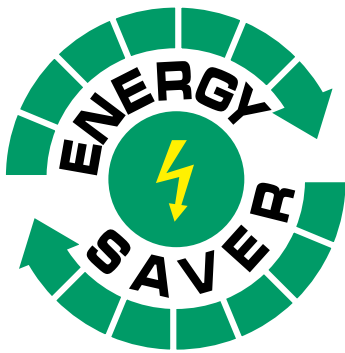




**TRD - ENERGY SAVER**  
**Thermal Refrigerated Air Dryers**



## Values that make a great deal of cents!

We are a company that does not believe in compromises! Since our inception, over 30 years ago, Russell Air Dryers has taken pride in producing quality compressed air dryers for Industrial and Process users that not only dry air to the lowest dewpoint in their class (2°C) but also provide *real cost savings* when running compressed air plant. Tens of thousands of our patented air dryers have been supplied to satisfied customers around the world where our reputation for Quality and Reliability is legendary. Superior performance, low running costs, quality and reliability are values we steadfastly uphold and engineer into our products. **TRD - ENERGY SAVER** dryers do precisely what they imply and will help users overcome the burden of the Climate Change Levy. Buy into our values and don't compromise your air system and resources with anything less - it can make a great deal of sense!

## WATER - the essence of life, curse of the pneumatics Industry!

Why is water so much a poison to industrial compressed air users, and where does it come from?

Water in a compressor system is simply a nuisance! Apart from rust and scale, it washes away lubricant from air tools interferes with control valves, resulting in product wastage, inconvenient malfunctions, inaccuracies and costly downtime.

This water originates from the air that enters the compressor and although it enters as a harmless vapour, it changes its state during compression and aftercooling to form water droplets which in

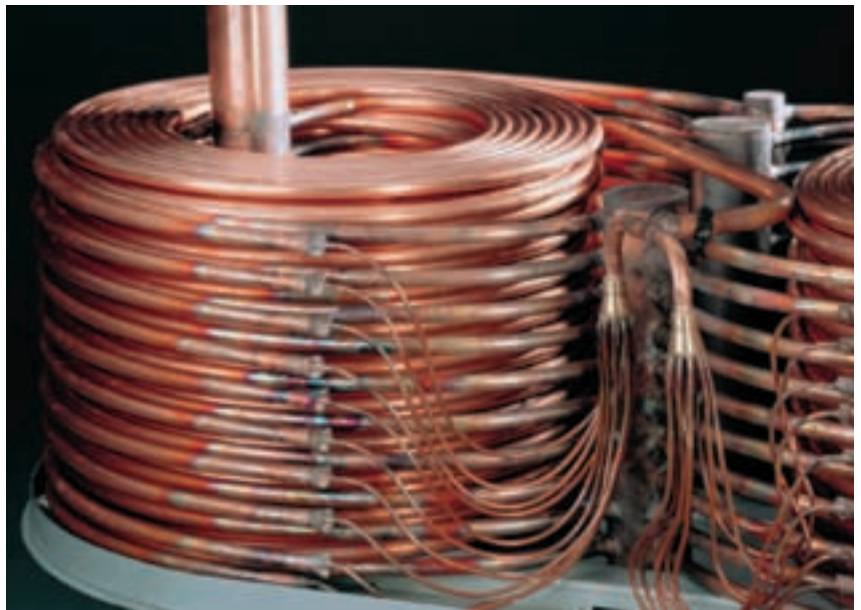


turn causes all the associated problems.

On a cool day a 37 kW air compressor will suck in almost 1 gallon of water as a vapour, every single day! Installing a quality, energy saving dryer within the process will prevent these costly diseases by eliminating almost all of the harmful water.

In return, the process will be assured consistently clean and dry air, delivered with an efficiency, reliability and running cost that has never been equalled by any ordinary dryer.

You are rewarded by more productivity, profitability and complete peace of mind.



## VALUE FOR MONEY - WITHOUT COMPROMISE

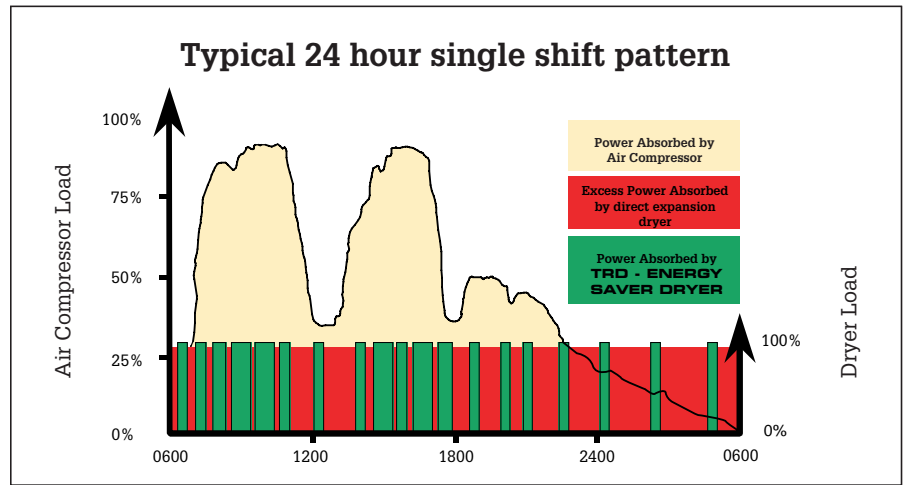
There are many refrigerated dryers on offer today that boast high performance with low pricing, some designs also claim to save on energy costs, however, none can match the real value for money that is delivered by using a **TRD - ENERGY SAVER** dryer. Unique heat exchanger designs coupled with reliable and proven refrigeration equipment,

guarantees year after year of trouble free quality air supply. Also, the remarkably low running costs, compared to all other direct expansion designs, means that in the majority of instances, the savings made will pay for any initial investment, very quickly indeed.

## ENERGY SAVINGS - WITHOUT COMPROMISE

Most installations have fluctuating demands for compressed air throughout the day where the air compressor regulates its output to match the usage pattern. However, the compressor is usually selected to meet the maximum demand of the plant which means that there are many occasions where the compressor is working less than its full load capability as can be seen from the diagram opposite.

As the dryer is also selected to cope with the worst case conditions (max flow rate, highest ambient, highest inlet temperature and lowest inlet pressure), there are also many periods where full dryer potential is not required. To ensure dry air can be delivered into the system at any given time, it is essential that all direct expansion dryers are kept operational 100% of the time which unnecessarily wastes energy and costs money. **TRD - ENERGY SAVER** dryers on the other hand simply shut down during low or no demand periods thereby conserving energy and reducing running costs.



The above schematic is typical for an air compressor loading during a normal working day in a medium sized single shift factory system. To match this particular load demand, the direct expansion dryer would have to operate continuously, whereas in this scenario the **TRD - ENERGY SAVER** shuts down for approx 56% of the time but still provides a consistent 2°C dewpoint all of the time!

Power savings as much as 80% are realistic and can quickly payback the initial investment of the dryer. Ask about our **ENERGY SAVER CALCULATOR** to see how much you can save on your own compressor system!

## QUALITY FEATURES - WITHOUT COMPROMISE:

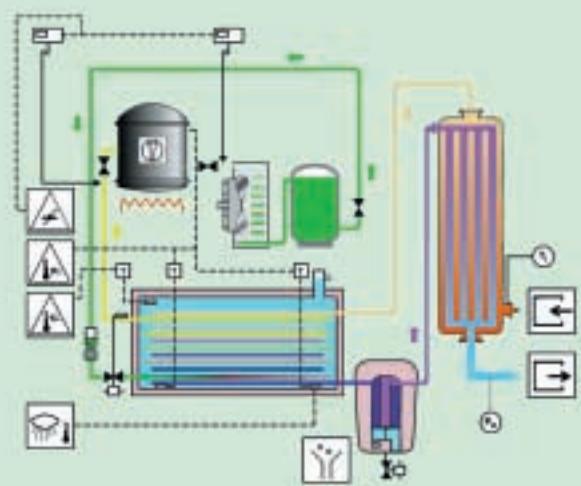
- ❖ **High Thermal Efficiency**
  - Constant Dewpoint
- ❖ **Operation by Demand**
  - Reduced Running Costs
- ❖ **Minimal Pressure Loss**
  - Lower Compressor Costs
- ❖ **Unique Heat Exchangers**
  - Ideal solutions
- ❖ **Easy Maintenance**
  - Accessibility
- ❖ **Efficient Water Removal**
  - DRY air at all times
- ❖ **Ergonomic Control Panel**
  - No complications
- ❖ **Reliability**
  - Proven track record
- ❖ **Environmentally Friendly**
  - CFC free
- ❖ **Quality Build**
  - Built to last

## OPERATION

Wet compressed air enters the dryer and is directed to the smooth bore tube in tube pre-cooler / re-heater.

The air entering is cooled down by the outgoing cold and dried air, which in turn reduces the load on the refrigeration compressor, saving on energy costs.

The air now passes to the "Thermal Heat Exchanger", which contains banks of spiral coils immersed in a special liquid Thermal Energy Storage Medium that reduces the air temperature to its specified preset dew point of 2°C. All the condensed moisture collects into droplets and is separated from the air stream in the high efficiency water separator where all the



condensate is discharged by an energy saving drain. Finally, the cool and dry air is reheated by thermally mixing it with the incoming air that also reduces its relative humidity, thus preventing corrosion and annoying condensation on the downstream pipework.

# TRD - ENERGY SAVER DRYERS: TEN DECISIVE ARGUMENTS

## High Thermal Efficiency

The large capacity liquid Thermal Energy Storage Medium with its high specific heat capacity compared to solid mass systems, guarantees longer periods of "shut-down" and consistent energy savings. Consistent pressure dewpoints and no freeze-ups are the benefits of using an oversized storage medium.

## Operation by Demand

An accurate, integrated start/stop control system precisely monitors and maintains the temperature within the Thermal Energy Storage Medium at a constant 2°C which ensures that the refrigerant compressor only runs when necessary, saving costs and increasing its life span.

## Minimal Pressure Loss

Smooth bore, large radius copper tubes without any additional turbulators means a low pressure drop across the dryer, when new and also in the many years of service to come!

The result is ongoing lower running costs for the air compressor!

## Unique Heat Exchangers

Compact spiral circuit designs provide ultra high thermal heat transfer efficiencies - the ideal solution for your compressed air demands.

## Easy Maintenance

Careful design with a thought for maintenance sees all serviceable items located in easily accessible locations. Even the Thermal Energy Storage Medium and heat exchangers can be accessed for inspection.

## Efficient Condensate Removal

A wide-band separator with an efficiency greater than 99.9% together with an energy saving drain, ensures that condensate is reliably removed from the compressed air without unnecessary energy losses.

## Ergonomic Control Panel

Simple and easy to read gauges with a synoptic display panel provide essential dryer information such as pressure dewpoint.

## Reliability

30 years of specialist experience guarantees an optimised, reliable dryer that requires virtually no maintenance, and keeps on providing dry air - day after day, for years to come.



## Quality Build

All dryers are built from Industrial standard componentary by dedicated craftsmen. To maintain consistent Quality, we follow ISO 9000 quality standards.

## Environmentally Friendly

All dryers use the latest energy saving, Ozone friendly R404a refrigerant, which is completely CFC-free, helping to protect the earths' environment.

# TECHNICAL CHARACTERISTICS

Model	Capacity @ 2°C PDP m <sup>3</sup> /min	Capacity @ 7°C PDP m <sup>3</sup> /min	Capacity @ 10°C PDP m <sup>3</sup> /min	Average power KW*	Air connections	Nett weight kg	Dimensions LxWxH cm
TRD 17	1.7	2.0	2.2	0.19	1" BSPF	92	61 x 61 x 77
TRD 20	2.1	2.4	2.6	0.23	1" BSPF	100	61 x 61 x 77
TRD 25	2.5	3.0	3.2	0.28	1" BSPF	104	61 x 61 x 77
TRD 30	3.0	3.5	3.9	0.43	1" BSPF	116	61 x 61 x 77
TRD 45	4.5	5.3	5.8	0.62	1 1/2" BSPF	156	77 x 67 x 123
TRD 65	6.5	7.5	8.2	0.64	1 1/2" BSPF	187	77 x 67 x 123
TRD 85	8.5	9.9	10.7	1.20	1 1/2" BSPF	236	77 x 67 x 123
TRD 120	12.1	13.9	15.2	1.28	2" BSPF	387	84 x 83 x 170
TRD 140	14.0	16.1	17.7	1.28	2" BSPF	420	84 x 83 x 170
TRD 170	17.0	19.6	21.2	1.66	2" BSPF	460	124 x 83 x 170
TRD 205	20.5	23.5	25.6	2.02	2" BSPF	518	124 x 83 x 180
TRD 245	24.5	28.3	30.4	2.25	80mm DIN 2633	586	124 x 83 x 170
TRD 285	28.5	32.9	35.5	2.75	80mm DIN 2633	662	124 x 83 x 170
TRD 385	38.5	44.5	48.3	3.55	100mm DIN 2633	1010	124 x 83 x 170
TRD 440	44.2	50.9	55.2	4.50	100mm DIN 2633	1098	191 x 105 x 204
TRD 515	51.5	59.4	64.3	4.71	100mm DIN 2633	1210	191 x 105 x 204
TRD 625	62.5	72.3	78.5	5.93	125mm DIN 2633	1319	191 x 105 x 204
TRD 880	88.0	101.0	110.0	6.73	150mm DIN 2633	1498	191 x 105 x 204

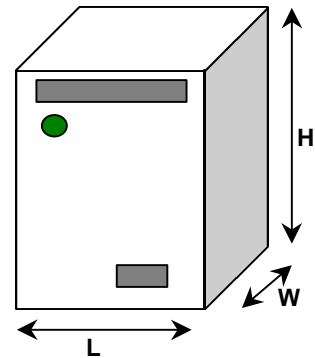
Performances are in accordance with ISO 7183  
\* At 80% load in 2 shifts.

## REFERENCE CONDITIONS

Inlet compressed air pressure:	7 bar g
Inlet compressed air temperature:	35°C
(100%RH)	
Ambient temperature	25°C

## OPERATING LIMITATIONS

Operating pressure:	2 to 16 bar g
Inlet air temperature:	55°C
Ambient temperature:	0°C to 43°C (47°C Option)



## CORRECTION FACTORS

For operating outside of reference conditions

Operating pressure (bar g)	5	6	7	8	9	10	11	12	13	14	15	16
Coefficient (Pc)	0.96	0.98	1.0	1.04	1.06	1.09	1.11	1.13	1.16	1.18	1.2	1.22

Inlet temperature (°C)	30	35	40	45	50	55
Coefficient (Ic)	1.11	1.0	0.89	0.79	0.7	0.62

Ambient temperature (°C)	25	30	35	40	43	47
Coefficient (Ac)	1.0	0.95	0.9	0.85	0.84	0.8

## EXAMPLE

Required flow capacity :	12 m <sup>3</sup> /min
Operating pressure:	10 bar g
Inlet air temperature:	40°C
Ambient temperature:	35°C

Revised dryer capacity	= required capacity / (Pc * Ic * Ac)
	= 12 m <sup>3</sup> /min / (1.09 * 0.89 * 0.9)
	= 13.74 m <sup>3</sup> /min
Dryer selection:	= TRD 140 for 2°C PDP or TRD 120 for 6°C PDP

# **ENGINEERING VALUES WITHOUT COMPROMISE**

