VARIATOR® LM
VARIATOR® TM

Variable speed system for lifting and travelling

VERLINDE®
LIFTING EQUIPMENT

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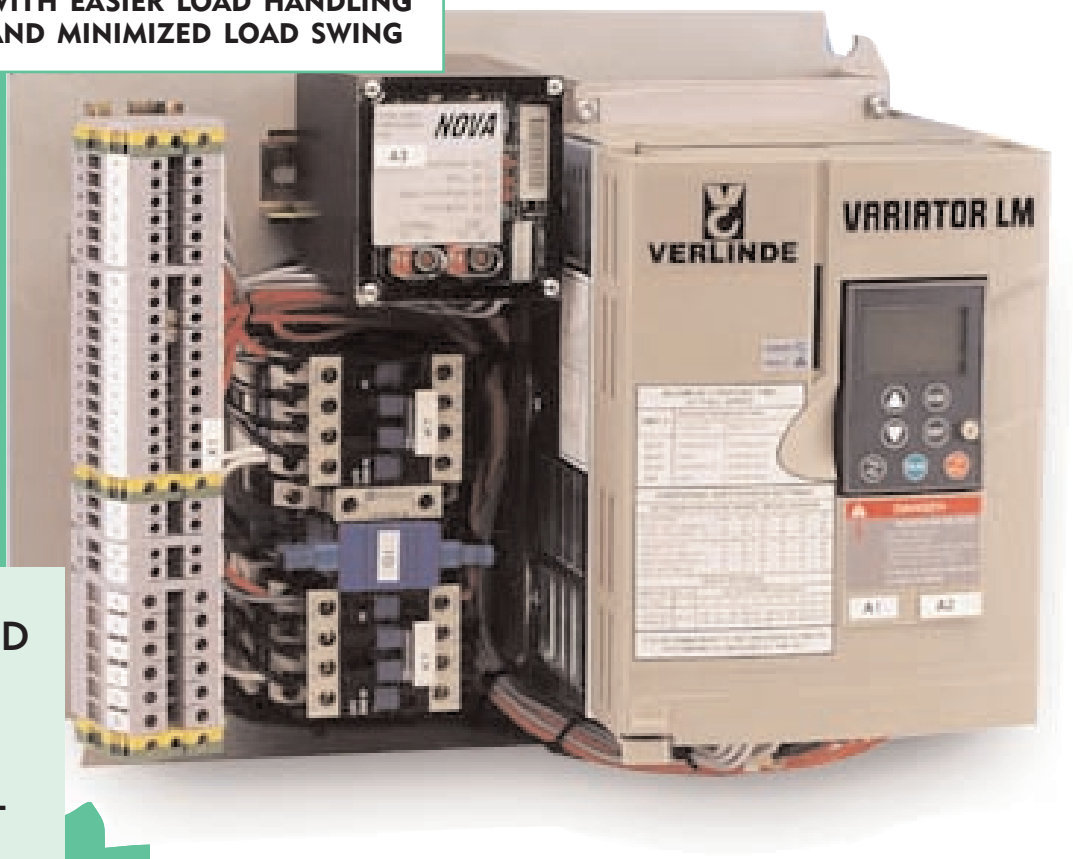
Stepless Speed for Higher

PRODUCTIVITY WITH A WIDE RANGE OF STEPLESS SPEEDS

SAFETY WITH EASIER LOAD HANDLING AND MINIMIZED LOAD SWING



IMPROVED RELIABILITY THROUGH REDUCED MECHANICAL STRESSES

Speed control solutions gave substantial impact on crane productivity, safety and reliability. When these are your requirements, the bet solution is Verlinde Variator stepless speed control systems.

VARIATOR LM for hoisting and VARIATOR TM for travelling are complete speed control systems.

VARIATOR LM and VARIATOR TM are based on the latest inverter and vector control technology designed specifically for crane applications. Software features and all hardware components are engineered to meet the requirements for both new and existing cranes. Exellent torque and construction with necessary uset interface for a wide range of crane applicaqtgions are only some of the specific features.

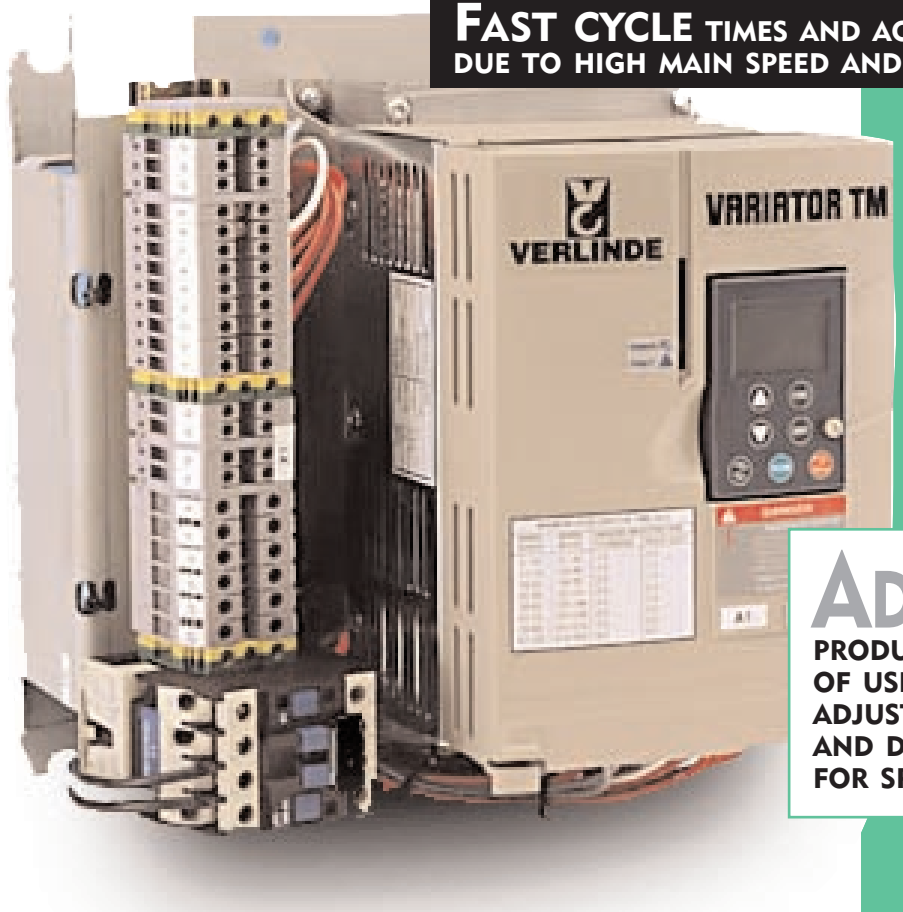
OPTIMAL CHOICE FOR NEW CRANES AND MODERNIZATIONS

Stepless speed control produces signifcant benefits in every application, whether it is a new crane, a performance upgrade or a modernization of an existing crane. The investment in stepless speed control systems is quickly recovered with increased productivity and reduced maintenance costs.

REDUCED MAINTENANCE COSTS DUE TO LOWER COMPONENT WEAR

Control Systems Productivity

FAST CYCLE TIMES AND ACCURATE LOAD POSITIONING
DUE TO HIGH MAIN SPEED AND VERY LOW CREEP SPEED



ADDITIONAL
PRODUCTIVITY AND EASE OF USE WITH SEPARATELY ADJUSTABLE ACCELERATION AND DECELERATION RAMPS FOR SPECIFIC CRANE USE

ADDITIONAL
SAFETY PROVIDED BY A SEPARATE AND INDEPENDENT HOISTING SPEED SUPERVISION CONTROL

VARIATOR LM utilizes open loop flux vector control with type-tested motors and hoisting speed feedback system specifically designed for VARIATOR LM applications. The motors incorporate a pulse sensor and a pulse wheel in the hoisting brake assembly. Guarantee optimal driving charcteristics and safety, only typ-tested motor and Variator LM combinations are used.

The speed supervision unit NOVA monitors the actual speed of the hoisting motor. This safety circuit is separte from the inverter and not dependent on software. In case of overspeed, stall or speed difference error, the NOVA speed supervision unit sotps the motion immediately.

SMOOTH AND EASY DRIVING
CHARACTERISTICS RESULT IN HIGHER SAFETY AND REDUCED LOAD DAMAGE

EXCELLENT TORQUE
MANAGEMENT DUE TO LATEST INVERTER AND VECTOR CONTROL TECHNOLOGY

EASY INSTALLATION
AND QUICK START-UP DUE TO STANDARDIZED CARNE USER INTERFACE AND SETUP FUNCTIONS

VARIATOR LM

VARIATOR TM

200- 240VAC series	015J*	022J	030J*	040J	055J*	075J
Power (kVA) at 230 V	3.1	4.3	5.4	7.2	9.6	12
Output current I CONT (A)	7.8	11	13.7	18.2	24.2	31
Max. output current 1min (A)	10.6	15	18.6	24.7	32.9	42.2

380-500VAC series 007F*	015F*	022F	030F*	040F	055F*	075F	110F*	150F
Power (kVA) at 400 V 1.5	2.8	4.0	5.4	7.2	9.0	12	16	22
Output current I CONT (A) 2.3	4.1	5.8	7.8	10.5	13	17.6	24.2	33
Max. output current 1min (A) 3.1	5.6	7.9	10.6	14.3	17.7	24	32.9	44.9
Overloadability	170 % of motor nominal torque for 60s, 200 % of motor nominal torque for 2s							
Maximum output voltage	Equal to supply voltage							

Supply	
Voltage	200V -10 % to 240V +10 %
	380V -10 % to 500 V +10 %
Frequency	50Hz ±5 % or 60Hz ±5 %

Control features	
Modulation	Sine wave PWM
Control method	Open loop flux vector control
Frequency control range	0-60Hz
Frequency command	Potentiometer, motor potentiometer, 2-5 step controller or 0-10V analog signal
Limit switch function	Stop limit inputs inboth directions and slowdown limit imput
Speed control range	Variator TM : s_N...10 % ; Variator LM : 4Hz...100 % (s_N = motor nominal slip)
Speed accuracy	
Frequency control :	Proportional to the slip of motor
Speed control :	±1/2 of motor nominal slip at speed velow 20 % ±2 % of nominal speed at speed range 20...100 %
Braking torque	125 %
Acceleration/decekeration	Linear or S-curve, ramp time according to application

Protection	
Stall prevention	During acceleration and constant speed
Motor overload protection	Thermistor based temperature measurement
Inverter overload protection	Thermal protection against overcurrent
Undervoltage protection	Fault is deteched in case of undervoltage
Overvoltage protection	Fault is deteched in case of overvoltage
Inverter ovetemperature	Thermal protection against oferheating
Mechanical brake	Protected bu a circuit breaker in models 040J- 075J and 075F-150F
Short circuit protection	Between output phases, between output phases and earth, on internal supply ouputs
Phase loss prtection	Detects loss of input phase and loss of output phase
Overspeed /stall/speed difference supervision	Independent measurement using pulse wheel (Variator LM)

Ambient conditions	
Ambient temperatiure	-10°C...+50°C (14°F...122°F)
Storage temperature	-25°C...+65°C (-13°F...149°F)
Altitude	1000m with no derating.Above this derate the current by 1 % per each 100m
Vibration resistance	Conforming to IEC 68-2-6 : * 1.5mm peak from 2 to 13Hz * 1gn from 13 to 200 Hz
Shock resistance	Conforming to IEC 68-2-27 : * 15gn, 11ms
Max.relative humidity	93 % without condensation or dripping water conforming to IEC 68-2-3
Operating position	Vertical

* VARIATOR LM only

Global Experience -Local Support

(Verlinde operates from over 200 location in over 30 countries througout the world to give the very best customer service. By analyzing your material handling process and utilizing the most extgensive range of components and know-hox, our experts can provide a solution for virtually any application. Our skilled technicians install our equipment and provide service agreements to ensure a prompt return on hour investment.

We are just a phone call away.

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