

DRYING



Energy-efficient drying systems

**LUXOR**

 think materials management



# LUXOR

## CUSTOMER-ORIENTED DRYING SOLUTIONS FOR PLASTIC PROCESSORS



### LUXOR central drying systems

Today, modern drying systems must be able to do more than just function reliably while operating in accordance with demanding specifications. They must also be economical, energy-efficient in operation and meet the very high requirements demanded for the manufacture of top quality finished products.

motan is continually striving to develop better and more energy-efficient ways to dry plastics. With the patented ETA-process® drying technology, motan had already set new standards. Now with the new ETA plus® technology, motan has taken another step forward. The system is a combination of the well-proven temperature adaptation and heat recovery systems, but now with a new dry airflow control which automatically considers variations in material throughput rates and material inlet temperatures. Compared with conventional drying systems, energy savings of up to 64 percent are possible.

### Economy, reliability and quality

motan's drying systems are designed to operate at maximum efficiency and with minimal maintenance. The integration of dry-air conveying, line purging as well as manual and automatic manifold stations provide maximum flexibility and productivity. This means for the processor: maximum production time by minimising the down-time caused during material changes.

Proven and reliable drying technology using stationary desiccant beds and process heaters mounted directly at the drying bin enhances the efficiency of the drying process in every phase. It reduces heat loss and enables precise temperature control. motan's twin and three bed drying technology, in combination with closed-loop cool-down during regeneration, results in a constant low dew-point throughout the drying process.

With the combination of temperature adaptation, airflow control and the heat recovery system, the new ETA plus® technology guarantees precise temperature control and elimination of material degradation by ensuring that the plastic granulate is not over or under dried and offers considerable energy savings.



### LUXOR central drying systems

motan's large range of LUXOR dryers is available in both standard and advanced versions.

The advanced LUXOR A series consists of ten models with a drying capacity from 80 to 2400 m<sup>3</sup>/h. Each advanced system dryer can be combined flexibly with all LUXORBIN A drying bins from 15 to 2400 litres.

The standard LUXOR S dryer series consists of four models with a dry-air capacity of 250 to 900 m<sup>3</sup>/h. These system dryers can be combined with all LUXORBIN S drying bins from 100 to 600 litres.

Furthermore, motan has a large assortment of different sized mobile LUXOR compact dryers and drying bins available ex stock.

### LUXOR drying bins

The LUXORBIN drying bins are available in different sizes from 15 to 2400 litres. As standards, all motan system drying bins are made of stainless steel, are completely insulated, and have individual heating

as well as temperature control. The cylindrical shape of the bins ensures uniform drying of the material. A hinged lid enables easy access from above.

The larger system bins from 100 to 2400 litres are equipped with especially large clean-out doors fitted with a sight glass. They are formed to the shape of the bin in order to optimise material flow and simplify cleaning. The smaller bins with 15, 30 and 60 litres are equipped with a sight glass and cleaning is carried out via the hinged lid.

The bins are mounted on solid frames and have a control box mounted at the front of the bin for optimum accessibility. The long-life solid state relays guarantee precise and reliable temperature control that avoids damaging thermally-sensitive materials.

In addition, motan offers a range of extra large drying bins with volumes from 3,000 to 13,000 litres. These are also available with gas heating.

LUXOR 80-160



LUXOR 250-1200



LUXOR 1800-2400



## LUXOR central drying systems

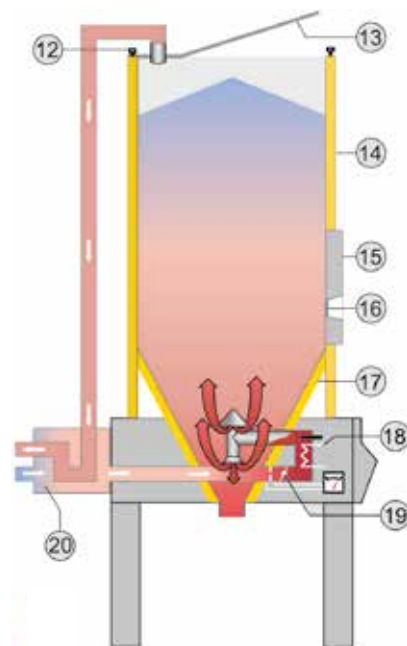
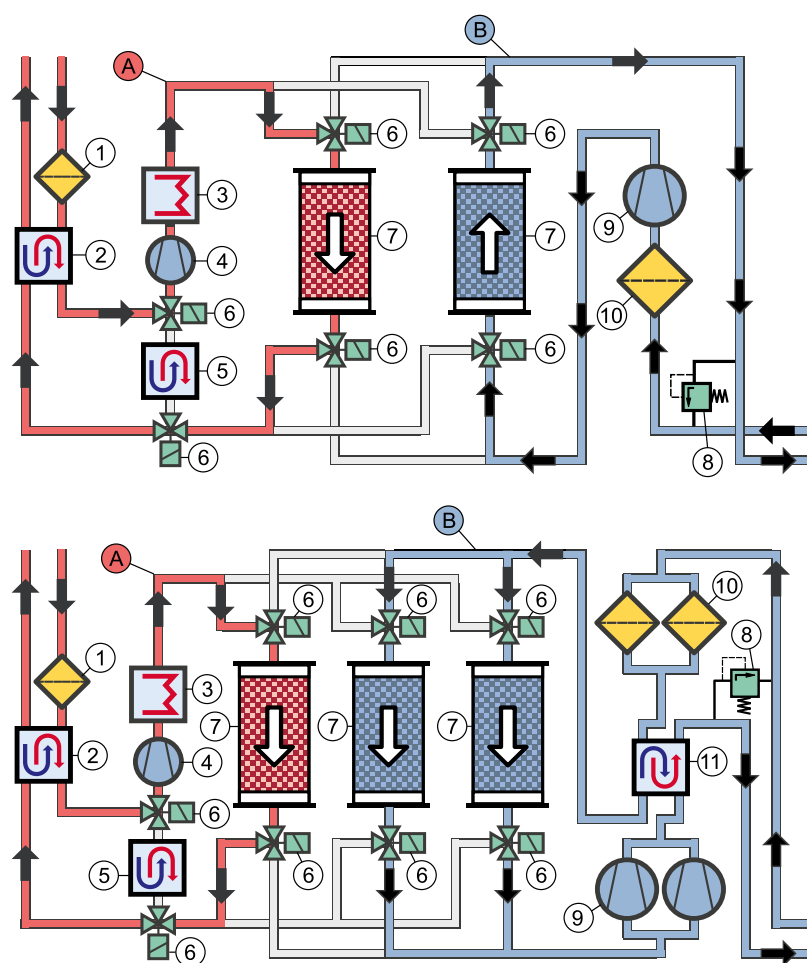
The LUXOR series dryers are equipped with either two or three fully insulated stationary desiccant beds. During regeneration, the air used to heat up the desiccant beds is pre-heated via a heat exchanger and so saves energy. Closed-loop after-cooling of the desiccant bed with dry air ensures a continuously low dew-point and maximum drying performance.

## Tap the full energy-saving potential of ETA plus®

ETA plus® technology stands for innovative and energy-efficient drying technology which takes three individual factors into consideration:

- The airflow control adapts automatically to the amount of material being dried as well as to seasonal and time-of-day related fluctuations.
- Once the air flow has been reduced to its minimum value, the drying temperature adapts automatically to the amount of material being dried. This guarantees very gentle drying, especially when there is a large drop in material throughput rates.
- When drying with high temperatures, the heat recovery exchanger makes sense because it uses the high exhaust air temperatures to pre-heat the process air resulting in a significant reduction in energy consumption.

Altogether, the combination of airflow control and temperature reduction offers the highest possible energy savings. Compared with conventional drying systems, energy savings of up to 64 percent are possible.

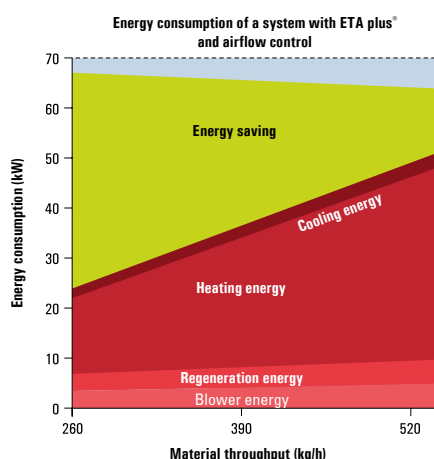


- Regeneration air circuit
- Dry air circuit
- 1. Filter regeneration air
- 2. Heat exchanger regeneration air
- 3. Regeneration air heater
- 4. Regeneration air blower
- 5. Regeneration air cooler
- 6. Bed switching valves
- 7. Desiccant beds
- 8. Safety valve
- 9. Dry-air blower
- 10. Return air filter
- 11. Heat exchanger process air (optional)
- 12. Quick-release fastener
- 13. Hinged lid
- 14. Insulation
- 15. Cleaning door
- 16. Sight glass
- 17. Additional insulation
- 18. Dry-air heater
- 19. Air regulation
- 20. Heat exchanger (optional)

### ETA plus® technology with heat recovery

Finding better ways to save energy has always been a focus for motan. For example, during regeneration when the desiccant beds are heated up, a heat exchanger is used to regain the energy from the hot moist exhaust air and to pre-heat the incoming air. Closed-loop cooling is then used in the cool-down phase so that only dry air is used. This saves energy and avoids moisture re-absorption prior to switch-over in the drying process.

With ETA plus® during drying, energy can be regained from the hot exhaust air leaving the drying bin through an optional heat exchanger. This is then used to pre-heat the process air resulting in large energy savings.



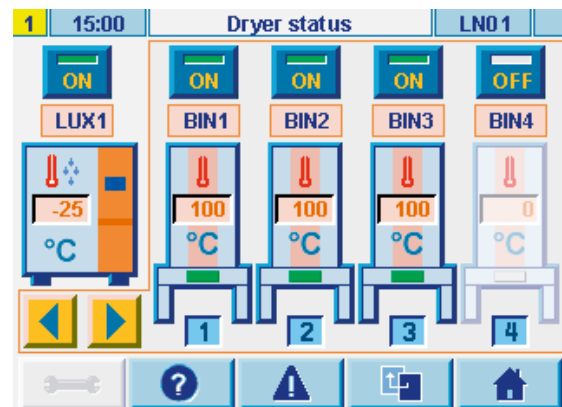
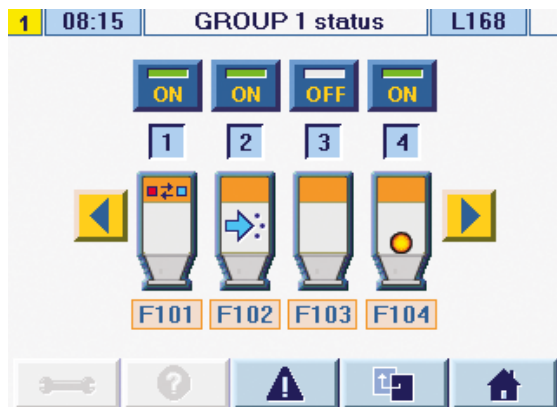
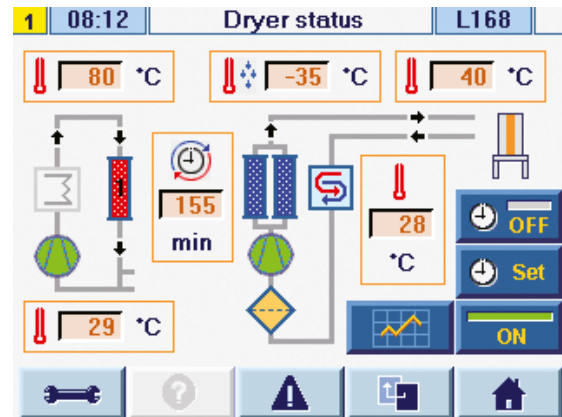
### LUXOR dryers with ETA plus® technology

#### ETA plus® airflow control and temperature adaptation

If some materials are dried for too long or with temperatures which are too high, they can be thermally damaged. With ETA plus® technology, this is automatically avoided with a material throughput dependent airflow control and drying temperature adjustment. The system identifies material throughput variations or changed material inlet temperatures and adjusts the air flow automatically. When production is stopped, the drying temperature can be lowered to a standby temperature. The energy savings gained, as well as an alarm function when material throughputs are too high, are additional benefits offered by ETA plus® technology.



# LUXOR



## LUXOR controls

Operation, monitoring and data management are regulated by modern PLC-supported controls based on industrial PC's in accordance with IEC standards or using Siemens S7 technology. There are different types of dryer controls available - from an individual stand-alone dryer or networked via motan's Ethernet CONTROLnet as part of an integrated central system together with conveying systems and mixing and dosing units.

The LUXORnet control offers user-friendly operation via a colour graphic display with touch screen. LUXORnet incorporates comprehensive functions for operation and process control, recipe management, reporting for quality assurance as well as enhanced service functions and trend charts. The integrated DryingOrganizer function monitors the amount of material being dried and guarantees material-protective drying results by adjusting the drying temperature. ETA plus® airflow control with temperature adaptation is available as an option.

To simplify the input of the material-related drying parameters such as drying time and temperature, a material database is integrated in the control. The database includes a data pool with parameters for about 70 standard materials and can accommodate up to 100 data sets as specified by the customer.

All LUXOR A drying systems have a LUXORnet control and a modern, flexible BUS technology for 16 drying bins as well as for up to 24 machine hopper loaders.

LUXORnet technology stands out due to its modern, Ethernet-based open network architecture enabling standard networking with all other motan CONTROLnet controls.



## Conveying

The hopper loaders on the drying bin are made of stainless steel and glass. They are equipped with a vacuum valve and an implosion valve for efficient filter cleaning after every conveying cycle.

## Suction box

Conveying from the drying bin to the processing machine is done via a no-dead-space-suction box made of stainless steel with integrated purge facility guaranteeing very low residual moisture content and a constant material temperature. Dry-air conveying and line purging are available as an option.

### Performance data

Material  
(throughput rates)

	Drying temp. (°C)	Residence time (h)	LB 15	LB 30	LB 60	LB 100	LB 150	LB 250	LB 400	LB 600	LB 900	LB 1200	LB 1800	LB 2400
ABS	80	2-3	4	8	15	25	38	63	101	155	230	305	455	610
CA	75	2-3	3	6	11	19	28	46	74	115	170	225	335	450
CAB	75	2-3	3	5	10	17	25	42	67	100	150	200	300	400
CP	75	4	2	5	10	16	24	40	63	95	145	190	290	385
EPDM	80	4	2	4	8	13	20	33	53	80	120	160	240	320
PA 6	75	4-6	2	4	8	14	20	34	54	85	125	165	245	330
PA 6 40% GF	80	4-6	3	6	12	20	31	51	82	125	185	245	370	490
PA 6.10 / 66	80	4-6	2	4	8	14	20	34	54	85	125	165	345	330
PA 6.11	80	6	2	3	6	10	16	26	41	65	95	125	190	250
PAEK	160	4	3	6	12	20	29	49	78	120	180	235	355	470
PBT	110	3	4	8	15	26	38	64	103	155	235	310	465	615
PC	120	3	4	8	15	26	38	64	103	155	235	310	465	615
PE	90	1-2	2	5	9	15	23	38	61	95	140	185	275	365
PE black	90	3	2	4	8	14	21	35	56	85	125	170	250	340
PEEK	150	3	4	8	15	26	38	64	103	155	235	310	465	615
PEI	150	3-4	3	6	12	20	29	49	78	120	180	235	355	470
PES	150	4	3	6	12	21	31	51	82	125	185	250	370	495
PET (blow moulding)	163	4-6	3	5	10	17	25	42	67	100	150	200	300	400
PET (film)	170	4-6	3	5	10	17	25	42	67	100	150	200	300	400
PET (preforms)	175	4-6	2	4	8	13	20	33	53	80	120	160	340	320
PET (injection moulding)	120	4	2	5	9	15	23	38	61	95	140	185	275	365
PET G	65	4-6	2	4	8	13	20	33	53	80	120	160	240	320
PI	140	2	5	9	18	30	45	76	121	185	275	365	545	730
PMMA	80	2-3	4	7	14	24	36	60	95	145	215	290	430	575
POM	110	2-3	4	8	17	28	42	69	111	170	250	335	500	670
PP	100	2-3	3	6	12	20	29	49	78	120	180	235	355	475
PP talc 40%	100	2-3	3	6	11	19	28	46	74	115	170	225	335	445
PPO (PPE)	110	2-3	4	8	15	26	38	64	102	155	230	310	465	615
PPS	140	3-4	3	7	14	23	35	58	93	140	210	280	420	555
PS	80	2	5	9	18	30	45	76	121	185	280	370	545	730
PSU	130	3-4	4	8	15	25	38	63	100	150	225	300	450	600
PUR, TPU	90	2-3	3	6	11	19	28	46	74	115	170	225	335	445
PVC	70	1-2	5	9	18	30	45	76	121	185	275	365	545	730
SAN	80	2-3	4	8	16	26	39	65	104	160	235	315	470	625
SB	80	2	4	8	17	28	42	69	111	170	250	335	500	670

The throughput rates indicated in the table are based on approx. values applicable to commercially available materials. Depending on bulk density, initial moisture and chosen drying parameters they can vary  
Material throughput rates for extra large drying bins from 3,000 to 13,000 litres are available on request  
Subject to technical changes

# LUXOR

## TECHNICAL DATA

Technical data										
Dry air generator Type LUXOR S & A	A 80	A 120	A 160	A/S 250	A/S 400	A/S 600	A/S 900	A 1200	A 1800	A 2400
Dry-air flow rate (m³/h)	80	120	160	250	400	600	900	1200	1800	2400
Connected load (kW)	3.1	4.1	5.2	7.1	15.0	19.0	29.0	41.0	57.0	69.0
Power supply (V/Hz)	3/ /PE 400/50									
Compressed air oil and water-free (bar)	5 - 7									
Dimensions										
L1	550	550	550	800	1000	1350	1350	1600	1600	1600
B1	920	920	920	850	1051	1268	1268	1270	2750	2750
H1	1440	1440	1440	1650	2050	2190	2190	2190	2105	2105
Ø d1	60	60	60	60	60	80	80	80	150	150
Ø d2	60	60	60	100	100	150	150	150	300	300
Weight approx. (kg)*	176	183	194	320	520	900	1000	1200	2710	2860
Colour RAL orange/grey	2011/7040									

LUXOR 80-160



LUXOR 250-2400



Technical data												
Drying bins Type LUXORBIN A & S	LBA 15	LBA 30	LBA 60	LBA LBS 100	LBA LBS 150	LBA LBS 250	LBA LBS 400	LBA LBS 600	LBA LBS 900	LBA LBS 1200	LBA LBS 1800	LBA LBS 2400
Drying bin volume (l)	15	30	60	100	150	250	400	600	900	1200	1800	2400
Type L: Connected load (kW)	1.0	1.0	1.5	1.5	1.5	3.0	—	4.5	6.0	10.5	10.5	21.0
Max. drying temperature (°C)	140	140	140	140	140	140	—	140	140	140	140	140
Type H: Connected load (kW)	1.0	1.0	1.5	1.5	3.0	—	4.5	6.0	9.0	21.0	21.0	31.5
Max. drying temperature (°C)	180	180	180	180	180	—	180	180	180	180	180	180
Power supply (V/Hz)	1/N/PE 230/50						3/ /PE 400/50					
Dimensions (mm)												
L2	580	580	580	750	750	1000	1000	1000	1250	1250	1250	1500
H2	1180	1315	1503	1813	2148	2157	2548	2548	2755	3128	3413	3681
B2	600	600	600	915	915	1165	1165	1165	1415	1415	1415	1665
Ø d3	278	343	416	507	507	668	717	858	1017	1017	1176	1434
Weight approx. (kg)*	60	65	72	125	135	185	230	250	350	380	460	815
Colour RAL orange/grey	2011/7040											

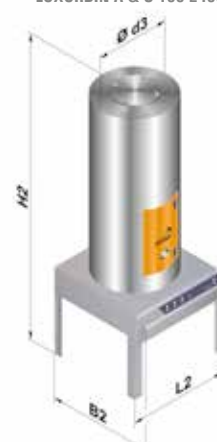
\* Depending on equipment

Technical data for extra large drying bins from 3,000 to 13,000 litres and electric/gas heaters are available on request

LUXORBIN A 15-60l



LUXORBIN A & S 100-2400l



Over 130 agencies world-wide.

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