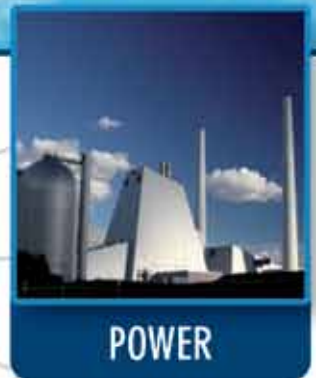


**MORE SAFETY  
LESS EMISSIONS**

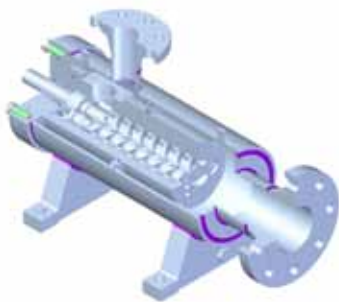


# SMAPI series

Three screw pumps API676 & ISO8217  
for low sulphure percentage compliant



## SMAPI Pump series



**SMAPI** is a casing three screw pumps designed and manufactured following the API676 regulation and also suitable for the ISO8217, which regulate the level of sulphur percentage in the fluid in case of Marine applications.

The quality of the Settima screws, with more than 35 years of experience and more than 1 million pumps installed around the world, ensures high performances, reliability and very low level of acoustic emissions and low pulsations.

**SMAPI** pump is a Settima three screw pump that is fitted inside an external case. Matching all the possible applications it can be manufactured with different structural

shapes, installation possibilities and materials.

The external case can be delivered in ASME carbon steel and inox, in accordance with international norms such as API. The internal cartridge can be manufactured in cast iron, steel, and hardened steel, while the three screws are made by steel for the primary screw and cast iron for the secondary screws.

The three screws rotate inside the pump body and the design of the screws avoids any axial load. The functional pressure develops some tolerance between the balancing piston of the main screw and the surrounding body.

This creates a balancing hydrodynamic force on the screws and, at the same time, lubricates and cools down the sealing ports. The torque needed to move the lateral screws is transmitted hydraulically by the pumped fluid, which means that the screws rotate with no possibilities of wearing.

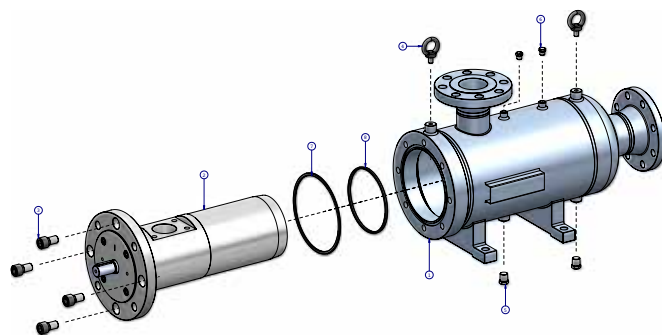
**SMAPI** pumps can always ensure flow and pressure matching to your current requirements, since it is always available a customized version. **SMAPI** pumps simplify your eventual necessity of maintenance: just remove the installed cartridge (n.1) without disconnecting the part n. 2 from the system.

Main areas of applications are Oil & Gas, Marine, Offshore and Power Gen industrial sectors. **SMAPI** is applied to deliver different fluids such as crude oil, diesel fuel, engines oil, petrol, naphta and many others.

SETTIMA can deliver a package of motor, **SMAPI** pump and base plates according to customer needs.

**SMAPI** pump can be installed horizontally (motor + pump unit + skid or feet base) or vertically (motor + pump unit).

The maintenance of the pump cartridge can be operated without the disconnection of external case from the system.



### SMAPI MAGNETIC COUPLING

**SMAPI** pump can be equipped with a magnetic coupling if required. The hermetically sealed magnetic coupling is a permanent magnetic synchronous coupling able to transmit torque through magnetic forces between the internal and external rotor. Applying a magnetic coupling, the drive and the driven sides are hermetically separated. In case of critical media the magnetic coupling is a reliable seal and avoid any serious leaking.

The magnetic coupling is the containment shroud that is fixed to the driven sided power unit and separates internal and external rotor from each other. Due to the absence of mechanical connection the vibration torque transmission are very low, with

completely leak-proof separation of product and atmosphere.

The magnetic coupling is used to ensure no media leaking or when working in environments with potentially explosive atmospheres.



## OIL & GAS

Pipe-line for off-shore platform.

Heating oil delivery and pipe-line for refineries and petrochemical industry.

Off-line filters, coolant lubrication for transmissions.

Off-line filters for engine oil.



## POWER

Lube service and off-line filtration for engines.

Lube and cooling systems for turbo-machinery.

Transmission lube for generator.

Oil Jacking.



## FUEL OIL HANDLING

Heavy fuel oil, fuels, marine distillate fuels, marine residual fuels for engine and boilers.

DMX (according to latest ISO8217), DMA, DMB, DMC, DMZ .

Fuel oil supply low pressure Diesel Oil delivery for industrial burners.

Fuel oil transfer for filtration, loading & unloading.

Fuel oil ignition & supply for booster modules.

Biodiesel applications.



## Test and certifications

Title	Description	Released by
Static test	Pressure test @ 1.5 times the working pressure	Settima
Dynamic test	Running test at working conditions	Settima
Material certification	EN10204 3.1b	Settima
Atex certification	Area: CE eX II 2 GD ck T3	Settima
Standard ISO	ISO 9001:2000 – DNV	Settima
Statement of fact, type approval, witnessed test		ABS, BV, DNV, LLOYD, RINA, CCS, RS, GL, KR, NK

# Technical characteristics / Caratteristiche tecniche

<b>Models available Modelli</b>	20 – 25 – 32 – 40 – 45 – 55 – 60 – 70 – 80 – 90 – 110	
<b>Installation Installazioni</b>	Vertical, horizontal <i>Verticale, orizzontale</i>	
<b>Connections Conessioni</b>	SAE, DIN, ANSI	
<b>Drive loading Carichi</b>	No axial or radial loads <i>Nessun carico assiale o trasversale</i>	
<b>Shaft rotation Rotazione albero</b>	Clockwise (from shaft end) , (suitable also for counter clockwise rotation, please contact Settima) <i>Destra (disponibile anche per rotazione sinistra, contattare Settima)</i>	
<b>Shaft speed Velocità di rotazione</b>	From 500 to 3.600 rpm <i>Da 500 a 3.600 rpm</i>	
<b>Flows Portate</b>	From 4 up to 1.800 L/min (at 2.950 rpm) - From 1.800 to 3.200 L/min pump must be over-busted, contact Settima <i>Da 4 a 1.800 L/min (a 2.950 rpm) - Da 1.800 a 3.200 L/min la pompa deve essere sovralimentata in aspirazione</i>	
<b>Outlet pressure Pressione di mandata</b>	60 bar continuous – 80 bar intermittent <i>60 bar continuo – 80 bar ad intermittenza</i>	
<b>Inlet pressure Pressione di aspirazione</b>	Min. -0.7 bar max 9 bar * (with mechanical seal) <i>Min. -0.7 bar max 9 bar * (con tenuta meccanica)</i>	
<b>Fluids Fluidi</b>	<ul style="list-style-type: none"> <li>- Mineral oil HLP e HLVP</li> <li>- Ecologic fluids HETG, HEPG, HEE</li> <li>- Synthetic fluid or emulsion: HFA oil-water emulsion, HFB water-oil emulsion 40% of volume, HFC water/glycole – water max 35 to 55%, HFDR phosphate ester</li> <li>- Lubrication high viscosity oils **</li> <li>- Special synthetic fluid: MIL-H, SKYDROL ***</li> <li>- Fuel oil: MGO, MDO, Low sulfur MDO and HFO</li> <li>- DMX (ISO8217), DMA, DMB, DMC, DMZ</li> <li>- MAZUT, bunker oil, furnace oil, engines oil, heating oil, hydraulics oils DIN 51524</li> <li>- Naphta, petrol</li> </ul>	<ul style="list-style-type: none"> <li>- Oli minerali HLP e HLVP</li> <li>- Fluidi ecologici HETG, HEPG, HEE</li> <li>- Fluidi sintetici o emulsioni: HFA emulsione olio-acqua, HFB emulsione acqua-olio 40% dl volume, HFC acqua/glycole – acqua max 35 to 55%, HFDR phosphate ester</li> <li>- Olio ad alta viscosità per lubrificazione **</li> <li>- Fluidi speciali sintetici: MIL-H, SKYDROL ***</li> <li>- Fuel oil: MGO, MDO, Basso livello di zolfo MDO and HFO</li> <li>- DMX (ISO8217), DMA, DMB, DMC, DMZ</li> <li>- MAZUT, bunker oil, furnace oil, olio per motori, heating oil, olio idraulico DIN 51524</li> <li>- Naphta, benzina</li> </ul>
<b>Viscosity Viscosità</b>	From 2 up to 10.000 cSt <i>Da 2 fino a 10.000 cSt</i>	
<b>Seals Guarnizioni</b>	Mechanical seal: NBR, FKM, FPM, EPDM **** <i>Tenuta meccanica: NBR, FKM, FPM, EPDM ****</i>	
<b>Acoustic emissions Emissioni acustiche</b>	From 52 up to 68 db(A) at 2.950 rpm <i>Da 52 fino a 68 db(A) at 2.950 rpm</i>	
<b>External case Corpo esterno</b>	ASME carbon steel, inox <i>Acciaio ASME, inox</i>	
<b>Cartridge Cartuccia interna</b>	Aluminum, cast iron, steel <i>Alluminio, ghisa, acciaio</i>	
<b>Screws Viti</b>	Steel for main screw , idler cast iron <i>Acciaio vite principale, ghisa viti secondarie</i>	
<b>Environment temperature Temperatura ambiente</b>	From -20° up to +60°C <i>Da -20°a +60°C</i>	
<b>Hydraulic Temperature Temperature Olio</b>	From -20°C up to +180°C <i>Da -20°C a +180°C</i>	
<b>Filtration Filtrazione</b>	Permissible degree of fluid contamination NAS to 1638 class 10 or ISO DIS 406 – 19/16. Recommended filtration $\beta_{25} \geq 75$ <i>Contaminazione NAS tipo 1638 classe 10 o ISO DIS 4406 – 19/16 . Filtrazione raccomandata <math>\beta_{25} \geq 75</math></i>	

\* For higher pressure please contact Settima. *Per pressioni maggiori contattare Settima.*

\*\*For high viscosity applications and/or oil-air emulsions, please contact Settima for the right pump model.

\*\*\*Special synthetic fluids on request. *Altri fluidi sintetici a richiesta.*

\*\*\*\*For special seals contact Settima. *Per tenute speciali contattare Settima.*



# Configurations



Motor + pump unit + SKID  
Horizontal installation



Single pump  
Vertical installation



Motor + pump unit  
Vertical installation

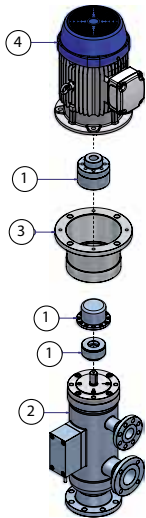


Single pump  
Horizontal installation

# Components

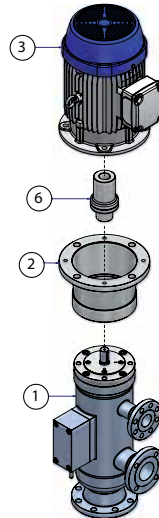
## VERTICAL ASSEMBLY

MOTOR PUMP GROUP / MAGNETIC COUPLING



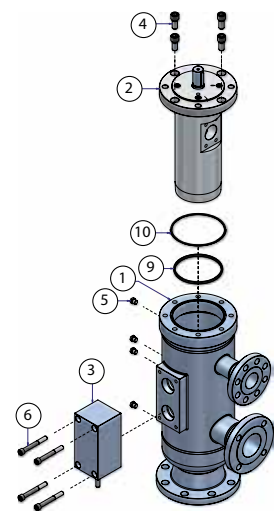
## VERTICAL ASSEMBLY

MOTOR PUMP GROUP / STANDARD COUPLING



## VERTICAL ASSEMBLY

PUMP



N°	PARTS DESCRIPTION	MATERIAL
1	Magnetic coupling	On request
2	SMAPI pump	
3	Bell house	On request
4	Electric motor	On request

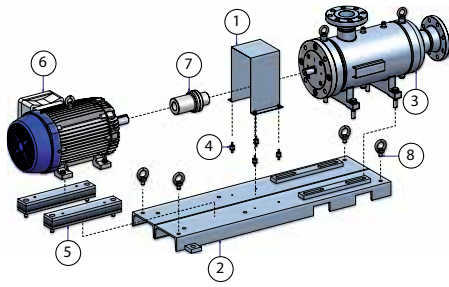
All fixing screws are steel UNI-5739 M16x40 – 8.8

N°	PARTS DESCRIPTION	MATERIAL
1	SMAPI pump	
2	Bell house	On request
3	Electric motor	On request
6	Elastic coupling	On request

All fixing screws are steel UNI-5739 M16x40 – 8.8

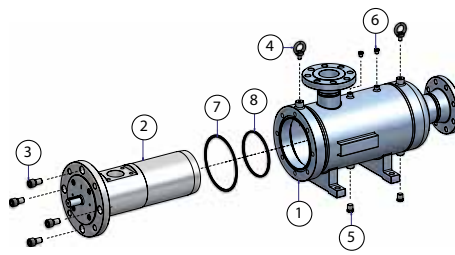
N°	PARTS DESCRIPTION	MATERIAL
1	Case V-ZN	
2	Internal cartridge	
3	RP external valve	
4	Screw	On request
5	Vent	On request
6	Screw	On request
9	Internal O-ring	On request
10	Internal O-ring	On request

**HORIZONTAL ASSEMBLY**  
MOTOR PUMP GROUP



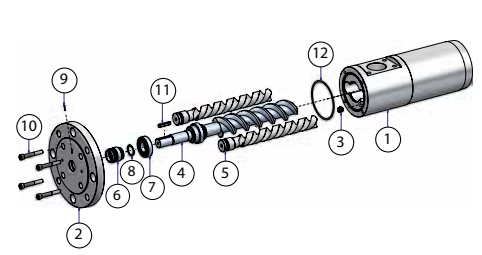
N°	PARTS DESCRIPTION	MATERIAL
1	Carter	On request
2	SKID	On request
3	SMAPI pump	
4	Vibration stopper	On request
5	Shock absorber	On request
6	Electric motor	On request
7	Coupling	On request
8	Golfare	On request

**HORIZONTAL ASSEMBLY**  
PUMP



N°	PARTS DESCRIPTION	MATERIAL
1	External Case	
2	Cartridge	
3	Screw	On request
4	Golfare	On request
5	Drainer	On request
6	Vent	On request
7	Internal O-ring	On request
8	Internal O-ring	On request

**HORIZONTAL ASSEMBLY**  
CARTRIDGE

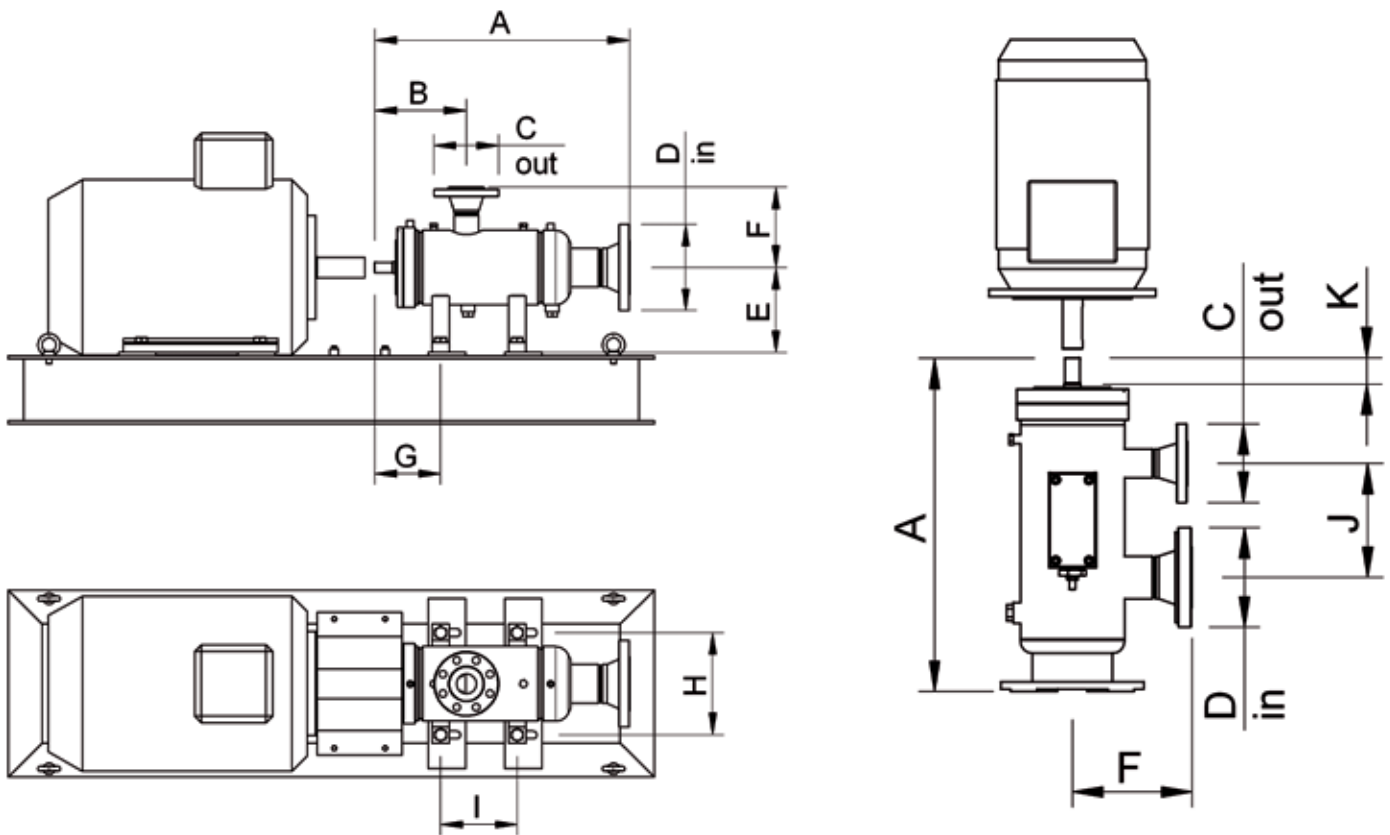


N°	PARTS DESCRIPTION	MATERIAL
1	Body pump	On request
2	Flange	On request
3	Bushing	On request
4	Main screw	On request
5	Idler screw	On request
6	Mechanical seal	
7	Ball bearing	On request
8	Seeger	On request
9	Pin	On request
10	Screw	On request
11	Key	On request
12	Internal O-ring	On request

## Standard dimensions

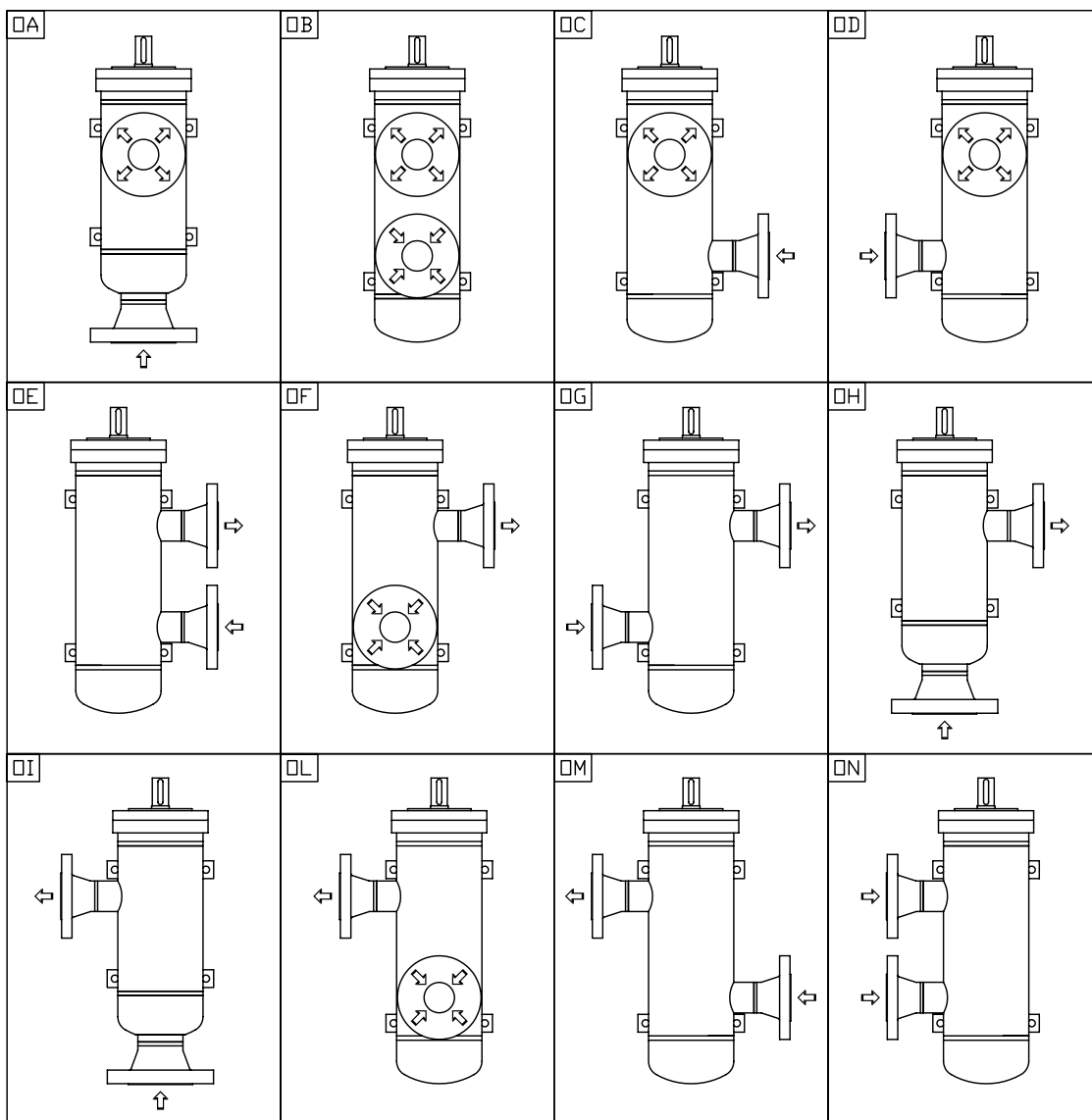
Pump	Dimensions		Flanges Ø				Dimensions						
			ANSI		DN								
	A	B	150, 300, 600		PN 10, 16, 25, 40		E	F	G	H	I	J	K
			D (in) inches	C (out) inches	D (in) mm	C (out) mm							
<b>GR20</b>	305	130	1	1"	25	25	106	160	80	144	90	135	36
<b>GR25</b>	354	165	1	1"	25	25	106	160	85	144	90	135	36
<b>GR32</b>	359	170	1 ½	1", 1 ½"	40	25, 40	106	160	144	144	160	135	36
<b>GR40</b>	521	186	1 ½, 2, 3"	1" ½, 2"	40, 50, 80	40, 50	119	185	155	144	150	140	36
<b>GR45</b>	600	208	2", 3"	1" ½, 2"	50, 80	40, 50	150	195	180	180	215	170	55
<b>GR55</b>	670	245	3", 4"	2", 3"	80, 100	50, 80	160	220	199	180	245	190	55
<b>GR60</b>	750	270	3", 4"	3"	80, 100	80	190	230	190	300	335	230	55
<b>GR70</b>	820	290	3", 4"	3", 4"	80, 100	80, 100	200	260	200	300	400	275	55
<b>GR80</b>	900	325	4", 6"	3", 4"	100, 150	80, 100	215	285	205	300	470	280	60
<b>GR90</b>	990	370	6"	4"	150	100	225	320	265	300	490	300	110
<b>GR110</b>	1190	410	6"	4"	150	100	260	345	270	370	550	415	110

All above dimensions are indicative and can change without prior information.



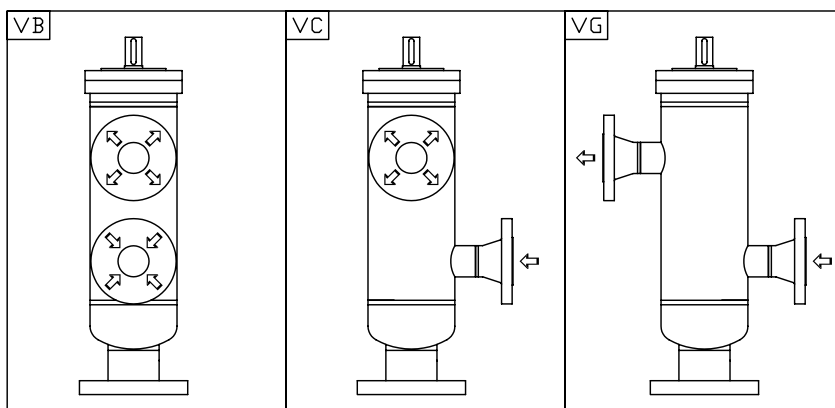
All our SMAPI pumps can be customised with specific and/or special parts dimensions according to customer requirements.

## HORIZONTAL PUMP CONFIGURATION



View from top.

## VERTICAL PUMP CONFIGURATION



Side view.



## Product range – Ordering code of SMAPI pumps

Pump type	Pumo model	Nominal flow (L/ min)	Pump body	Shaft seal	Screws treatment	Seals type	Ports type		Port configurations	Rotation
							A = IN	M = OUT		
<b>GR20</b>	<b>SMAPI</b>	<b>8L, 12L, 15L, 20L, 23L</b>	Standard Aluminium <b>(none)</b>	Standard NBR <b>(none)</b>	Standard Steel & cast iron <b>(none)</b>	<b>TM</b> Mechanical seal	<b>ANSI 150 300 600 A*</b>	<b>(ANSI) M*</b>	O= Horizontal V= Vertical	Standard Clockwise <b>(none)</b>
<b>GR25</b>		<b>25L, 30L</b>							<b>OA</b>	
<b>GR32</b>		<b>35L, 45L, 55L, 75</b>							<b>OB</b>	
<b>GR40</b>		<b>100L, 125L, 150L</b>	Optional <b>GZ</b> Cast Iron Internal coating						<b>OC</b>	
<b>GR45</b>		<b>180L, 210L</b>							<b>OD</b>	
<b>GR55</b>		<b>250L, 300L, 330L, 380L</b>	Optional <b>AZ</b> Carbon steel Internal coating						<b>OE</b>	
<b>GR60</b>		<b>440L, 500L</b>							<b>OF</b>	
<b>GR70</b>		<b>560L, 600L, 660L, 800L</b>							<b>OG</b>	
<b>GR80</b>		<b>1.000L, 1.200L</b>	Optional <b>V</b> (FKM)						<b>OH</b>	
<b>GR90</b>		<b>1.500L, 1.700L, 2.000L, 2.200L</b>							<b>OI</b>	
<b>GR110</b>			<b>2.300L, 2.500L, 2.800L, 3.200L</b>						Optional <b>G</b> Cast iron	
	<b>OM</b>									
	<b>ON</b>									
	<b>VB</b>									
			Optional <b>A</b> Carbon steel					<b>VC</b>		
								<b>VG</b>	Check at pag. 8	

\*Please check table pag. 7 to chose the right dimensions for your needs for ANSI standard.

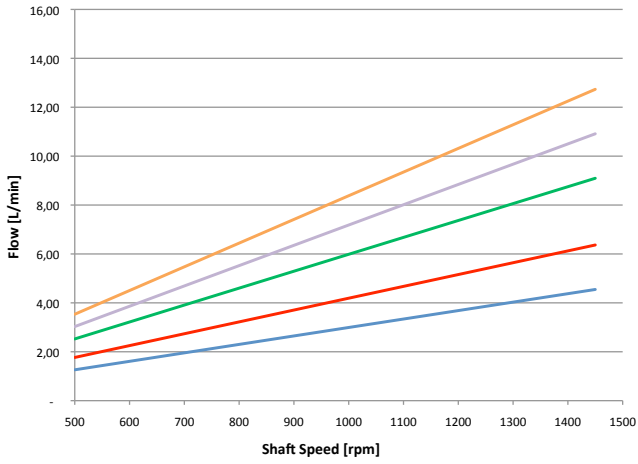
\*\*Please check table at pag. 7 to chose the right dimensions for you need for DN standards.

Examples of order code: GR40 SMAPI 150L G V HD TM ANSI150 A3 M2 VB  
GR40 SMAPI 150L G V HD TM DN10 A40 M40 VB SX

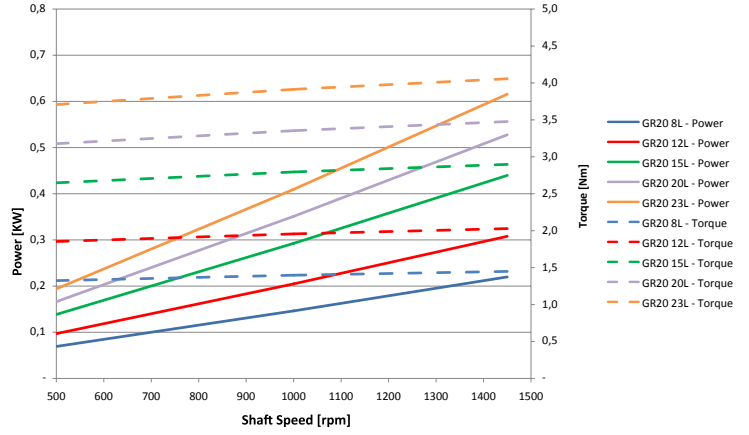
# Flow & power performances 4 poles motor – 50 HZ

20 bar, 46 cSt

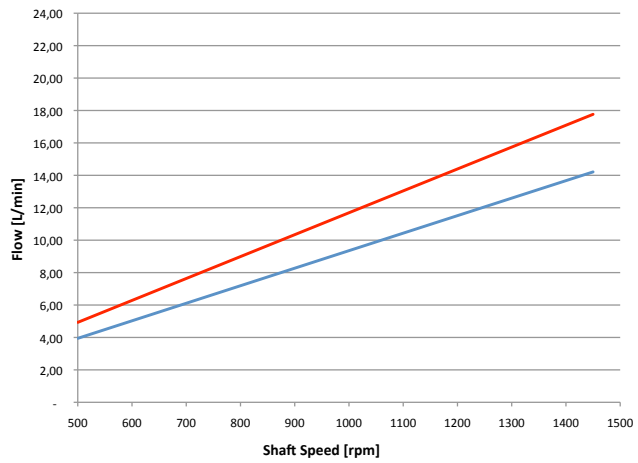
GR20



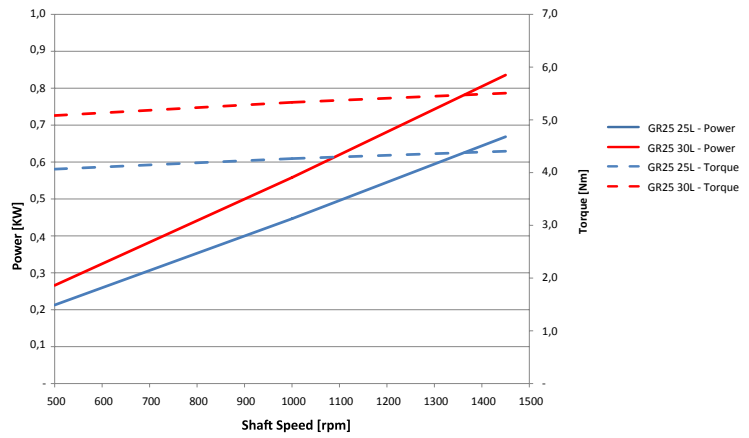
GR20



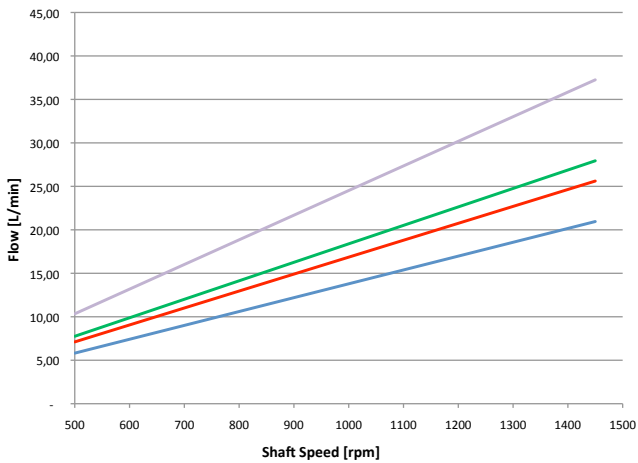
GR25



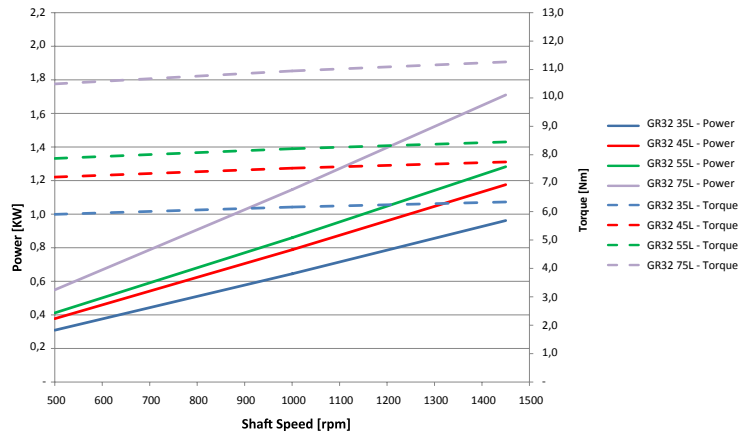
GR25



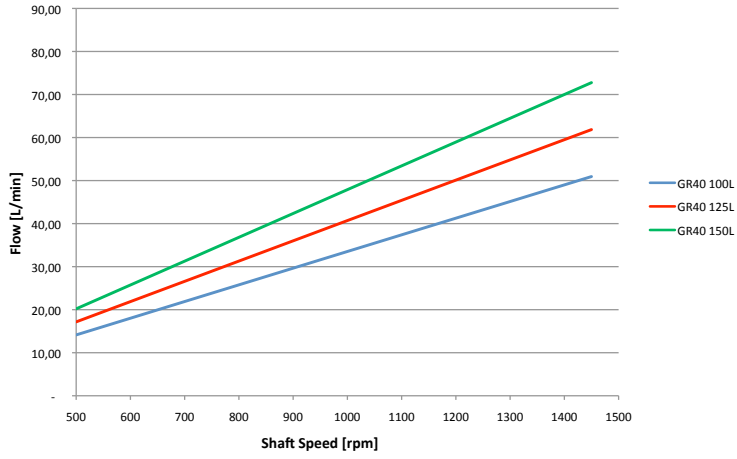
GR32



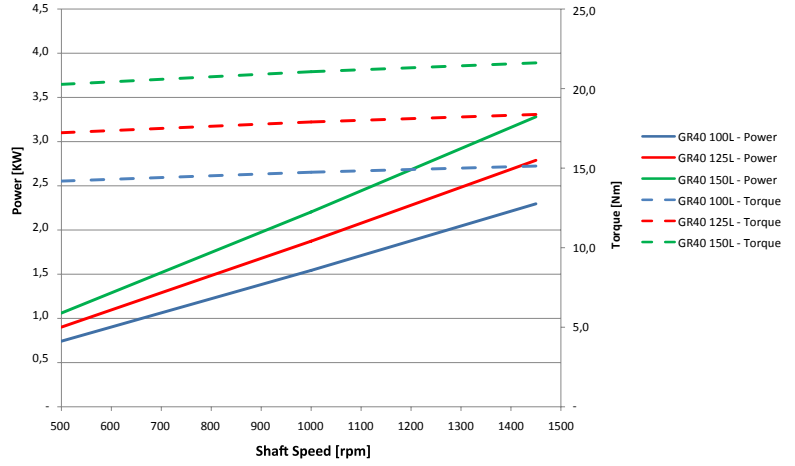
GR32



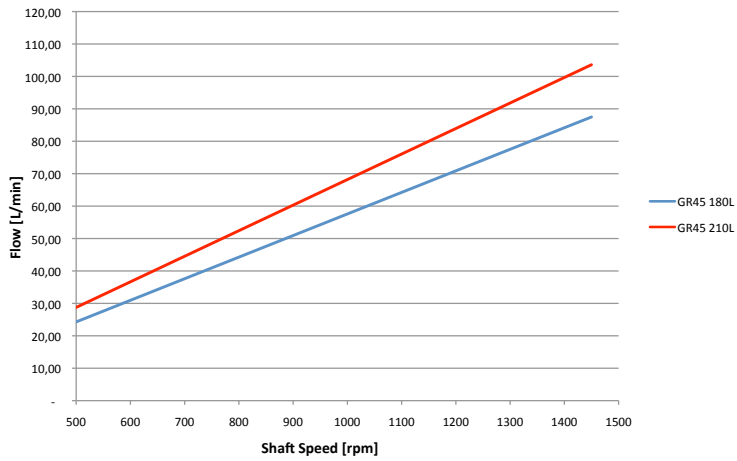
### GR40



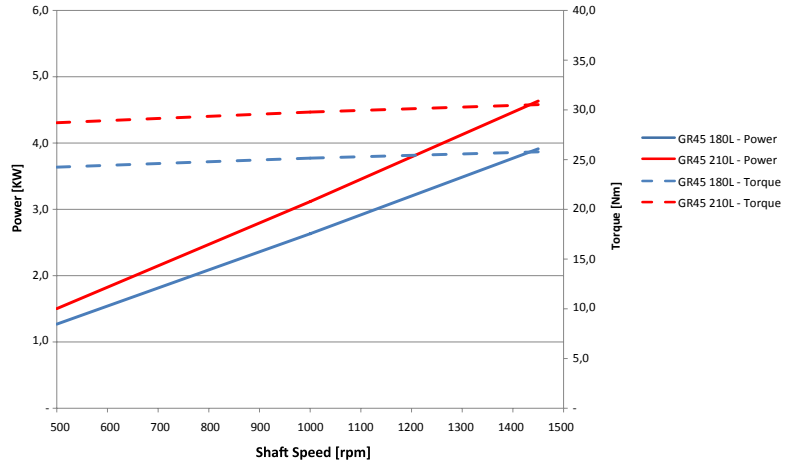
### GR40



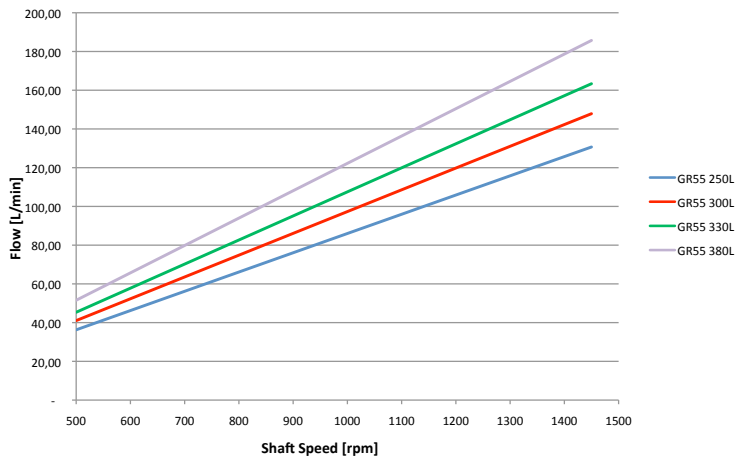
### GR45



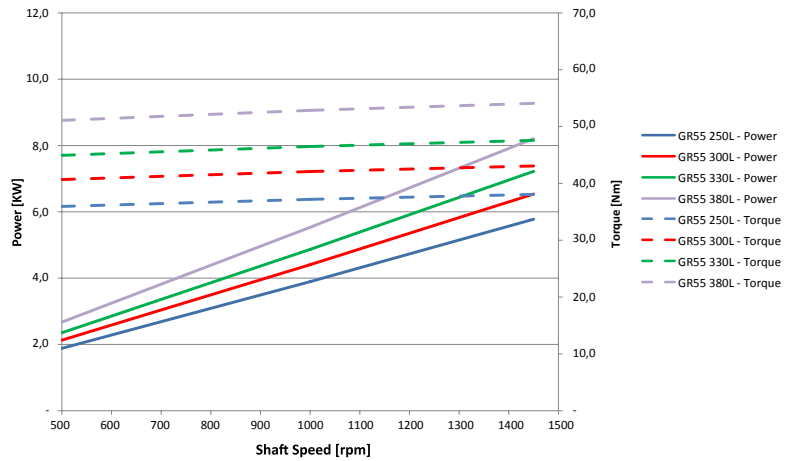
### GR45



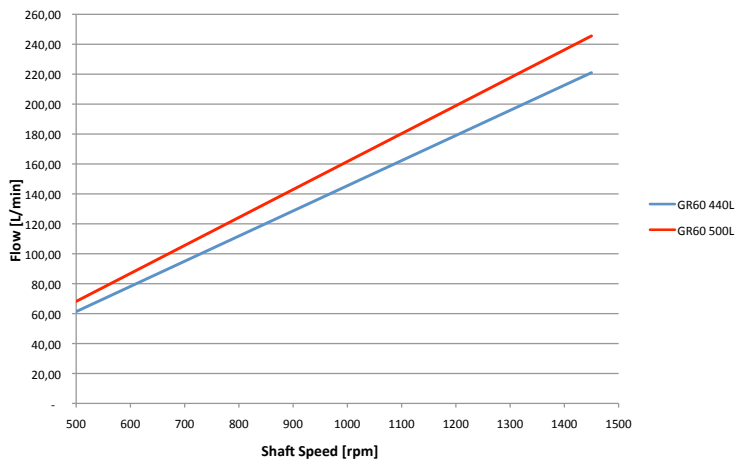
### GR55



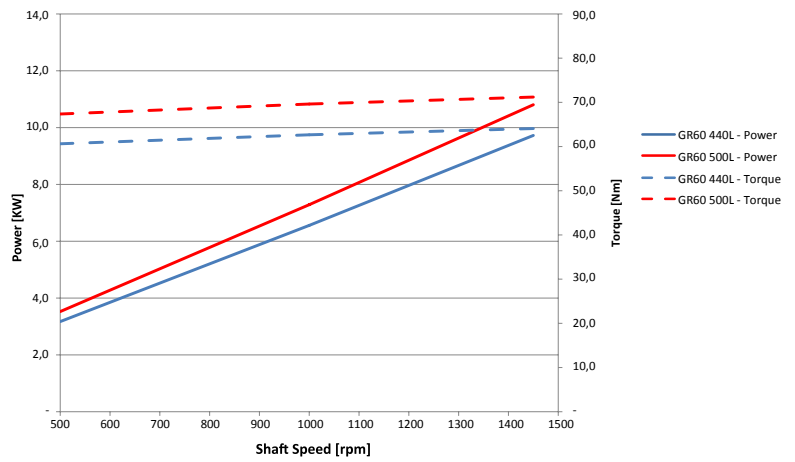
### GR55



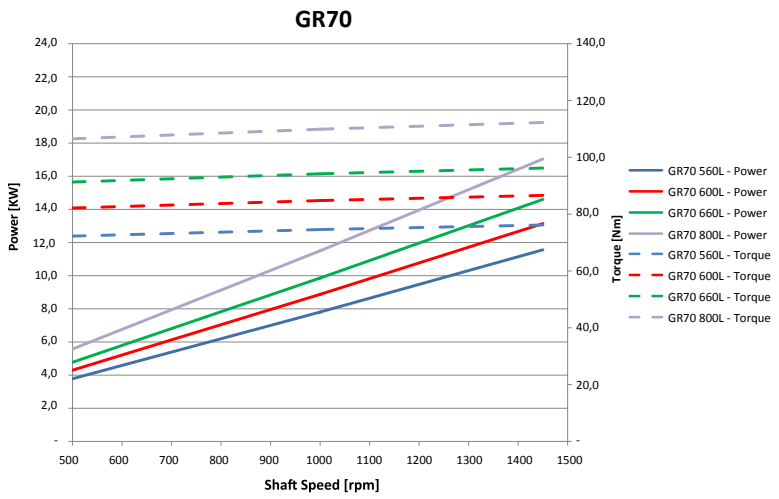
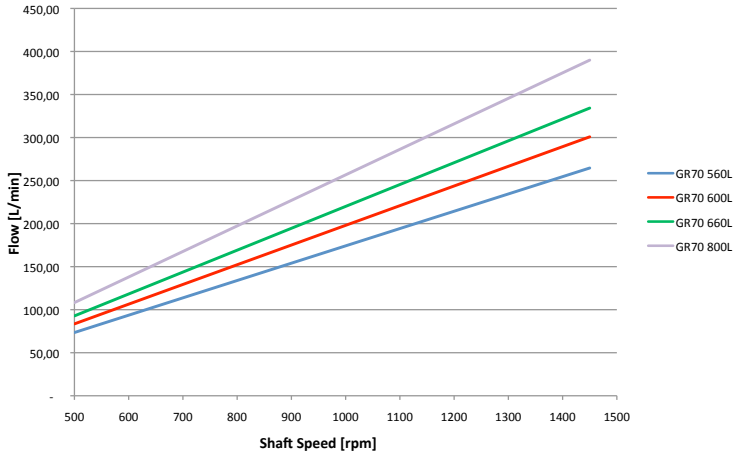
### GR60



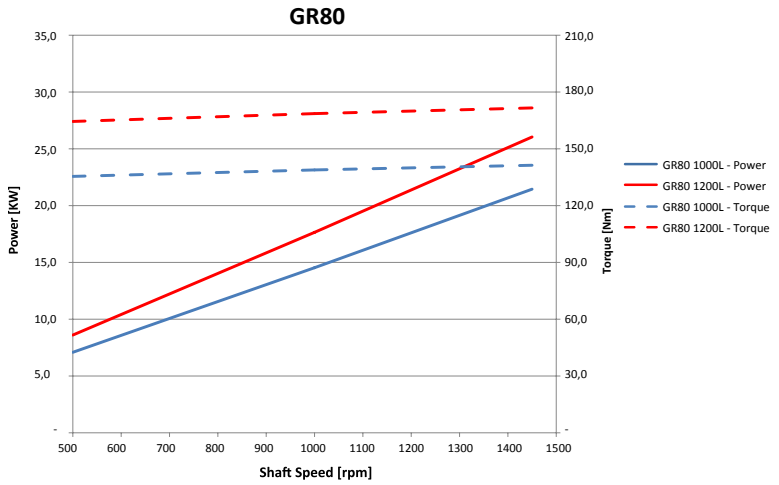
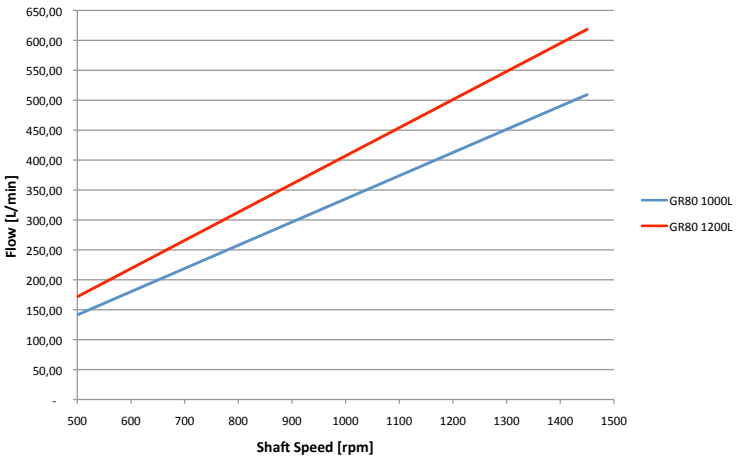
### GR60



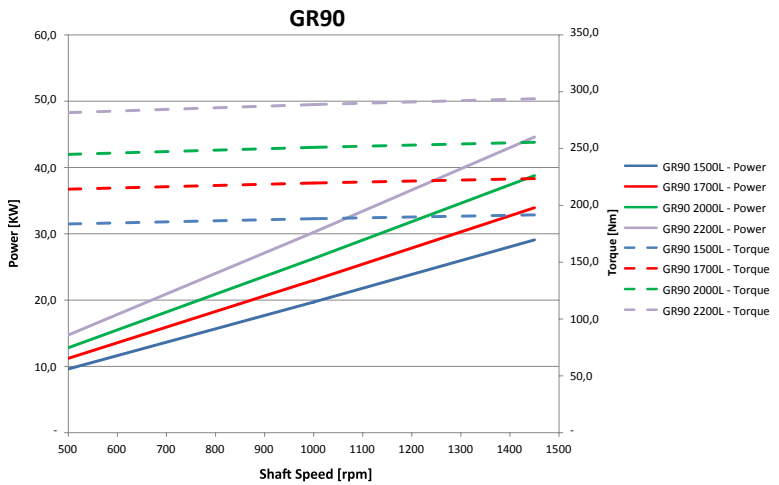
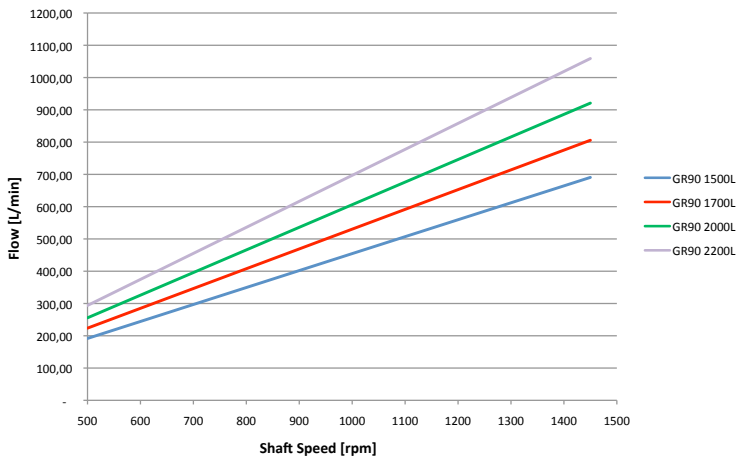
### GR70



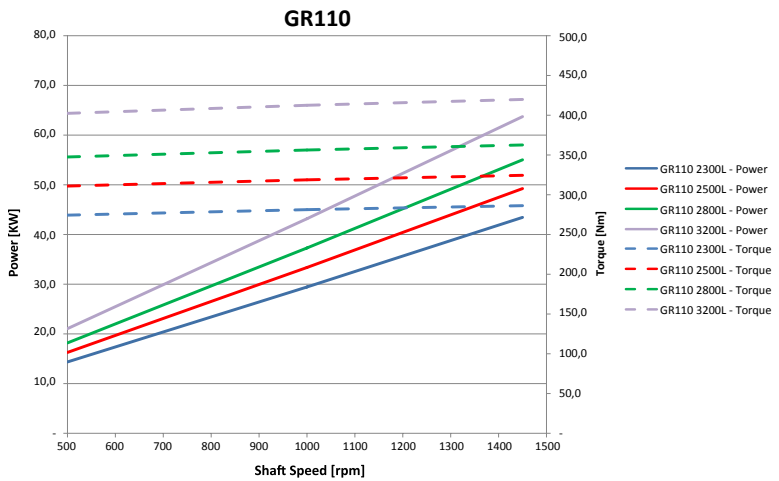
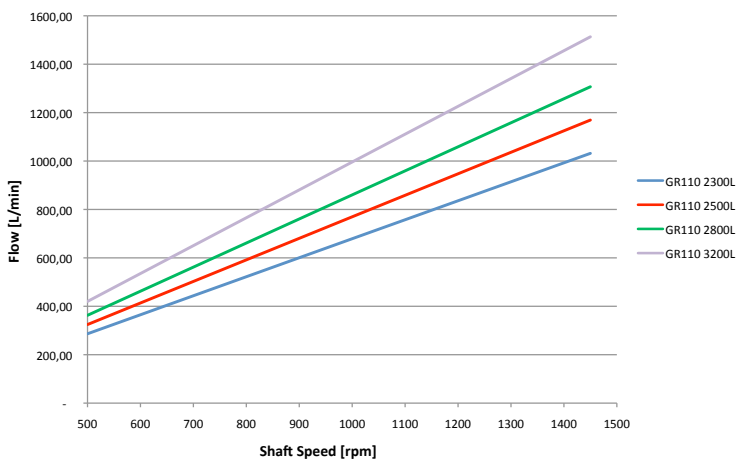
### GR80



### GR90



### GR110

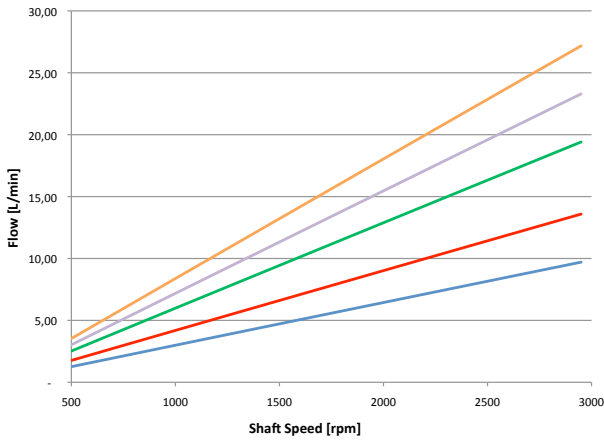


For more information about SMAPI performances at different pressure and viscosity level please contact Settima.

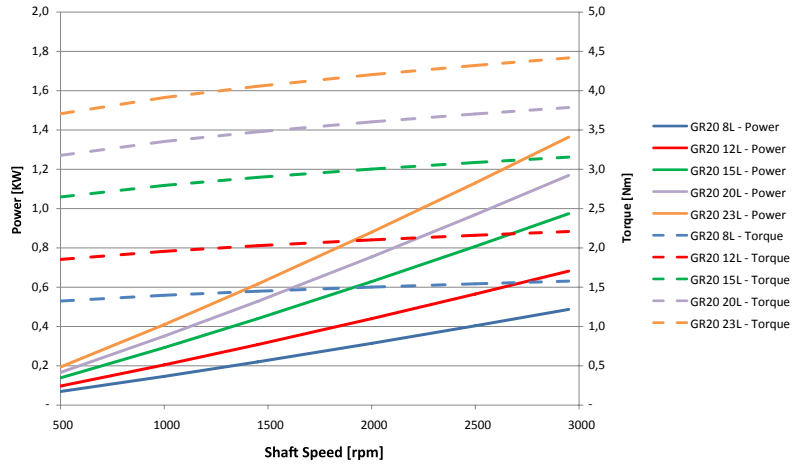
# Flow & power performances 2 poles motor – 50 HZ

20 bar, 46 cSt

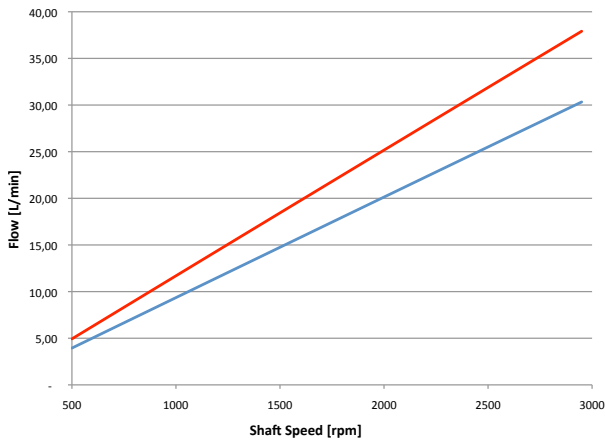
GR20



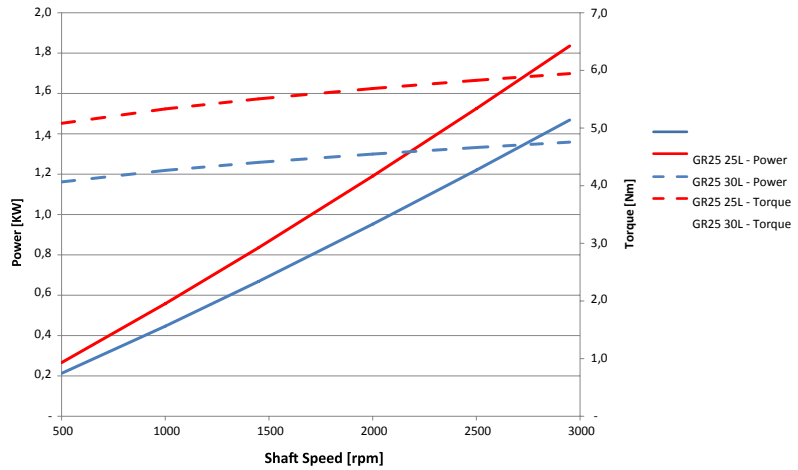
GR20



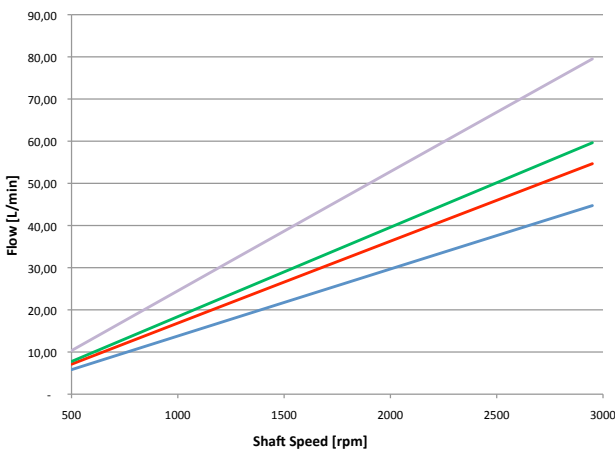
GR25



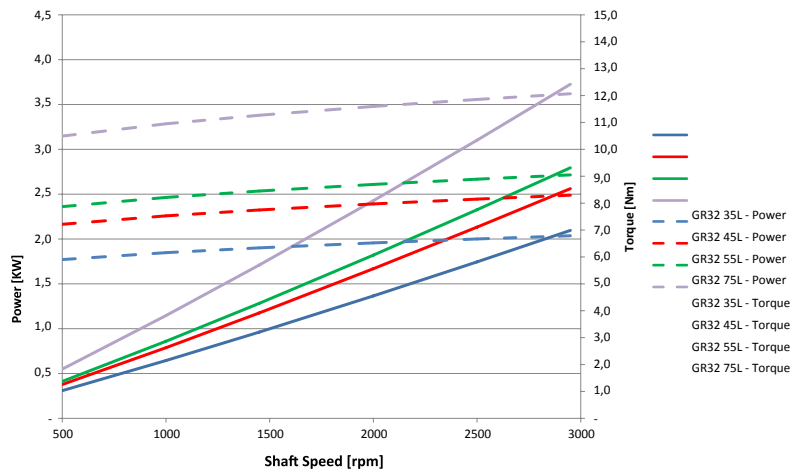
GR25



GR32

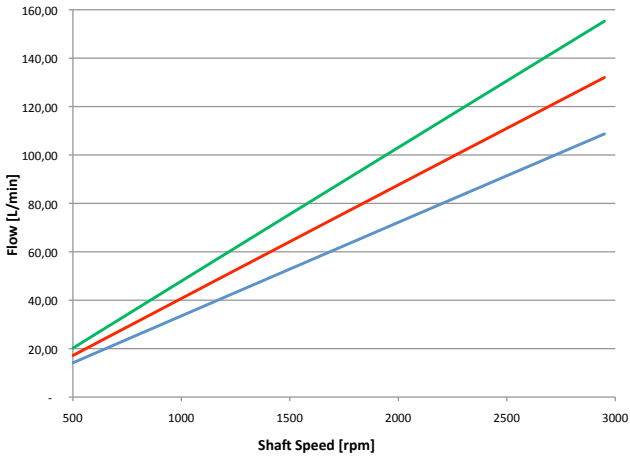


GR32

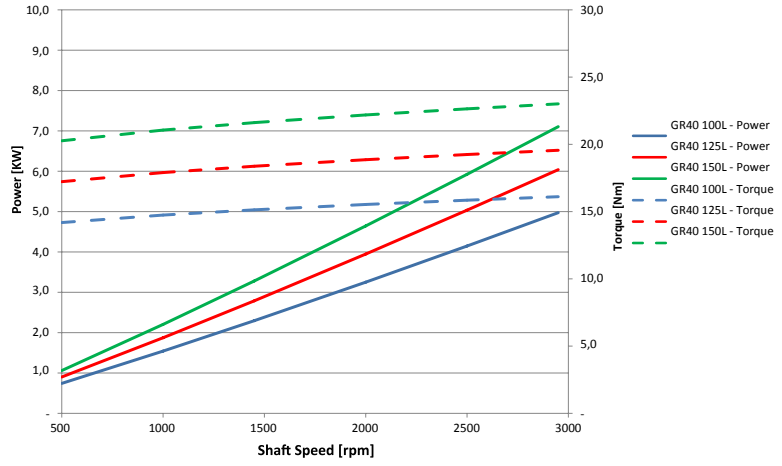




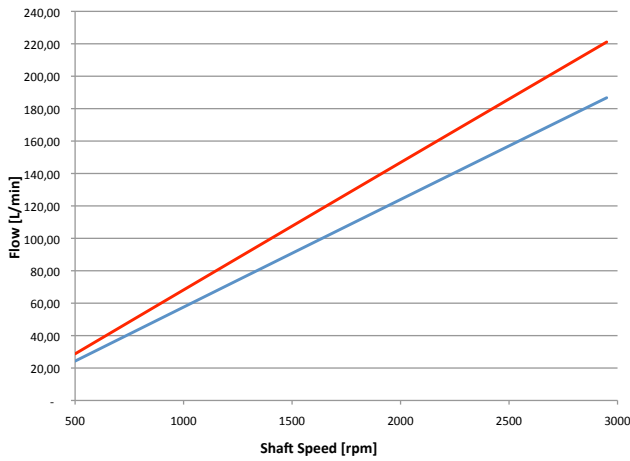
### GR40



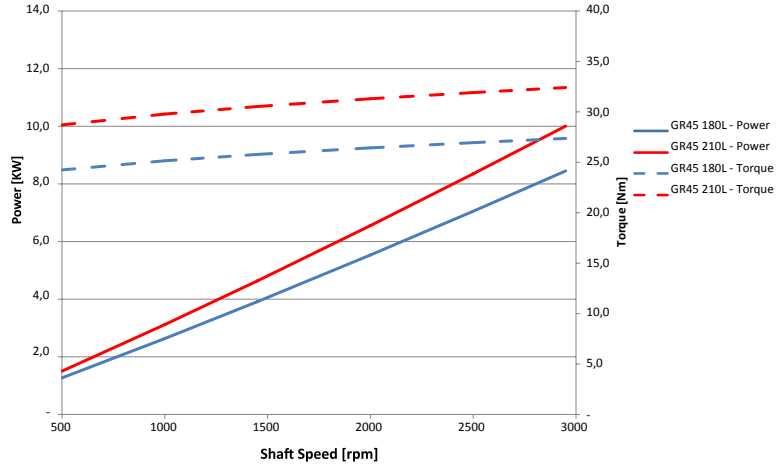
### GR40



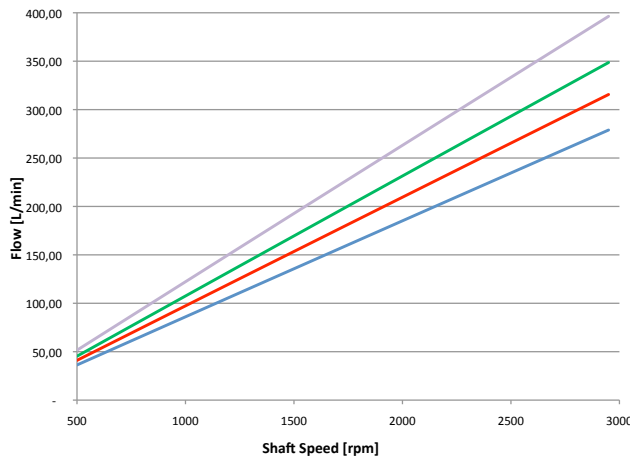
### GR45



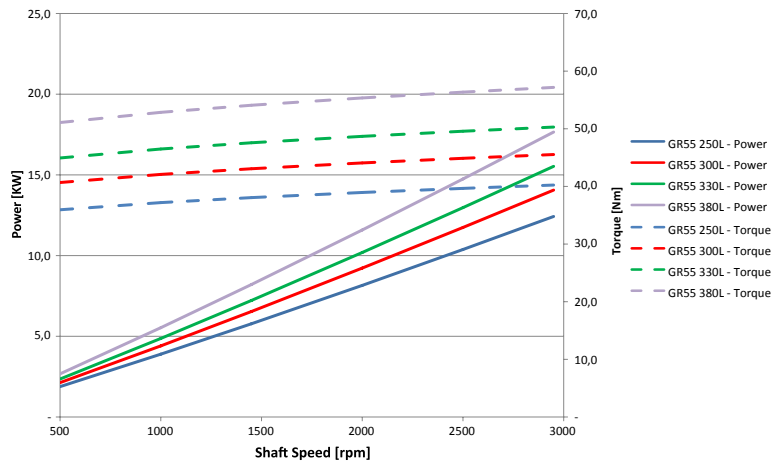
### GR45



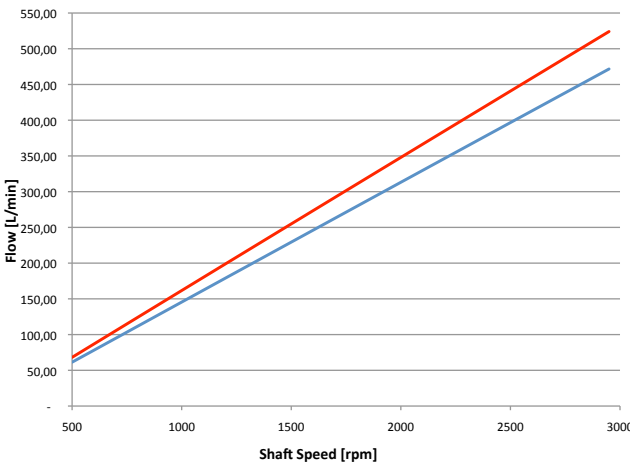
### GR55



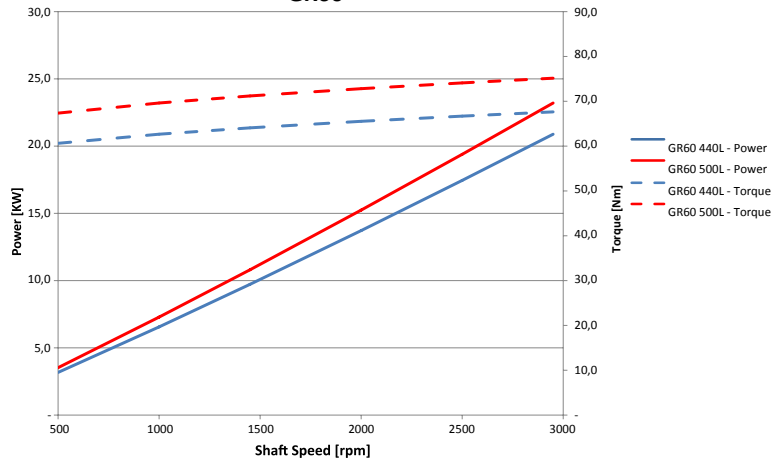
### GR55



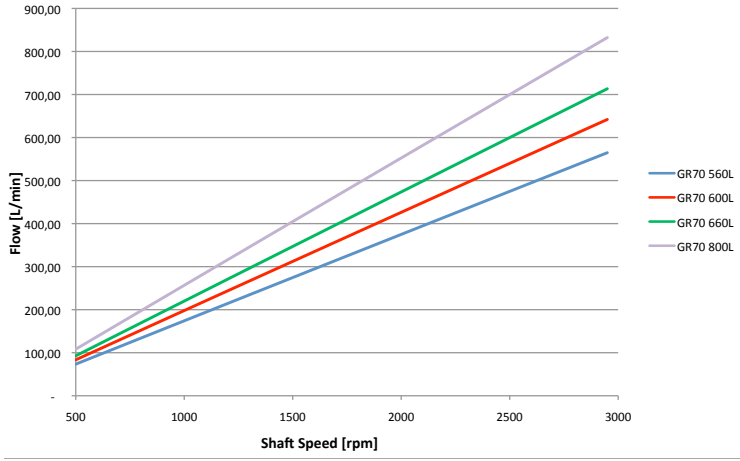
### GR60



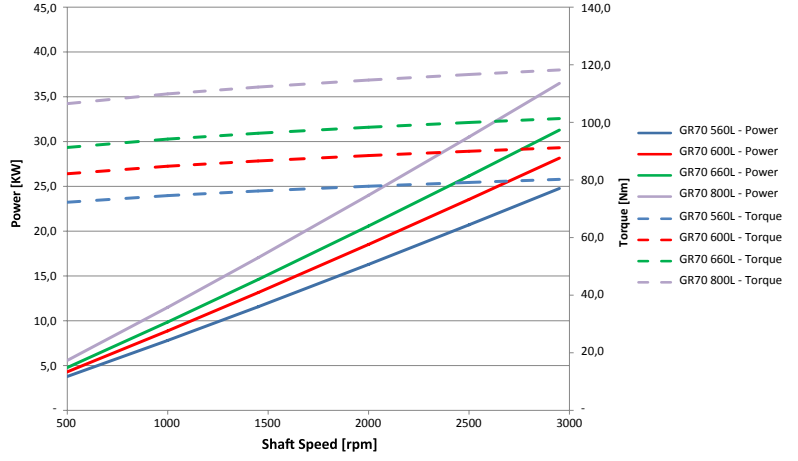
### GR60



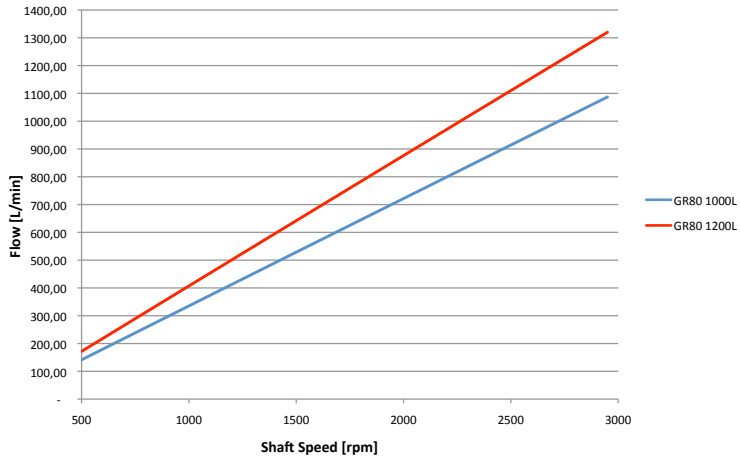
### GR70 \*



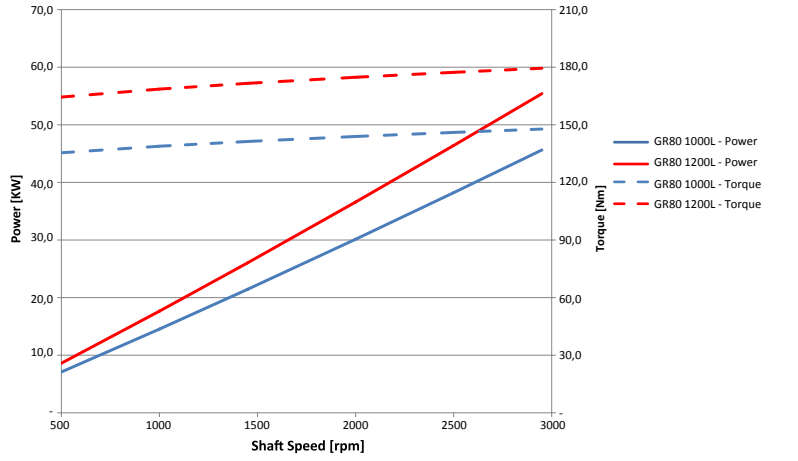
### GR70 \*



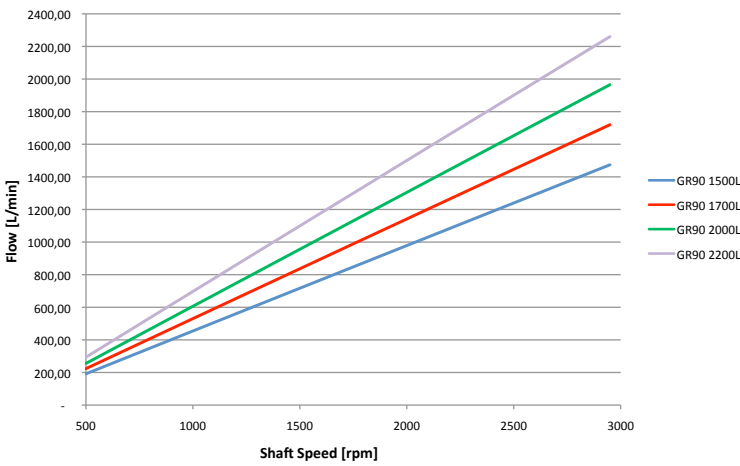
### GR80 \*



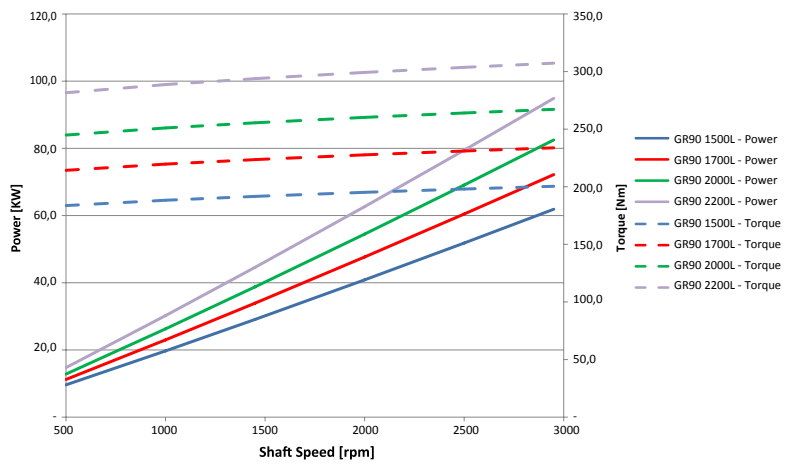
### GR80 \*



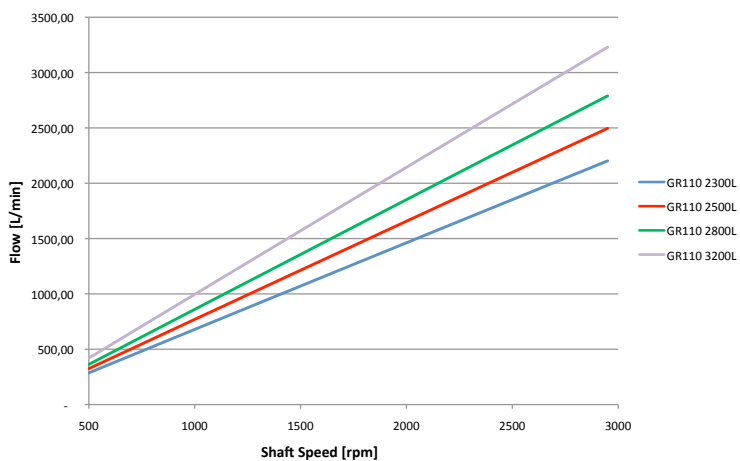
### GR90 \*



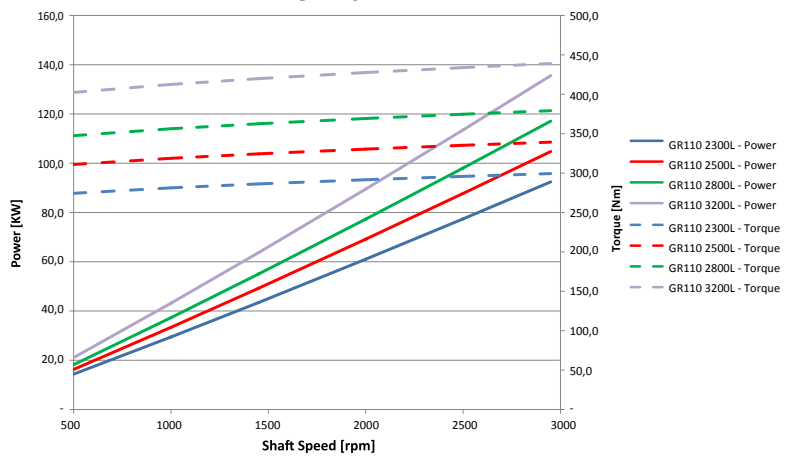
### GR90 \*



### GR110 \*



### GR110 \*



\*For model GR70 600L and 800L, GR80, GR90, GR110 pump must be over-busted, please contact Settima.

For more information about SMAPI performances at different pressure and viscosity level please contact Settima.

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