



COMPRESSED AIR  
& GAS TREATMENT

# DEiTECH

**PULSE**  
TECHNOLOGY

**THERMAL MASS**  
TECHNOLOGY



Energy saving refrigeration dryers  
10 - 1000 SCFM



*Purifying your compressed air,  
increasing your efficiency.*



Cooling, conditioning, purifying.



# DEiTECH

# PULSE<sup>N</sup> TECHNOLOGY

# THERMAL MASS TECHNOLOGY

## Refrigeration dryers with Energy Saving Pulse Technology and Thermal Mass

With the introduction of DE iTECH, the new generation of energy-saving refrigeration dryers, MTA not only renews its product offering for the compressed air treatment but also reinterprets the concept of **thermal storage** operation, that made the international success of the DE Hybrid dryers. The new **Pulse Technology** offers important advantages in terms of energy saving, reliability and operating costs as the DE iTECH dryer is able to adapt itself to the real needs of the compressed air system. The regulation system of the dryer controls the dryer operation granting the most energetically effective method of compressed air drying, achieving high energy saving and ensuring at the same time an excellent dew point stability also in dynamic conditions.



### Enhanced Energy Savings

New 3-in-1 high efficiency heat exchanger with optimized fluid dynamics useful to keep the pressure drops to a minimum level. Advanced drying capacity control by pulses or by thermal storage effect. Enhanced energy savings (up to 80% compared with hot gas by-pass dryers).

### Reliable Drying & Separation

The stainless steel demister separator efficiently removes the condensed moisture at all airflows (unlike centrifugal separators). This ensures a high grade of drying all the time.

### High Operating Limits

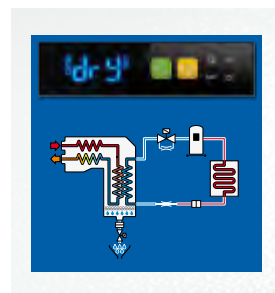
High maximum inlet temperature +158 °F (DEiT 0010-0325) +135 °F (DEiT 0425-1000) and maximum ambient temperature (+115 °F) ensure a fail-safe operation at all times. High maximum operating pressure (232 psig).

### Easy installation

Advanced design makes this dryer extremely compact and lightweight. Small footprint and frontal access for all controls and refrigeration components save valuable plant floor space.

### User Friendly

DE iTECH automatically adapts itself to any operating condition, without any need to adjust or switch OFF the dryer. User friendly digital control is standard on all the models and shows all the main parameters, providing warnings and alarms to ensure correct dryer operation.





**UNBEATABLE ENERGY EFFICIENCY, LOW PRESSURE DROPS, MAXIMUM RELIABILITY, SYSTEM SIMPLIFICATION: THESE ARE THE ADVANTAGES OF MTA DRYERS.**



Cooling, conditioning, purifying.

## PULSE TECHNOLOGY ENHANCED ENERGY SAVING

This revolutionary design matches energy consumption to the work load to achieve energy savings while in operation. Thanks to two temperature sensors placed in the refrigeration and on the compressed air circuits, the microprocessor controls the dryer operation granting the most effective method of compressed air drying.



- For high/medium flows, the dryer applies the **Pulse Technology** to regulate its drying capacity.
- For low air flows, the dryer utilizes the "thermal storage" operation.

### PULSE TECHNOLOGY FOR HIGH/MEDIUM AIR FLOWS

The refrigerant compressor is permanently ON to achieve a perfect control of the dew point. The microprocessor controls through "pulses" the opening and closing of a solenoid valve installed on the suction pipe of the refrigeration compressor, in partial load conditions then only a small portion of the nominal refrigerant flows through a by-pass capillary to the compressor.

In partial load conditions the compressor compresses less refrigerant than at peak load and therefore it consumes less energy (refrigerant flow control technology).

### THERMAL STORAGE OPERATION FOR LOW AIR FLOWS

The refrigerant compressor cycles ON/OFF for maximum savings and reliability. Since the refrigeration capacity is greater than the load, the excess capacity cools the all-in-one exchanger that acts like a thermal storage.



#### Reliable operation

The simple refrigeration circuit, without hot gas by-pass valve, and the careful selection of the materials and components assure long, trouble free service life. The condenser coil is generously sized to maintain efficiency in all environments even at high ambient temperatures.

#### Easy Serviceability

Removable frontal panel assures easy access to the main refrigeration components, thus facilitating maintenance operations also with dryer ON. There is no need of seasonal adjustments unlike hot gas by-pass dryers. Condenser filters standard (DEiT 0600-1000) prevent mechanical equipment fouling by stopping debris.

#### Guaranteed Quality

All models are individually tested: refrigerant charge and leakage control, microprocessor and safety device setting verification. Leading brand components are used throughout, ensuring long term reliability.

#### Respect of Environment

DE iTECH's energy savings coupled with R134a and R410A non ozone depleting refrigerants, reduce the environment impact minimizing the energy waste. Recyclable and high quality materials ensure respect of environment, and reduced carbon footprint.

#### Robust Design

Heavy duty structure with panels protected by an epoxy polyester powder coating. The electrical panel (mod. DEiT 0425 ÷ 1000, DEiT 0200 3ph and DEiT 0250 3ph) is designed in compliance with the standard UL 508A features a protection degree IP54. A phase monitor standard provides protection against phase loss and phase reversal (mod 0425 ÷ 1000).

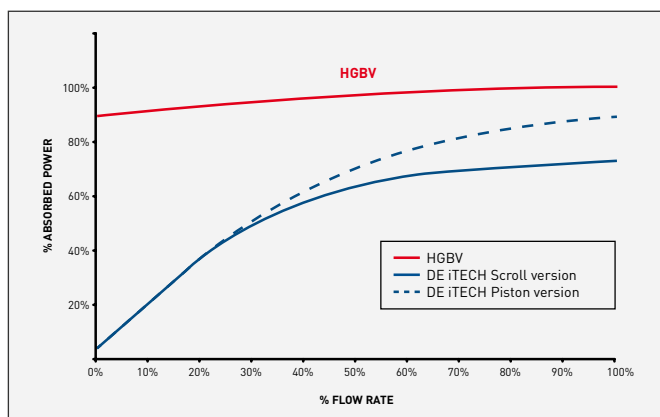


# Enhanced Energy Savings

## ENERGY SAVING COMPARISON

Normally a refrigeration dryer is sized to reach its nominal performance even in the most extreme conditions.

In reality, these conditions are rarely achieved and the dryer works at partial load for most of its operating life. This is due to both the high variability of the compressed air flow of industrial plants and for the average operating temperature that normally is lower than the temperature used to select the dryer itself. Only a dryer capable to adapt its working cycle to the real working conditions can provide a real energy savings.



### Hot Gas by-pass Valve (HGBV)

"Non cycling" dryers work with the refrigerant compressor continuously running independently from the inlet condition, using a by-pass valve to control evaporating pressure. Energy consumption remains almost constant also in absence of compressed air flow.

### Pulse Technology (iTECH)

Pulse Technology combines the technologies of regulation by pulses of the refrigerant flow (cooling capacity control for medium/high compressed air flow) and thermal storage effect (low compressed air flow) to produce maximum energy savings and the lowest dew point.



## ENERGY SAVING CALCULATIONS

### Productivity Savings

Compressed air networks rarely operate at full load. Air compressors typically run at 70-80% of capacity for the first shift operation, further decreasing on second and third shifts because of variable process demands as well as seasonal fluctuations in ambient temperature. DEiTECH saves energy across the full load spectrum and maximizes the bottom line energy savings.

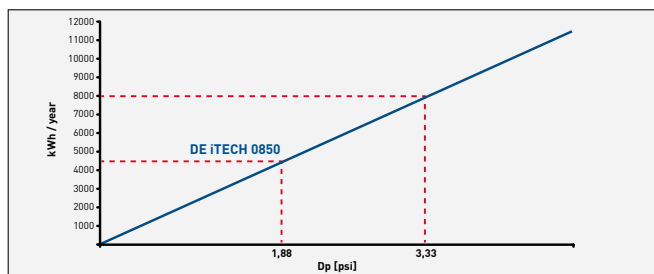
The chart below shows a comparison between a DE iTECH 0850 (850 SCFM) and a dryer which uses hot gas by-pass control. The DE iTECH 0850 ensures an annual energy saving of 8103 kWh corresponding to a cost saving of \$ 810 and a reduction on annual CO<sub>2</sub> emissions of 5145 lbs.

Compressed air flow 850 SCFM		Non Cycling Dryers	DE iTECH 0850
Energy consumption per year	Kwh	24370	16266
Energy cost per year	\$	3,313	2,211
CO <sub>2</sub> emission per year	lbs	15472	10326
Energy saving per year	Kwh	-	8103
Cost saving per year	\$	-	1,101
CO <sub>2</sub> emission saved per year	lbs	-	5145

(\*) 6000 hours/year. Load profile: for 4800 h/year, load = 80%; for 1200 h/year, load = 30%. Energy costs = \$ 0,1 per kWh.

### Low Pressure Drops Savings

The pressure drops generated by a refrigerant dryer must be considered as an extra load that must be overcome by the compressed air compressor to ensure the pressure level required. DE iTECH are designed and optimized from the fluid dynamics point of view to keep the pressure drops to a minimum. The graph represents the increase in power consumption (kWh per year) of a screw compressors 132 kW caused by the pressure drops (6000 working hours per year).



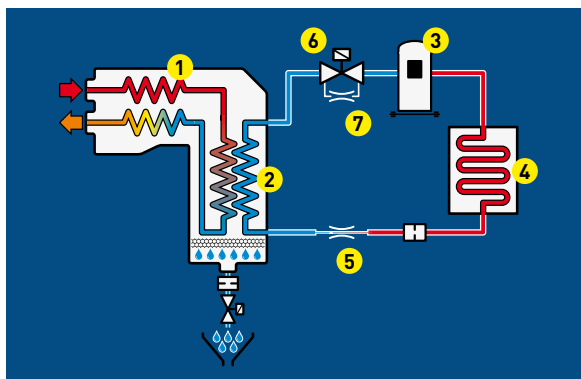
DE iTECH 0850 with a pressure drop 1.88 psi provides a considerable energy saving respect another dryer with higher pressure drop 3.33 psi:  
Annual Energy Saving = (7945 - 4490) kWh/year = 3454 kWh/year. That corresponds to an yearly cost saving of \$ 460 (energy cost \$ 0,1 per kWh) and to a reduction on annual CO<sub>2</sub> emissions of 2193 lbs.

### Total Productivity and Low Pressure Drops Savings

DE iTECH 0850 (850 SCFM)		Total savings per year
Total energy saving per year	Kwh	11557
Total cost saving per year	\$	1,571
CO <sub>2</sub> emission saved per year	lbs	7339

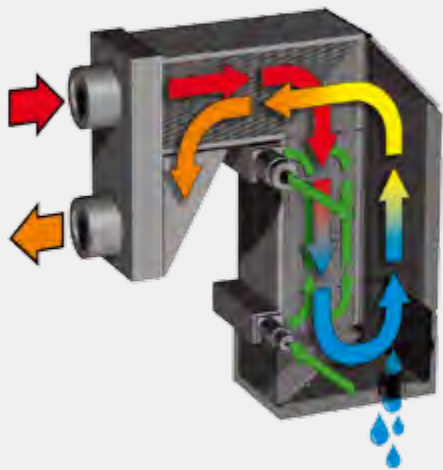
## HOW IT WORKS

Hot moist compressed air enters the Air-to-Air heat exchanger (1) where it is pre-cooled by the dry air leaving the dryer. The refrigerant compressor (3) compresses the refrigerant gas and push it through the condenser (4) where it is condensed in high pressure liquid. The refrigerant liquid then passes through a capillary (5) that meters it into the evaporator (2) as a low pressure liquid. The microprocessor adapts the working cycle to the real working conditions by controlling through "pulses" the opening and closing of the solenoid valve (6). In partial load conditions only a small portion of the refrigerant flows through the by-pass capillary (7) to the compressor that therefore consumes less energy. The pre-cooled air enters the evaporator (2) where it is cooled to the required dew point by the incoming refrigerant liquid that changes phase and becomes a low pressure gas suitable to continue the process as it returns to the suction side of the refrigerant compressor (3). The exiting cold dry compressed air then returns to the Air-to-Air heat exchanger (1) where it is reheated by the incoming air, to prevent sweating in your plant.



## Built to perform

### HIGH EFFICIENCY HEAT EXCHANGER



### NEW ADVANCED 3-IN-1 HEAT EXCHANGER

3-in-1 compact aluminium heat exchanger including an Air-Air heat exchanger, the evaporator and a separator combined in a single module.

This advanced heat exchanger has been engineered specifically to maximize the heat transfer coefficient and to guarantee industry leading pressure drops.

#### Air-to-Air Heat Exchanger

Hot and moist air enters the Air-to-Air heat exchanger where it exchanges heat in total counter flow with the outgoing cold air. Precooling saves energy by reducing the heat load on the evaporator section.

#### Evaporator (Air-to-Refrigerant Heat Exchanger)

The pre-cooled air enters the evaporator where it is cooled to the required dew point by exchanging heat in counter flow with the evaporating refrigerant, allowing maximum thermal exchange. The dew point temperature is held within its optimum performance range by the microprocessor even under differing ambient conditions.

#### Demister Separator

After cooling the cold air enters the high efficiency stainless steel separator where the condensate is removed by a demister falling into the generously dimensioned drainage chamber or sump for disposal through the microprocessor controlled drain.

The cold dry compressed air passes through the secondary side of the Air-to-Air heat exchanger where it is reheated by the hot inlet air it is precooling. Reheating prevents downstream pipe sweating.

### HIGH-PERFORMANCES CONDENSER

The air-cooled condenser is designed to ensure operation up to 115 °F external temperature and to achieve very high energy efficiency values. DEiT 0010-0100 are supplied with tubeless condenser with steel fins protected by a double layer dipping painting. DEiT 0125-1000 are equipped with a condenser coil with copper tubes and aluminium fins. Thanks to the ducted condenser coil, the maintenance activities are possible also with dryer ON. Condenser filters standard on DEiT 0600 - 1000.

### REFRIGERATION COMPRESSORS FULLY HERMETIC

Piston compressors (DEiT 0010-0325) ensure high reliability and long service life.

Scroll compressors (DEiT 425-1000) offer reduced energy consumptions, low vibrations, less moving parts and high reliability.

### ENVIRONMENTALLY FRIENDLY REFRIGERANTS

R134a refrigerant: DEiT 0010-0325

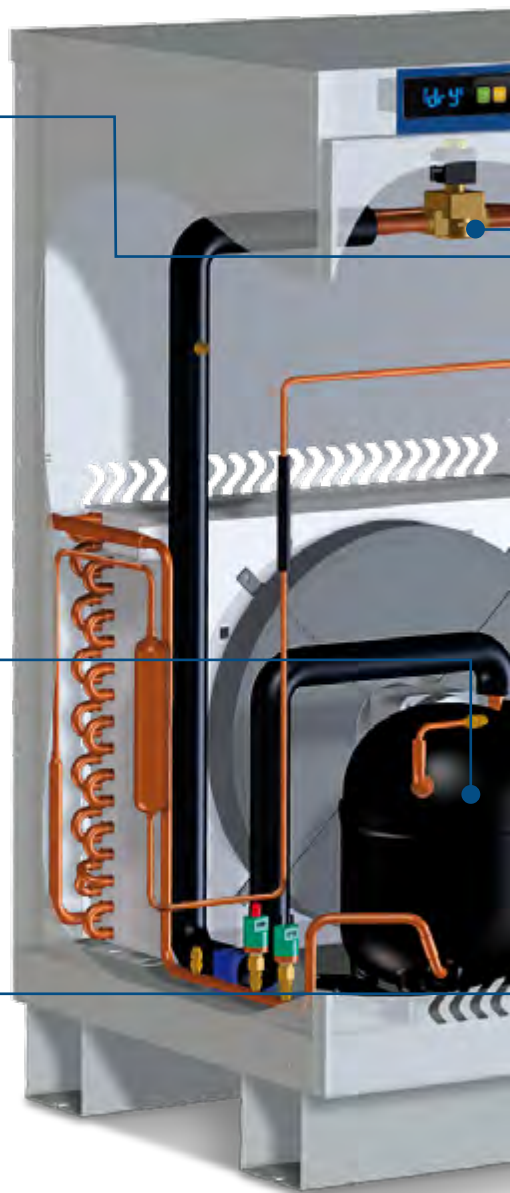
R410A refrigerant: DEiT 0425-1000

### HIGH EFFICIENCY 3-IN-1 HEAT EXCHANGER

3-in-1 compact aluminium heat exchanger including an Air-Air heat exchanger, the evaporator and a separator combined in a single module.



It is mandatory to install a pre-filter (min. filtration grade P 3µm) to prevent module and drainer clogging.





### ELECTRIC POWER AND CONTROL PANEL

The electrical cabinet (mod. DEiT 0425 ÷ 1000, DEiT 0200 3ph and DEiT 0250 3ph) and the wirings (mod. DEiT 0010 ÷ 0250 1 ph) are designed in compliance with the standard UL 508A. The electrical panel protection degree is NEMA Type 1 (IP22 for models with wirings, IP54 for models with electrical cabinet). The electrical cabinet is supplied with an interlocked door main switch to prevent access while power supply is on. A phase monitor standard provides protection against phase loss and phase reversal (mod 0425 ÷ 1000).

### PULSE TECHNOLOGY

The microprocessor adapts the working cycle to the real working conditions by controlling through "pulses" the opening and closing of the solenoid valve.

### CONDENSATE DRAINS

All the dryers have microprocessor controlled drains. The drain open time and cycle time are fully adjustable and the settings can be locked in to avoid tampering. Zero loss drain (option): a level sensor measures the level of the condensed moisture and automatically opens a valve to drain it off, preventing any pressure loss.

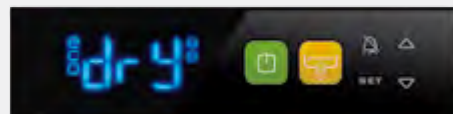
### ROBUST CABINET AND STRUCTURE

Heavy duty structure with panels protected by an epoxy polyester power coating RAL 7035. Simple and safe handling by forklift or pallet truck.

### ADVANCED DIGITAL CONTROL

DE iTech features advanced microprocessor control technology, with all models fitted with easy to use digital controls.

A comprehensive digital display keeps the user fully informed. Maintenance operations are simplified, and remote supervision RS485 can easily be supplied.



- The display shows continuously with icon-based menus the following parameters:
  - Status of the dryer (OFF/dry/hdP);
  - Status of the compressor;
  - Status of condensate drain;
  - Energy saving level;
  - Alarms.
- 3 coded alarms ensuring faultless dryer operation.
- Programmable user alarm.
- Service warning, informing user that preventive maintenance should be carried out.
- Condensate drain control and programming, including manual drain test function.
- Remote ON/OFF function.
- General alarm contact for remote alarm indication.
- Possibility to connect the dryer to a supervisor system via RS485 Modbus (option).



Cooling, conditioning, purifying.

## Product specifications

Model	Airflow scfm (1)	Nominal pressure drop psi	Power supply V / Ph / Hz				Nominal absorption power kW (2)	Air connections NPT	Overall dimensions (inches)							Weight lbs (3)
			115/1/60	230/1/60	230/3/60	460/3/60			A	B	C	D	E	F	G	
DEiT 0010	10	0,3	x				0,14	3/8"	12,5	11,9	15,3	0,6	13,9	1,3	2,8	40
DEiT 0015	15	0,5	x				0,19	3/8"	12,5	11,9	15,3	0,6	13,9	1,3	2,8	40
DEiT 0025	25	0,7	x				0,30	1/2"	14,1	11,9	16,3	0,8	14,6	1,3	2,8	46
DEiT 0035	35	1,1	x				0,36	1/2"	14,1	11,9	16,3	0,8	14,6	1,3	2,8	48
DEiT 0050	50	0,4	x				0,42	1"	20,2	14,9	24,6	1,1	18,9	2,7	2,9	79
DEiT 0075	75	0,8	x				0,68	1"	20,2	14,9	24,6	1,1	18,9	2,7	2,9	90
DEiT 0100	100	1,4	x	x			0,74	1"	20,2	14,9	24,6	1,1	18,9	2,7	2,9	93
DEiT 0125	125	1,3	x	x			0,91	1"	26,7	20,1	33,8	1,1	26,9	3,2	3,1	165
DEiT 0160	160	2,1	x	x			1,17	1"	26,7	20,1	33,8	1,1	25,4	4,7	3,7	165
DEiT 0200	200	0,8		x			1,17	1 1/2"	29,7	21,8	39,2	1,2	29,6	5,9	4,1	205
					x	x			40,6	30,6	40,9	1,2	31,3	5,9	4,1	331
DEiT 0250	250	1,3		x			1,39	1 1/2"	29,7	21,8	39,2	1,2	29,6	5,9	4,1	207
					x	x			40,6	30,6	40,9	1,2	31,3	5,9	4,1	331
DEiT 0325	325	1,5		x	x	x	1,58	2"	40,6	30,9	40,9	1,2	29,4	5,9	5,7	397
DEiT 0425	425	2,3			x	x	2,49	2"	40,6	30,9	40,9	1,2	29,4	5,9	5,7	412
DEiT 0500	500	3,0			x	x	2,68	2"	40,6	30,9	40,9	1,2	29,4	5,9	5,7	417
DEiT 0600	600	2,0				x	2,75	2 1/2"	46,1	36,4	44,5	1,6	33,1	7,9	6,5	580
DEiT 0700	700	2,6				x	3,16	2 1/2"	46,1	36,4	44,5	1,6	33,1	7,9	6,5	589
DEiT 0850	850	1,9				x	3,85	2 1/2"	46,1	36,4	44,5	1,6	33,1	7,9	6,5	626
DEiT 1000	1000	2,3				x	5,21	2 1/2"	46,1	36,4	44,5	1,6	33,1	7,9	6,5	630

(1) Air flow rate: data refers to the following conditions: air FAD 68 °F/14,5 psi(a), pressure 100 psi(g), ambient temperature 100 °F, air inlet temperature 100 °F, according to CAGI (ADF100) standards, PDP from 33 °F to 39 °F.

(2) Total Dryer absorbed power at rated operating conditions and at 115/1/60 or 460/3/60 power supply.

(3) Weights are net (without packing and for timed drain configuration).

Refrigerant fluids: R134a (DEiT 0010-0325), R410A (DEiT 0425-1000). Protection class IP22 (NEMA Type 1).

Maximum inlet temperature: 158 °F (DEiT 0010 - 0325); 135 °F (DEiT 0425 ÷ DEiT 1000).

Maximum ambient temperature: 115 °F. Minimum ambient temperature: 41 °F. Maximum air pressure: 232 psig.

The correction factors in the following table should be used as a guide only; for accurate selection at conditions differing from the above the selection software should be utilised.

**Capacity Correction Factors** (indicative values): Air flow (scfm) = RATED VALUE x K1 x K2 x K3 x K4.

Air pressure	psig	50	75	100	125	150	175	232
Correction factor	K1	0,75	0,9	1	1,06	1,09	1,13	1,19

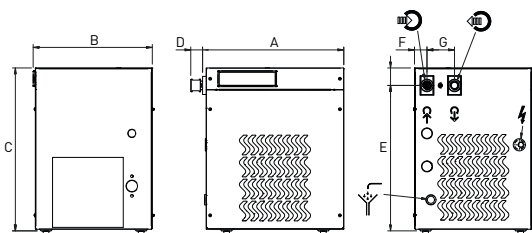
Air inlet temperature	°F	90	100	110	120	130	135	158
Correction factor	K3	1,23	1	0,81	0,68	0,61	0,57	0,44

Pressure dew point	°F	38	40	45	50
correction factor	K2	1	1,05	1,21	1,36

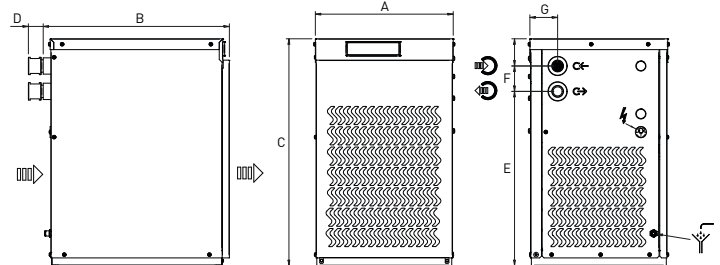
  

Ambient temperature	°F	90	100	110	115
Correction factor	K4	1,07	1	0,93	0,88

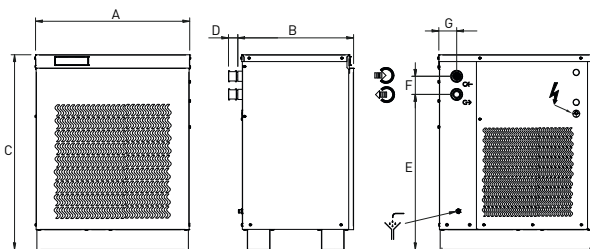
DEiT 0010 - 0035



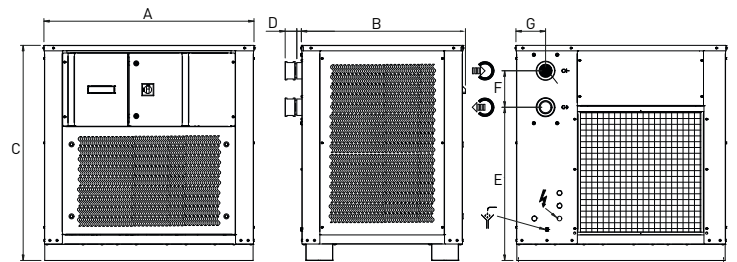
DEiT 050 - 0100



DEiT 0125 - 0250\*



DEiT 0200 - 1000\*\*



(\*) Mod. 0200-0250 power supply 230/1/60

(\*\*) Mod. 0200-0250 power supply 230/3/60 or 460/3/60

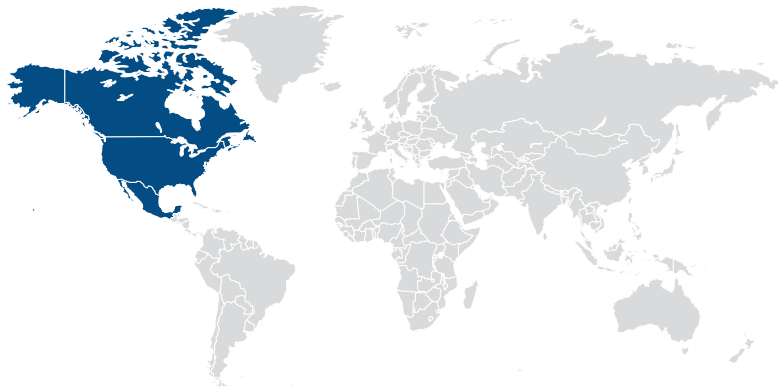
Complete your compressed air treatment system with MTA aftercoolers, separators, filters, adsorption dryers, drains, oil-water separators and chillers.





www.mta-usa.com

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MTA is ISO9001 certified, a sign of its commitment to complete customer satisfaction.



cUL Certification



Cooling, conditioning, purifying.