functions :

- Reactivation heater :
 - Steam heat exchanger
 - Water heat exchanger
 - Electrical heater
- Filtration :
 - Pre -filtration G4 to F8 (one or two rows)
 - Final filtration F8 to H14
- Air flows isolation (manual or motorised dampers)
- Temperature function (post-heating or post-cooling) :
 - Chilled water heat exchanger
 - Hot water or steam heat exchanger
 - Electrical heater

Each system can be supplied with an electrical cabinet grouping power and control elements including :

- LED (voltage presence / start / defaults alarm)
- emergency stop function
- PLC with monitor
- buttons (Clearance/On/Off)

The standard information or orders are as follows :

- remote operation order
- default warning
- return to operation
- emergency stop remote
- filter contamination control
- GSM communication module (incompatible with ModBus)

The following items are available on screen :

- operating mode
- defaults
- setpoint settings and control parameters (if present)

Available options :

- MODBUS communication
- humidity control
- temperature control
- air flow control
- graphical control screen
- historical data

DESSICA DIA system selection

The size of a DIA system depends mainly on the front air velocity towards the various components, therefore the air flow to be treated.

Each component must be selected according to its own selection criteria. Usually, the desiccant rotor, the filtration systems, the cold and hot coils are crucial to define the size of the various casings. The humidity level in the dry air is also a determining factor for choosing the appropriate system size. Thus, the DIA are offered with two thickness dimensions for the desiccant rotors allowing more flexibility in the sizing.

The following quick selection tables are established on the sole criteria of the desiccant rotor.

Dryer is delivered as one section

Wheel Ø size	mm	in																
DTIA-122	1220	48																
DTIA-124	1220	48																
DTIA-142	1370	54																
DTIA-144	1370	54																
DTIA-152	1525	60																
DTIA-154	1525	60																
DTIA-172	1730	68																
DTIA-174	1730	68																
DTIA-192	1940	76																
DTIA-194	1940	76																
DTIA-222	2190	86																
DTIA-224	2190	86																
Airflow CMH			5000	7500	10000	12500	15000	17500	20000	22500	25000	27500	30000	32500	35000	37500	40000	
Airflow CFM			2950	4425	5900	7375	8850	10325	11800	13275	14750	16225	17700	19175	20650	22125	23600	

Dryers delivered in two sections, rotor in several sections. Assembly will be done on site.

Wheel Ø size	mm	in																
DIA-252	2450	96																
DIA-254	2450	96																
DIA-272	2700	106																
DIA-274	2700	106																
DIA-292	2900	114																
DIA-294	2900	114																
DIA-312	3100	122																
DIA-314	3100	122																
DIA-332	3300	130																
DIA-334	3300	130																
DIA-352	3500	138																
DIA-354	3500	138																
DIA-382	3800	150																
DIA-384	3800	150																
DIA-402	4000	157																
DIA-404	4000	157																
DIA-422	4250	167																
DIA-424	4250	167																
DIA-452	4500	177																
DIA-454	4500	177																
Airflow (m³/h)			20000	30000	40000	50000	60000	70000	80000	90000	100000	110000	120000	130000	140000	150000	160000	
Airflow CFM			11000	17700	23800	29500	35400	41300	47200	53100	59000	64900	70800	76700	82600	88500	94400	