ECOFLEX™

INVERTER CONTROL IN-LINE GLANDED PUMPS

OMEGA ECOFLEX

reliable efficient quality

SMEDEGARD
Pumping Technology

Omega ECOFLEX with Integral Inverter

Smedegaard's continued investment in energy efficient technologies has resulted in the development of the Omega ECOFlexx range of pumps.

The Omega ECOFlexx is the marriage of our tried and tested Omega fixed speed pump and the extremely reliable and efficient FlexxDrive variable speed inverter drive. The FlexxDrive is also available as a stand alone item for retro-fit to existing glanded pumps.

All single and twin pumps, from 0.12 up to 22 kW, can be supplied as Omega ECOFlexx with integral inverters to give automatic adjustment via a signal from pressure transducers or another external source. Inverter pump packages above 22kW are available upon request. All pump curves and specifications are the same as those provided for the Omega pumps – individual data sheets can be found on our website at www.smedegaard.co.uk. The Omega ECOFlexx gives electrical and thermal savings together with reduced noise level in the installation.

FlexxDrive Mounting

The FlexxDrive is normally supplied fitted to the pump, but is also suitable, without modification, for wall mounting. The non reliance on the pump motor fan for the cooling of the FlexxDrive reduces the risk of overheating whilst operating at low speeds, and has the added benefit of not reducing the flow of air to the pump motor thereby ensuring longevity of both the pump and the inverter drive. The smaller FlexxDrive units (0.75 and 1.50 kW) are fitted with a large heat sink with cooling fins to enable cooling by natural convection. The larger FlexxDrive units (2.2 kW and above) also incorporate one or more cooling fans and a large heat sink to enable cooling. Wall mounting of the FlexxDrive inverter is via the fixing holes provided at each corner of the Unit.

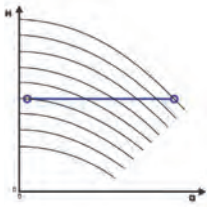
Omega ECOFlexx Power Supply Options

- Single Phase power supply for motors
  0.12 kW - 2.2 kW
- Three Phase power supply for motors
  0.12 kW - 22 kW

Function of Omega ECOFlexx

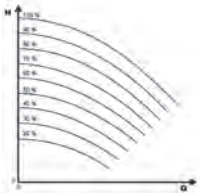
The basic function of the Omega ECOFlexx inverter drive package is to control the pump to meet the varying system demands in one of three ways.

Control for constant pressure



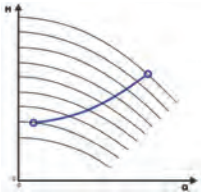
The desired differential pressure is set (in bar) by the operator. The Omega ECOFlexx inverter drive package varies pump speed as demand increases or decreases to keep the pressure constant. In order to set the Omega ECOFlexx for this application, the pumps should be selected so that the maximum pressure and flow required by the system is on or below the full speed performance curve of the pump, usually 1450/2950 rpm.

Control for variable speed via analog input



In analog input mode the pump speed can be varied via an external source using a 4-20 mA or 0-10 VDC signal. In this case the built in controller is taken out of circuit.

Control for pressure loss compensation



Using an external control system such as a BMS the discharge pressure of the pump can be adjusted as the flow increases, thus compensating for the added friction losses in the system. This allows the pump to follow the "system curve".

The Omega ECOFlexx inverter drive package will then automatically compensate for the friction losses depending on the increasing flow and speed.

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The Omega ECOFlexx performs these functions by:

- Measuring the system pressure via transducers connected to the inlet/outlet of the pump (these can be mounted on the pump flange binder points). It may also be a preference to measure the differential pressure remotely in the system and to accommodate these situations the Omega ECOFlexx pump can be ordered with or without transducers.
- Sending a signal to the pump motor for start, increase speed, decrease speed or stop.

Additional functions

In addition to the basic functions, the Omega ECOFlexx inverter drive package can perform the following tasks, which are normally only associated with the most advanced computerised control systems.

- Protect the pump and motor from over voltage, under voltage, overload and overheat.
- Vary the time of pump speed acceleration and deceleration.
- Send out a signal for remote monitoring of pressure and frequency.
- Display all functions on an illuminated display.
- Communicate with another Omega ECOFlexx, computer, or other controller via an RS 485 interface.

Omega ECOFlexx Pump Control

Operator controls

All FlexxDrive inverters are fully adjustable without the need for an external control module. The Omega ECOFlexx has several operator controls which may be selected for both single and multiple pump applications depending upon the working conditions and individual preferences. Please refer to the operating manual for specific programme options.

- The Omega ECOFlexx inverter drive packages can be set to operate at any frequency up to 60 Hz. In order not to overload the motor the unit should not be set at frequencies higher than the nominal rating of the motor being used.
- Omega ECOFlexx can be programmed to show actual pressure in bar, psi, Hz, Amps, suction pressure, discharge pressure or differential pressure.

Operator indicators and display

The following displays are found on the Omega ECOFlexx, the units can also be monitored remotely through the RS 485 interface (3 phase FlexxDrives only).

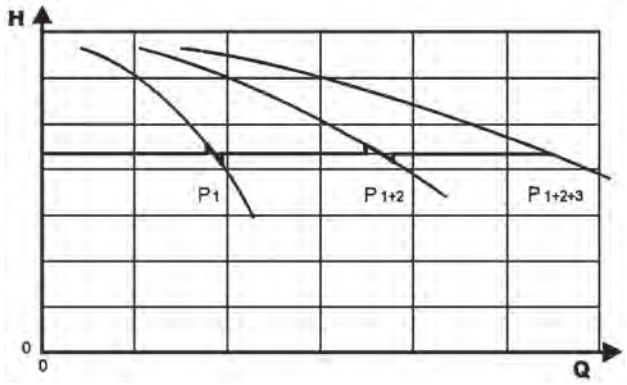
- FlexxDrive Indicator lamps show power on, run and fault, all of which indicate the basic status of the unit.
- The display normally shows a pressure reading, which is the current pressure being read by the transducers.
- The operator can modify the pump speed by using the up/down button as a test. The digital display can be changed to show the Hz, Suction Pressure, Discharge Pressure, Differential Pressure and AMPS.
- The number of 'hours run' by the Omega ECOFlexx is logged.

Omega ECOFlexx Multiple Pump Operation and Control

For single and three phase, up to four Omega ECOFlexx controlled pumps can operate together to form a system, without any other controls being necessary.

In a multi-pump system all pumps are connected via the CAN interface. The Master microprocessor monitors the system and stages the pumps to maintain a steady pressure. Please note: For this application all Omega ECOFlexx controllers must be of the same size and type.

Constant Pressure Systems



Constant pressure is maintained by the Omega ECOFlexx in a multi-pump system, in the same manner as a single pump system. The FlexxDrive can control up to four pumps to maintain constant pressure. The first pump will operate until it can no longer maintain the set pressure, then the second pump will start, followed by the third and fourth if required by the system demands.

ChangeGaard Auto Change-Over Module

The entire range of Omega ECOFlexx twin headed pumps (or pairs of single pumps) can be controlled by the use of the ChangeGaard. The supply voltage to ChangeGaard is 230-1-50 but, it is suitable for both single and three phase FlexxDrives. The Omega ECOFlexx pumps are controlled via the integral remote on/off contacts of the ChangeGaard. The features include:

- Pump run/fault display.
- VF contacts for remote indication.
- Automatic change-over in the event of a pump fault.
- Settable timed change-over.

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Models and Product feature

Drive Type	H	W	D	kW	F.L.C (Amps)	Weight (Kg)	Constant Pressure	Differential Pressure Control	Variable Speed (4-20mA)	External Stop/Start	External Emergency Stop	External Signal Speed Control	Fixed Speed Setting	Illuminated Status Display	Integral Setting Buttons	Low Water Protection	Common Fault Relay	Communication to Multiple Drives	Alternating	Cascable Operation	Error Status	Frequency Display	Hours Run	RS 485 (Option)
Electrical supply - Single-phase 1x230v 50 / 60Hz +/- 10%																								
FD 0075-SD	130	205	120	0.75	2.88	1.5	•	•	•	•	•		•	•	•	•	•				•	•	•	
FD 0150-SD	130	205	120	1.5	5.32	1.5	•	•	•	•	•		•	•	•	•	•				•	•	•	
FD 0220-SD	170	245	145	2.2	8.08	2.7	•	•	•	•	•		•	•	•	•	•				•	•	•	
Electrical supply - Three-phase 3x400v 50 / 60Hz +/- 10%																								
FD 0075-T	130	205	120	0.75	1.67	1.5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 0150-T	130	205	120	1.5	3.08	1.5	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 0220-T	170	245	145	2.2	4.18	2.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 0400-T	170	245	145	4.0	6.88	2.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 0550-T	240	300	175	5.5	10.6	5.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 0750-T	240	300	175	7.5	14.1	5.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 1100-T	425	290	190	11.0	20.5	27	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 1500-T	425	290	190	15.0	27.3	27	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 1850-T	460	290	190	18.5	33.6	30	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
FD 2200-T	460	290	190	22.0	40.4	30	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Note: *To retrofit a single phase 230-1-50 inverter (2.2 kW max) the motor must be wound for a 230-3-50 Hz supply. For a three phase 400-3-50 inverter the motor must be wound for a 400-3-50 Hz supply.*

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