Intelligence: Buran Ultrapulse

Buran Refrigeration Compressed Air Dryer

1. Ultrapulse
2. Compressed-air inlet
3. Compressed-air outlet
4. Condensate separator
5. Condensate drain
6. Refrigerant condenser
7. Hemetically sealed refrigerant compressor
8. Refrigerant-to-air heat exchanger
9. Air-to-air heat exchanger

CE/CE 0045

Annual energy savings of **40%** and more

Annual savings with the Microprocessor-based Ultrapulse Control

	Standard Refrigeration Dryer with hot-air gas by-pass	Donaldson Refrigeration Compressed Air Dryer with Ultrapulse Control
Volume flow in m³/h	1000	1000
Pressure dewpoint	3°C	3°C
Annual energy consumption in kWh	6137	3729
Annual energy costs in €	**491**	**298**

The example for energy savings is based on:
Two shifts industrial production, 5 days a week (4,000 hours a year)
and energy costs of 8 Eurocents per kilowatt hour

Technical alterations reserved (TS 09/2006)

Qualified for Energy Technology List
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Refrigeration Compressed Air Dryer Buran Ultrapulse

The Refrigeration Compressed Air Dryer with Intelligence: Buran Ultrapulse

There is more to compressed air than just compressing air

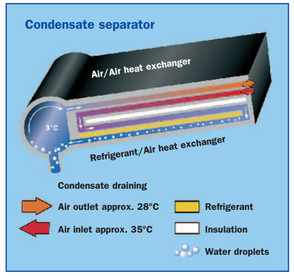
Compressed air is an indispensable source of operating and processing power in all areas of industrial and technical production. To prevent production downtimes compressed air must be clean, dry and oil free. Compressed air is generated by raising the pressure of large volumes of ambient air. Usually this air contains harmful substances, such as dirt particles and moisture in the form of water vapour. The water vapour condenses and can lead to operational breakdowns and considerable but avoidable costs.

The important advantages of this heat exchanger:

- Generously sized air-to-air and refrigerant-to-air heat exchanger with a large power density
- Integral condensate separation system
- Self-cleaning due to generously dimensioned flow channels
- Low differential pressure
- Corrosion resistant aluminium / stainless steel construction

How the Buran functions?

Compressed air entering the dryer is precooled in the air-to-air heat exchanger by the outgoing cold compressed air. The precooled air then passes through the refrigerant-to-air heat exchanger where it is further cooled to the required pressure dewpoint. The moisture in the compressed air condenses out and is collected and discharged automatically. Finally, the cold discharged air is rewarmed by the incoming compressed air. This saves energy and prevents moisture from forming beyond the dryer in the compressed air system.



Ultrapulse: State of the art in fridge dryer regulation

This microprocessor-based control device is the heart of this generation of fridge dryers. By monitoring parameters such as cooling temperature, pressure in the fridge circuit as well as dryer specific parameters, the actual operational condition of the dryer is calculated. If indicated by the measured data, the fridge compressor will be shut off for a pre-calculated period. The pulsating measuring of the temperature (several times per second) and the use of the aluminium heat exchanger as a storage mass ensures a quick response to load changes without risking dewpoint spikes above the set level. In addition, the processor controls monitors the condensate drain which works without loss of compressed air.

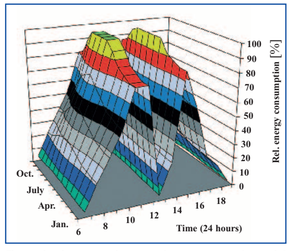
Important advantages of the dryer generation

- Ultrapulse-controlling from SD 0100 AP as standard
- Multi Functional Display
- load controlled energy consumption, reduction down to 10% of nominal energy consumption
- load controlled drain
- low voltage monitoring
- Display is changeable from °C to °F
- Optional: dry contact for alarm signal and analogue signal 0-10 V for dewpoint temperature
- High operation parameters
- Environmentally friendly refrigerant R-134a
- Compact and easy to install cabinets

Microprocessor based control device

The Multi Functional Display shows all relevant parameters:

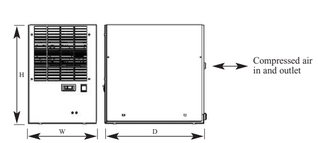
- Current pressure dewpoint
- Operation mode Normal/Summer/Automatic
- Power consumption related to the whole life time
- Alarm signal
- Alarm history
- Maintenance necessary
- Operation status of the drain
- Operation hours
- Fridge compressor on/off
- Current energy consumption



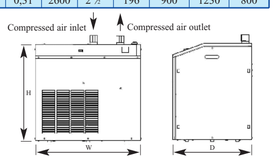
This graphic shows a typical compressed air consumption of a one shift industrial plant. The full capacity is only required for a short time.

Technical Data Buran DC 0020 A - SD 1650 AP

	Type	Airflow	Airflow	Pressure drop	Power supply	Power consumption kW			Cooling air	Air connection	Weight	Dimensions mm		
						100% Full load	50% Part load	0% zero			kg			
		m³/h	m³/min	bar	V/50 Hz				m³/h	BSP		Width	Height	Depth
Compact	DC 0020 A	20	0,33	0,06	230	0,15	0,13	0,11	380	½"	25	310	450	450
	DC 0035 A	35	0,58	0,15	230	0,16	0,14	0,12	380	½"	26	310	450	450
	DC 0050 A	50	0,83	0,19	230	0,22	0,20	0,18	320	½"	27	310	450	450
	DC 0065 A	65	1,08	0,22	230	0,24	0,21	0,19	320	½"	28	310	450	450
	DC 0085 A	85	1,42	0,24	230	0,26	0,23	0,20	320	½"	29	310	450	450
Classic	SD 0100 AP	100	1,67	0,14	230	0,35	0,19	0,04	740	1"	48	600	550	450
	SD 0125 AP	125	2,08	0,22	230	0,46	0,25	0,05	740	1"	50	600	550	450
	SD 0150 AP	150	2,50	0,25	230	0,70	0,40	0,07	1000	1"	52	600	550	450
	SD 0175 AP	175	2,92	0,28	230	0,74	0,41	0,08	1000	1"	53	600	550	450
	SD 0225 AP	225	3,75	0,23	230	0,76	0,39	0,08	1300	1 ½"	70	600	650	600
	SD 0300 AP	300	5,00	0,24	230	0,88	0,48	0,09	920	1 ½"	80	600	650	600
	SD 0375 AP	375	6,25	0,29	230	0,95	0,50	0,09	920	1 ½"	95	600	650	600
	SD 0450 AP	450	7,50	0,15	230	1,08	0,59	0,11	920	1 ½"	97	600	650	600
	SD 0550 AP	550	9,17	0,23	400	1,25	0,69	0,13	2900	2"	150	900	1230	800
	SD 0650 AP	650	10,83	0,20	400	1,28	0,70	0,13	2900	2"	152	900	1230	800
	SD 0750 AP	750	12,50	0,26	400	1,45	0,80	0,15	2900	2"	166	900	1230	800
	SD 0850 AP	850	14,17	0,29	400	1,80	0,99	0,18	2600	2"	175	900	1230	800
	SD 1000 AP	1000	16,67	0,27	400	2,40	1,32	0,24	3100	2 ½"	177	900	1230	800
	SD 1175 AP	1175	19,58	0,29	400	2,56	1,41	0,26	2600	2 ½"	180	900	1230	800
	SD 1350 AP	1350	22,50	0,21	400	2,80	1,54	0,28	2600	2 ½"	185	900	1230	800
	SD 1500 AP	1500	25,00	0,25	400	2,95	1,65	0,30	2600	2 ½"	190	900	1230	800
	SD 1650 AP	1650	27,50	0,26	400	3,10	1,71	0,31	2600	2 ½"	196	900	1230	800



Buran Compact DC 0020 A - DC 0085 A



Buran Classic SD 0100 AP - SD 1650 AP

Volume flow referred to the suction status of the air compressor (+20 °C, 1 bar), with compressed air inlet temperature 35 °C, operating overpressure 7 bar, ambient temperature 25 °C, pressure dewpoint +3 °C, measured at dryer outlet in accordance with DIN ISO 7183. Permitted ambient temp.: min. +2 °C – max. 50 °C, max. operating pressure: 16 bar, higher pressure on request. Permitted inlet temp.: max. 70 °C. Protection class IP 20, noise pressure level: dB(A) <70.

Working pressure	bar g	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Factor	f_p	0,60	0,70	0,80	0,88	0,94	1,00	1,04	1,06	1,09	1,10	1,12	1,14	1,15	1,16	1,17

Dewpoint	°C	3	5	7	10	15
Factor	f_{pd}	1,00	1,12	1,24	1,36	1,45

Ambient temperature	°C	25	30	35	40	45	50
Factor	f_{tu}	1,00	0,97	0,94	0,87	0,75	0,62

Compressed air inlet temp.	°C	30	35	40	45	50	55	60	65	70
Factor	f_{te}	1,28	1,00	0,88	0,75	0,58	0,48	0,38	0,42	0,40

Corrected dryer capacity =
Standard dryer capacity x f_p x f_{pd} x f_{tu} x f_{te}