OMRON

SX SERIES

Force & flow in harmony

» IP54 compact size

» 400/690 V power supply

» True application oriented inverter

realizing

Safe force and smooth flow...

Designed to drive any high power application from 0.75 kW up to 1 MW, the new SX series of compact inverters features embedded application dedicated functionality plus logic programming and customizable LCD information to give you all the control flexibility required for applications ranging from high torque to smooth flow and pressure control. Housed in robust IP54 cabinets and with EMC C3 Class filters and fuses (from 200 kW) as standard, the SX series protects your process while reducing downtime.

...in perfect harmony!

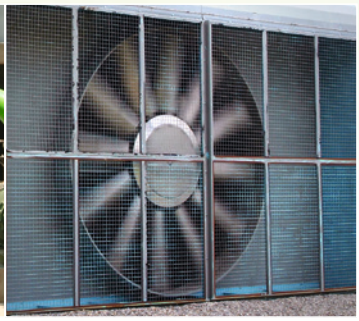
Force & flow in harmony

SX inverters deliver force safely through direct torque and accurate speed control with efficient vector braking in torque applications (cranes, crushers, mills and mixers etc) and smooth motor control with optimized operation and reduced energy consumption in flow and pressure applications (compressors, blowers, pumps and fans etc).

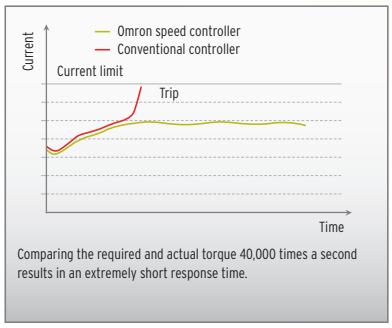
Product features & benefits

- 400 V and 690 V power supply (from 0.75 kW up to 1 MW)
- Built-in EMC filter for complete family and fuses from 200 kW save installation time & costs
- Multiple hardware customization to meet your needs in terms of safety (EN13849-1, EN62061), network communications, liquid cooling, special PCB coating, and more
- Compact & robust IP54 enclosure saves space & costs
- True application oriented thanks to its dedicated functionality, logic programmability and LCD customization
- Pre-maintenance alarms to protect your processes from damage and down-time
- Marine certificate DNV (Det Norske Veritas)

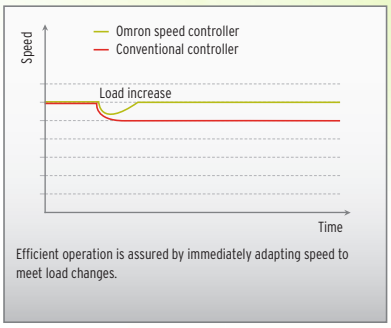


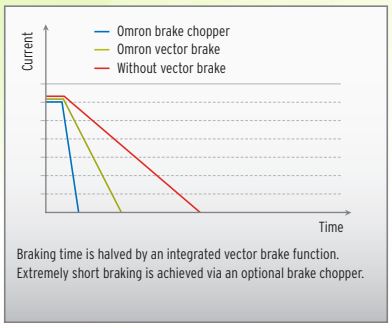
Safe force



Comparing the required and actual torque 40,000 times a second results in an extremely short response time.



Efficient operation is assured by immediately adapting speed to meet load changes.



Braking time is halved by an integrated vector brake function. Extremely short braking is achieved via an optional brake chopper.

Direct torque control

Operation is protected from interruptions by means of very accurate and extremely quick speed and direct torque control. Disturbances caused by, e.g. peak loads, sudden load changes, or inaccurate ramp times are entirely eliminated.

Speed control

Changes liable to cause motor-speed deviation are reacted to quickly and the speed adjusted to the setpoint value. The set-up time is minimised thanks to an autotune function.

Vector brake function

Instead of using mechanical brakes, rapid and protective braking is assured by an integrated vector brake function. As the braking energy is dissipated through the motor itself, interruptions caused by excessive brake voltages are avoided.

Safe Force

The SX inverter series ensures that your installation is provided with all the power it requires while maintaining full control of the process itself. It does this by applying the combination of direct torque control, accurate speed control and efficient vector braking.

Moreover, it efficiently solves the critical start-up of high torque applications by boosting the torque to overcome initial peak loads, thus ensuring that sudden, jerky movements are prevented. This is achieved by providing the pre-magnetized motor with sufficient power to deliver the torque required to start the movement at the very moment the mechanical brake is released.

Product Overview

Voltage	Model	Motor kW		Output characteristics		
		For HD setting (150%, 1 min)	For ND setting (120%, 1 min)	Max output current (A)	Rated output current (A) at HD	Rated output current (A) at ND
400 V	SX-D40P7-E*	0.55	0.75	3.8	2	2.5
	SX-D41P5-E*	1.1	1.5	6	3.2	4
	SX-D42P2-E*	1.5	2.2	9	4.8	6
	SX-D43P0-E*	2.2	3	11.3	6	7.5
	SX-D44P0-E*	3	4	14.3	7.6	9.5
	SX-D45P5-E*	4	5.5	19.5	10.4	13
	SX-D47P5-E*	5.5	7.5	27	14.4	18
	SX-D4011-E*	7.5	11	39	21	26
	SX-D4015-E*	11	15	46	25	31
	SX-D4018-E*	15	18.5	55	29.6	37
	SX-D4022-E*	18.5	22	69	37	46
	SX-D4030-E*	22	30	92	49	61
	SX-D4037-E*	30	37	111	59	74
	SX-D4045-E*	37	45	108	72	90
	SX-D4055-E*	45	55	131	87	109
	SX-D4075-E*	55	75	175	117	146
	SX-D4090-E*	75	90	210	140	175
	SX-D4110-E*	90	110	252	168	210
	SX-D4132-E*	110	132	300	200	250
	SX-D4160-E*	132	160	360	240	300
	SX-D4200-E*	160	200	450	300	375
	SX-D4220-E*	200	220	516	344	430
	SX-D4250-E*	220	250	600	400	500
	SX-D4315-E*	250	315	720	480	600
	SX-D4355-E*	315	355	780	520	650
	SX-D4400-E*	355	400	900	600	750
	SX-D4450-E*	400	450	1032	688	860
	SX-D4500-E*	450	500	1200	800	1000
	SX-D4630-E*	500	630	1440	960	1200
	SX-D4800-E*	630	800	1800	1200	1500
690 V	SX-D6090-E*	75	90	108	72	90
	SX-D6110-E*	90	110	131	87	109
	SX-D6132-E*	110	132	175	117	146
	SX-D6160-E*	132	160	210	140	175
	SX-D6200-E*	160	200	252	168	210
	SX-D6250-E*	200	250	300	200	250
	SX-D6315-E*	250	315	360	240	300
	SX-D6355-E*	315	355	450	300	375
	SX-D6450-E*	315	450	516	344	430
	SX-D6500-E*	355	500	600	400	500
	SX-D6600-E*	450	600	720	480	600
	SX-D6630-E*	500	630	780	520	650
	SX-D6710-E*	600	710	900	600	750
	SX-D6800-E*	650	800	1032	688	860
	SX-D6900-E*	710	900	1080	720	900
	SX-D61K0-E*	800	1000	1200	800	1000

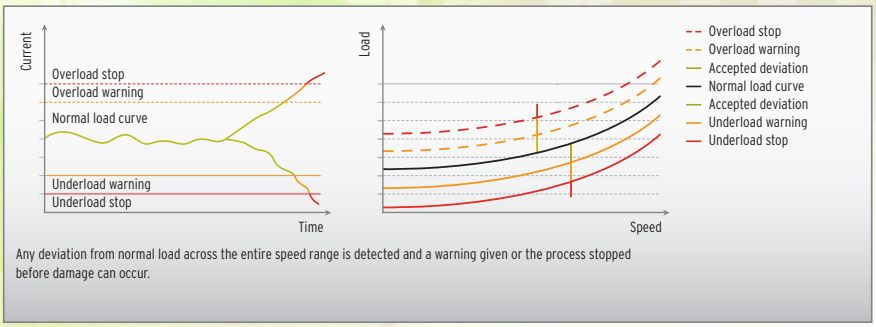
∗ For all types:

Output voltage: 0 to Mains supply voltage
Max. output frequency: 400 Hz
Rated input voltage and frequency for 400 V models:
3-phase 230 to 480 V, 50/60 Hz
Rated input voltage and frequency for 690 V models:
3-phase 500 to 690 V, 50/60 Hz
Allowable voltage fluctuation: +10% to -15%
Allowable frequency fluctuation: 45 to 65 Hz

∗ Please add F or V depending on your application motor control needs:
F: Flux Vector Motor Control
V: V/F Motor Control

Smooth Flow

The SX inverter series ensures perfectly smooth control of flow and pressure. This is achieved by controlling the motor speed in fan and pump applications, as opposed to using mechanical solutions, such as throttle valves or dampers. The result is a considerable saving in energy consumption and therefore operating costs. Dedicated control functionality, such as a sleep mode, automatic pump rinsing and multiple pump control, ensure complete and precise control, while gentle starts and stops protect equipment from pressure spikes and eliminate the risk of pressure surges (water hammer).

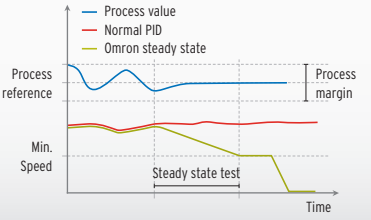


Any deviation from normal load across the entire speed range is detected and a warning given or the process stopped before damage can occur.

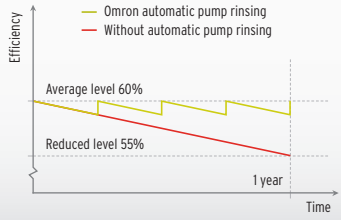
Load curve control

Your process is protected from damage and downtime by a built-in shaft power monitor in combination with a unique load curve protection function that monitors the equipment load curve across the entire speed range. This instantly detects harmful load conditions that could lead to inefficiency or damage. Setting the warning and safety stop levels is an easy matter.

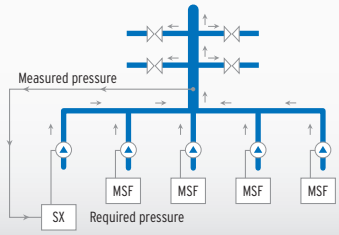
Smooth Flow



Energy is saved by pausing the motor whenever the pressure is sufficient for it not to run.



Efficiency is raised by setting a centrifugal pump to occasionally run at full speed to rinse out sludge.



Reliable and cost-efficient flow/pressure control for multiple pumps/ compressors with varying demand.

Sleep function

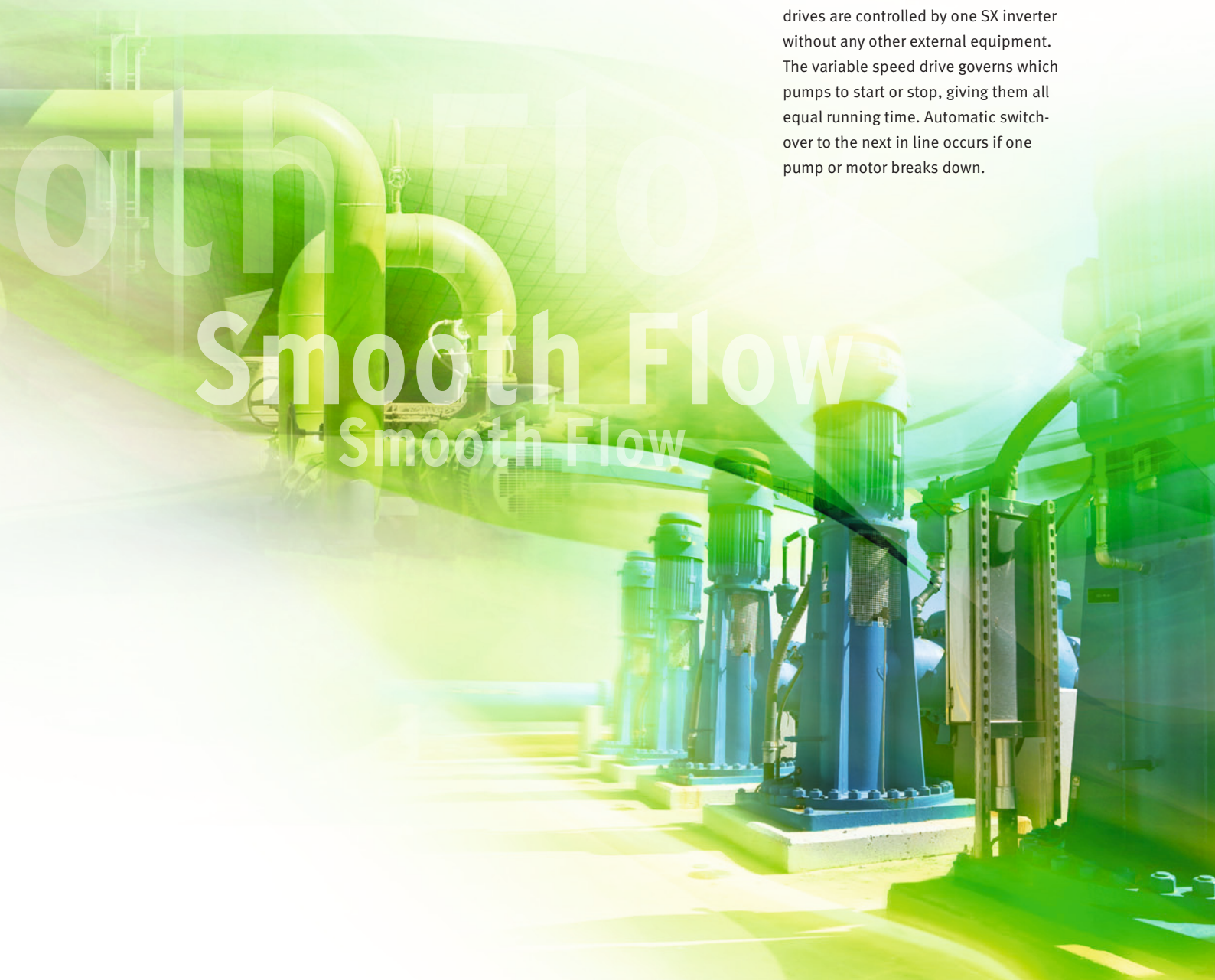
Process optimisation is achieved by a built-in sleep function that reduces the motor speed to zero when the pressure does not require the motor to run. This also reduces the energy requirement as well as equipment wear.

Automatic pump rinsing

Sludge adhering to impellers can reduce efficiency if a pump is idle or running at low speed. The SX solves this by allowing you to set the pump to run at full speed upon start up, or at predetermined intervals, thus cleaning and maintaining efficiency.

Multiple pump control

A flexible and cost-efficient way of keeping a constant flow or pressure despite varying demands is by using multiple pumps or compressors. Only the number of pumps or compressors required at any given time is used and thus energy is saved. Up to seven drives are controlled by one SX inverter without any other external equipment. The variable speed drive governs which pumps to start or stop, giving them all equal running time. Automatic switch-over to the next in line occurs if one pump or motor breaks down.



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