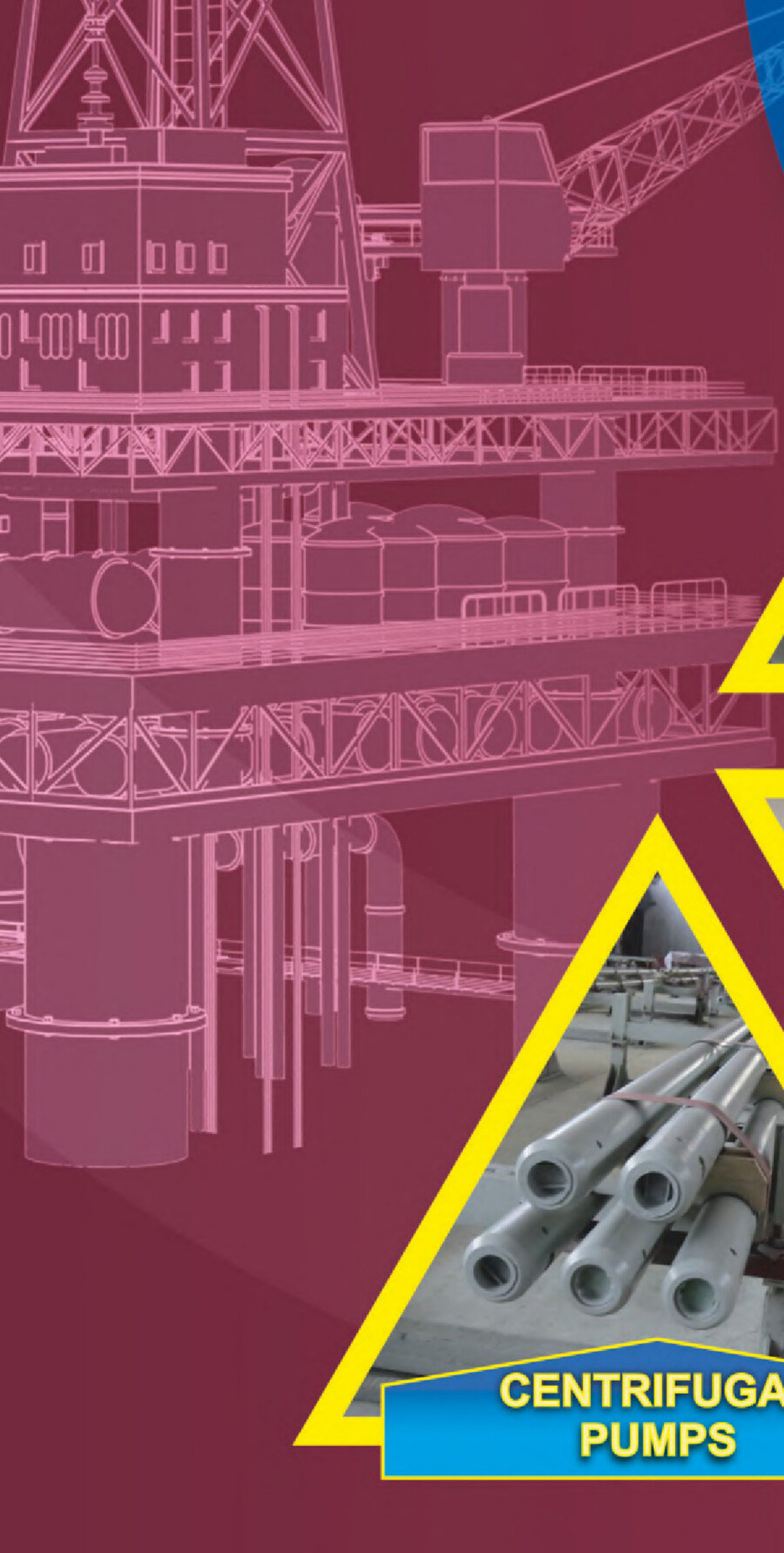
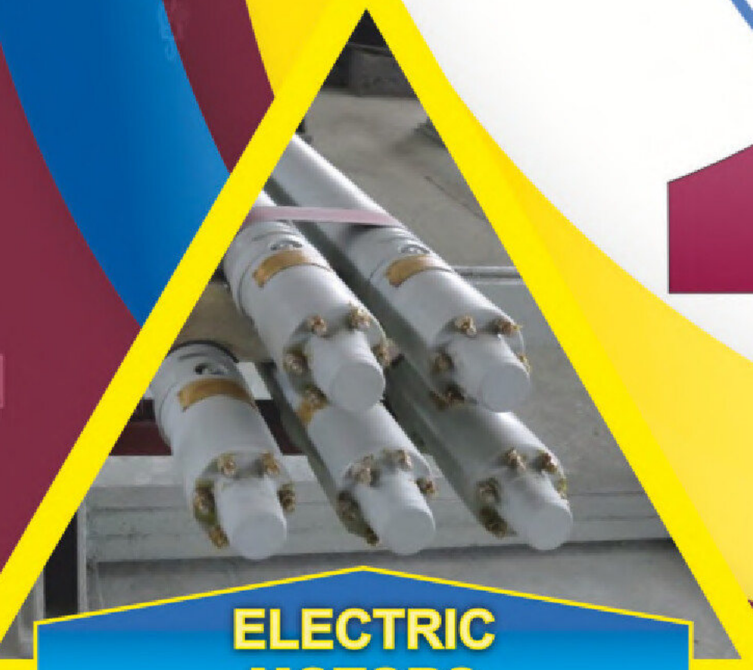
PJSC “KHEMZ-IPEC”

SUBMERSIBLE EQUIPMENT FOR OIL PRODUCTION

KHEMZ-IPEC





ELECTRIC MOTORS

MOTOR SEAL

CENTRIFUGAL PUMPS

GAS SEPARATORS

KHEMZ-IPEC

Private Joint Stock Company

“KHEMZ-IPEC”

Submersible Equipment for Oil Production

Product Catalog

Private Joint Stock Company "KHEMZ-IPEC" was founded in 1995 by the State Property Fund of Ukraine and investment company International Petroleum Company, Inc., based on production facilities of Kharkov Electromechanical Plant, which for more than a half of century had been manufacturing submersible electric motors used to drive centrifugal pump plants.

Due to purposeful investment policy, PJSC "KHEMZ-IPEC" became a modern high-technology enterprise with closed manufacturing cycle for of electric submersible pumps, and output of submersible asynchronous electric motors in quantity of up to 3000 units per year. Our company owns the territory of 2.93 ha, including nearly 22000 m2 of production premises. In its production activities, the enterprise uses more than 550 machine tools, dozens of testing stands, stations and testing and manufacturing plants.

Our company has blanking, stamping, machining, heat-treating, impregnation, winding, painting, assembly and reinforcing sectors, testing stations, repair units, tool-making and woodworking facilities.

PJSC "KHEMZ-IPEC" is certified according to ISO-9001 system.

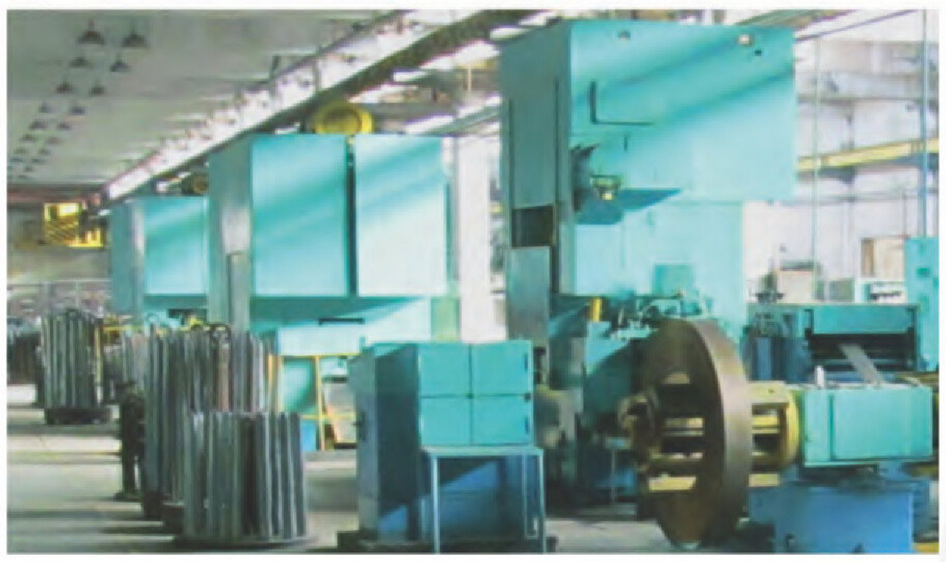
In 2002, PJSC "KHEMZ-IPEC" started delivery of new "M5" series of retrofitted electric motors using stator magnetic circuit with 24 closed slots and impregnating varnish (compound), having enhanced electrically insulating properties and heat resistance. The electric motor comes complete with single-housing motor seal.

Basing on its developments since 2006, PJSC "KHEMZ-IPEC" launched production of electric submersible pumps 362 series (pump housing diameter of 92 mm) and rated flowrate 377, 604, 943 BPD (60, 96, 150 m3PD) at 60 Hz and head from 5197 to 14410 Ft (from 1584 to 4392 m) at 60 Hz.

PJSC "KHEMZ-IPEC"

Since 2015, electric submersible pumps are manufactured of 362 series (pump housing diameter of 92 mm) and rated flowrate from 189 to 1509 BPD (from 30 to 240 m3PD) at 60 Hz and head from 1370 to 18899 Ft (from 418 to 5760 m) at 60 Hz.

Since 2019, electric submersible pumps are manufactured of 339, 362, 406, 449 series (pump housing diameter of 86, 92, 103, 114 mm) and rated flowrate from 113 to 9434 BPD (from 18 to 1500 m3PD) at 60 Hz and head from 523 to 18899 Ft (from 159 to 5760 m) at 60 Hz.



The stand for acceptance of electric submersible pumps provides conducting tests in compliance with GOST 6134-87. The stand for periodical testing electric submersible pumps provides conducting tests for conformity of centrifugal pumps to the technical requirements of GOST 6134-87. The stands for acceptance of electric motors provide conducting tests in compliance with DSTU 2649-94, GOST 11828-86, GOST 7217-87, GOST 183-74.

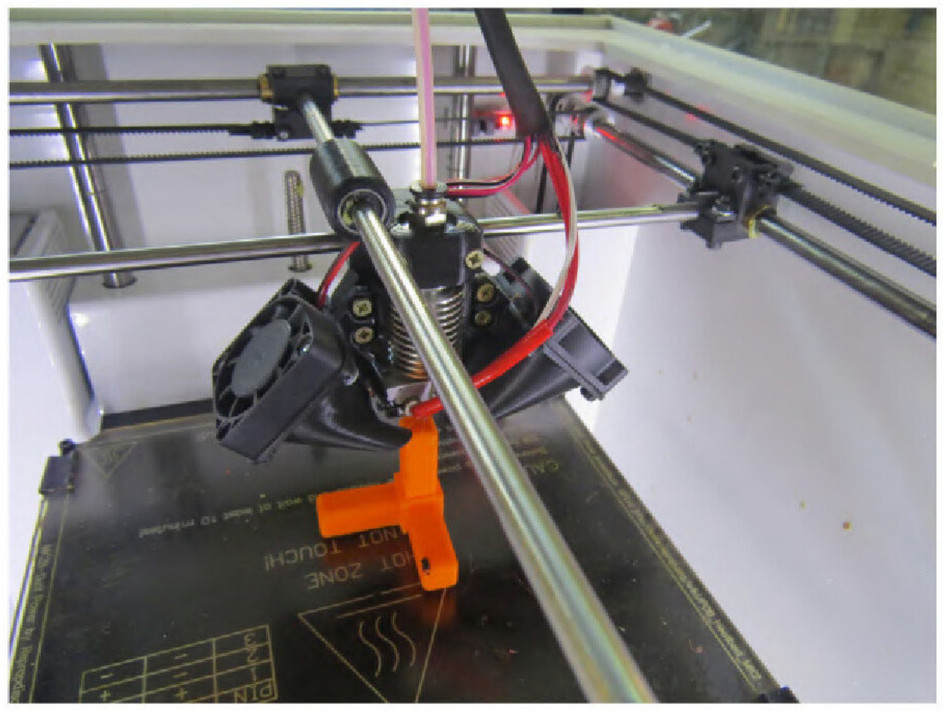
The stand used to check tightness provides check for tightness in compliance with DSTU 2649-94. The vibration stand for electric motor diagnostics provides test for vibration of electric motors in inclined positions according to the requirements of ISO 10816-1-97. The automated stand for periodical testing electric motors provides conducting tests for conformity of electric motors to the technical requirements of DSTU 2649-94,

GOST 11828-86, GOST 7217-87, GOST 183-74 and GOST 25491-83.

PJSC “KHEMZ-IPEC” takes measures to improve production organization methods and increase the level of modernization to increase production efficiency while saving the enterprise financial and material resources. As a result, new equipment and the latest technological processes are introduced into production. Updating and modernization of production provides:

- increasing productivity and quality of products;
- significant expansion of functionality;
- improving the accuracy and speed of production due to partial or full automation of the production process;
- qualitatively new characteristics of machines: the ability to control and control from a remote computer, the ability to process parts in several planes with automatic tool change;
- the ability to embed existing equipment in an automated production management system;
- energy saving.

PJSC "KHEMZ-IPEC"



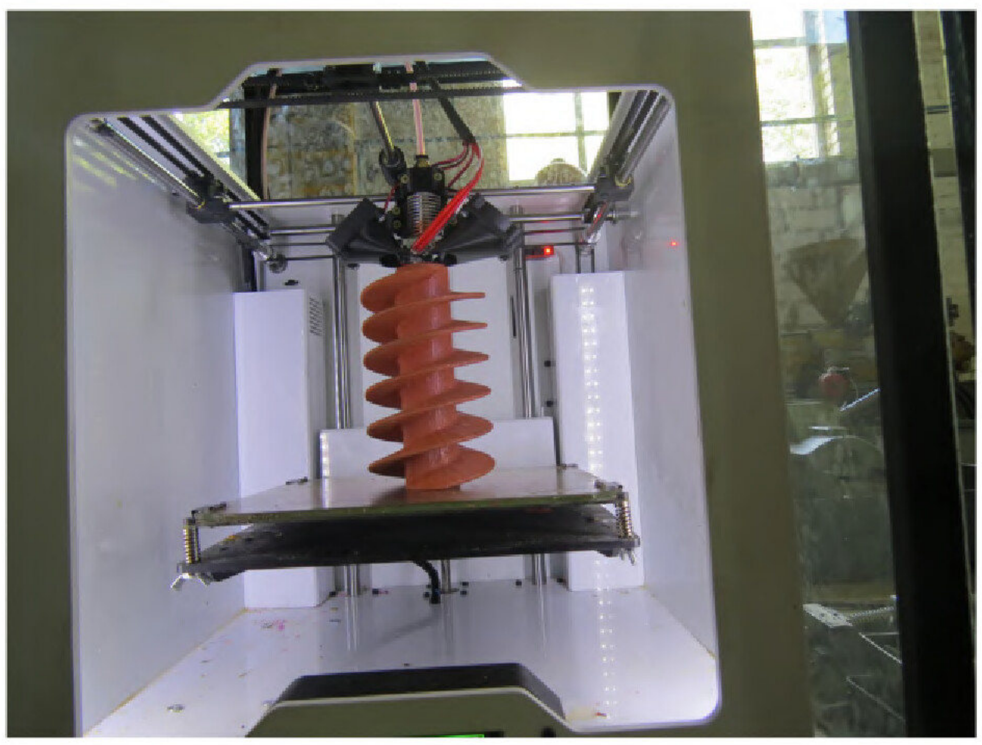
PJSC "KHEMZ-IPEC" is actively introducing new technologies in the framework of updating and modernization of production. An example is the introduction of additive technologies in production. In the area of CNC machines, a number of 3D printing equipment was installed. 3D printing allows us to solve a wide range of tasks quickly, efficiently and accurately, for example:

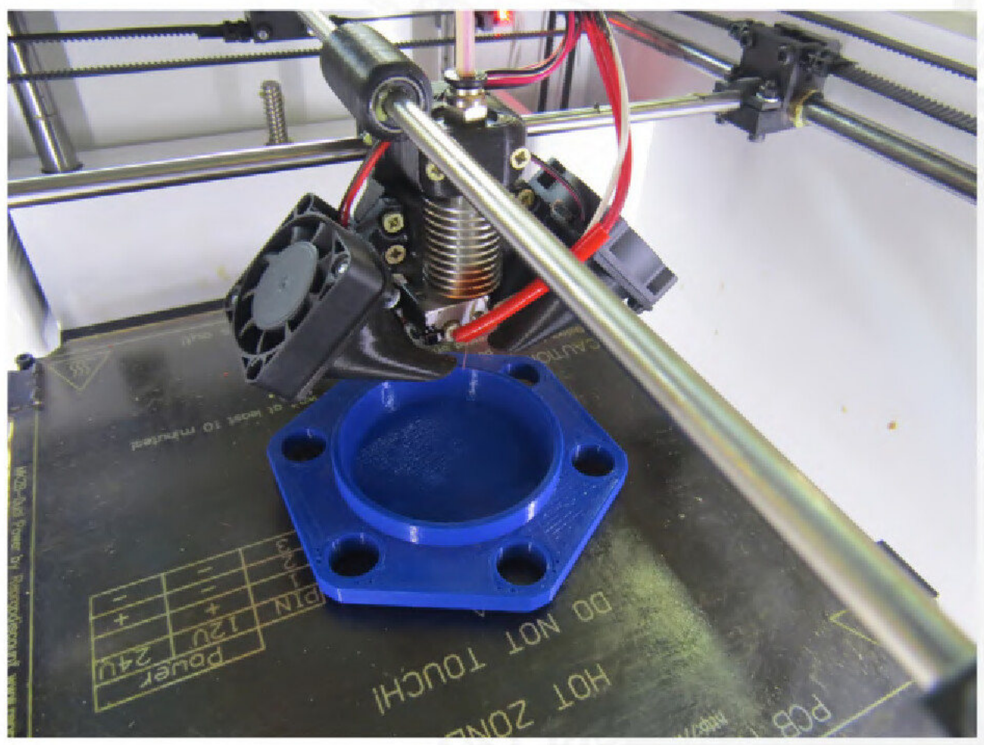
- development of new parts and mechanisms;
- modernization of existing systems and individual elements;
- repair and replacement of failed parts;
- the possibility of manufacturing parts unique in geometry that cannot be created by traditional methods.

In addition, up-to-date 3D printing systems make it possible to solve the widest range of tasks quickly and efficiently that our engineers and designers face in new developments, and update existing design solutions as well.

3D printers have become indispensable both at the stage of creating conceptual designs, and for the production of finished products.

Using 3D printing, young specialists of our company have developed and introduced into production a number of new products.





BUREAU VERITAS

Bureau Veritas Certification

PRIVATE JOINT STOCK COMPANY "KHEMZ-IPEC"

15-A, Industrialna St., Kharkiv, 61106, Ukraine

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 9001:2015

Scope of certification

Design and manufacture of submersible centrifugal pumps, submersible asynchronous electric motors (electric motors and hydraulic protection), gas separators, gas separators-dispersers, plunger metering pumps and units and hermetic metering pumps and units.

Original cycle start date:	**30 November 2001**
Expiry date of previous cycle:	**NA**
Certification / Recertification Audit date:	**NA**
Certification / Recertification cycle start date:	**09 October 2024**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate expires on: **16 October 2027**

Certificate No. **UA231554** Version: **1** Issue date: **09 October 2024**

Olena Svyrydenko
Signed on behalf of BVCH SAS UK Branch

UKAS MANAGEMENT SYSTEMS
0008

Certification body address: ***5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom***
Local office: ***5th floor, 28, Simon Petlyura St., Kyiv, 01032, UKRAINE***

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: +380 44 354 16 00

1 / 1

BUREAU VERITAS
Certification

Private Joint Stock Company "KHEMZ-IPEC"

15-A, Industrialnaya Str., Kharkiv, 61106, Ukraine

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 45001:2018

Scope of certification

Design and manufacture of submersible centrifugal pumps and submersible asynchronous electric motors; plunger metering pumps and units, and hermetic metering pumps and units.

Original cycle start date: **05 September 2018**
Expiry date of previous cycle: **NA**
Certification / Recertification Audit date: **NA**
Certification / Recertification cycle start date: **28 August 2021**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **04 September 2024**

Certificate No. **UA230217** Version: **0** Revision date: **28 August 2021**

Olena Svyrydenko
Signed on behalf of BVCH SAS UK Branch

UKAS MANAGEMENT SYSTEMS
0008

Certification body address: ***5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom***
Local office: ***5th floor, 28, Simon Petlyura St., Kyiv, 01032, UKRAINE***

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: **+380 44 354 16 00**

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BUREAU VERITAS
Certification

Private Joint Stock Company «KHEMZ-IPEC»

15-A, Industrialnaya Str., Kharkiv, 61106, Ukraine

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

ISO 14001:2015

Scope of certification

Design and manufacture of submersible centrifugal pumps and submersible asynchronous electric motors; plunger metering pumps and units, and hermetic metering pumps and units.

Original cycle start date:	**13 August 2018**
Expiry date of previous cycle:	**12 August 2021**
Certification / Recertification Audit date:	**28 July 2021**
Certification / Recertification cycle start date:	**28 August 2021**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **12 August 2024**

Certificate No. **UA230216** Version: **0** Revision date: **28 August 2021**

Olena Svyrydenko
Signed on behalf of BVCH SAS UK Branch

UKAS MANAGEMENT SYSTEMS
0008

Certification body address: ***5th Floor, 66 Prescot Street, London E1 8HG, United Kingdom***
Local office: ***5th floor, 28, Simon Petlyura St., Kyiv, 01032, UKRAINE***

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: **+380 44 354 16 00**

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Electric Submersible Pumps (ESP)

Product Summary Table

Pump Model	Stage Type	Housing Diameter		Performance Summary Data at 60 Hz (3492 RPM)			
				Nominal Flowrate		Recommended Range	
		in	mm	BPD	m^3PD	BPD	m^3PD
400-189	Radial			189	30	75…340	12…54
400-226	Radial			226	36	151…400	24…64
400-340	Radial			340	54	226…491	36…78
400-377	Radial			377	60	302…604	48…96
400-453	Radial	4.00	101.6	453	72	302…566	48…90
400-604	Radial			604	96	453…792	72…126
400-755	Mixed Flow			755	120	604…906	96…144
400-943	Radial			943	150	604…1208	96…192
400-1509	Radial			1509	240	1057…2113	168…336

Note: The nominal flowrate scale can be compressed or expanded.

Product Summary Table

Pump Model	Stage Type	Housing Diameter		Performance Summary Data at 50 Hz (2910 RPM)			
				Nominal Flowrate		Recommended Range	
		in	mm	BPD	m^3PD	BPD	m^3PD
400-189	Radial	4.00	101.6	157	25	63…283	10…45
400-226	Radial			189	30	126…333	20…53
400-340	Radial			283	45	189…409	30…65
400-377	Radial			314	50	252…503	40…80
400-453	Radial			377	60	252…472	40…75
400-604	Radial			503	80	377…660	60…105
400-755	Mixed Flow			629	100	503…755	80…120
400-943	Radial			786	125	503…1006	80…160
400-1509	Radial			1258	200	881…1761	140…280

Note: The nominal flowrate scale can be compressed or expanded.

400 Series ESP

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in	
	101.6 mm	
Minimum Casing Size	5.5 in	
	139.7 mm	
Shaft Diameter	0.669 in	
	17 mm	
Shaft Cross-Sectional Area	0.352 in^2	
	226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP	80 HP
	72 kW	60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP	174 HP
	156 kW	130 kW
Rotational Direction	Clockwise	

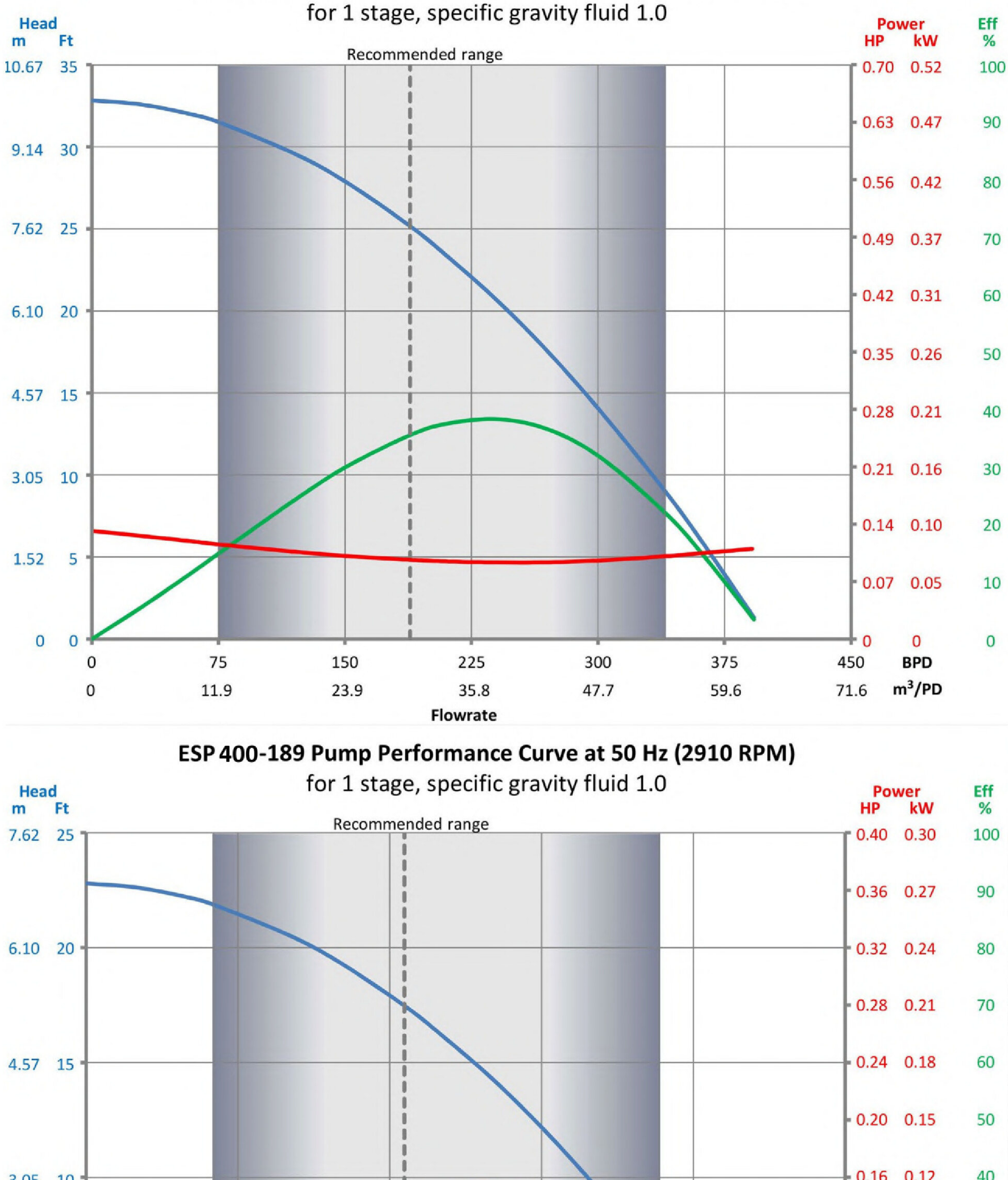
Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	189 BPD	157 BPD
	30 m^3PD	25 m^3PD
Recommended Range	75…340 BPD	63…283 BPD
	12…54 m^3PD	10…45 m^3PD
Head Per Stage	25.18 ft	17.49 ft
	7.68 m	5.33 m
Power Per Stage	0.1 HP	0.058 HP
	0.074 kW	0.043 kW
Efficiency	35.5 %	

Data performance summary for specific gravity fluid 1.0.

ESP 400-189 Pump (Design 1)

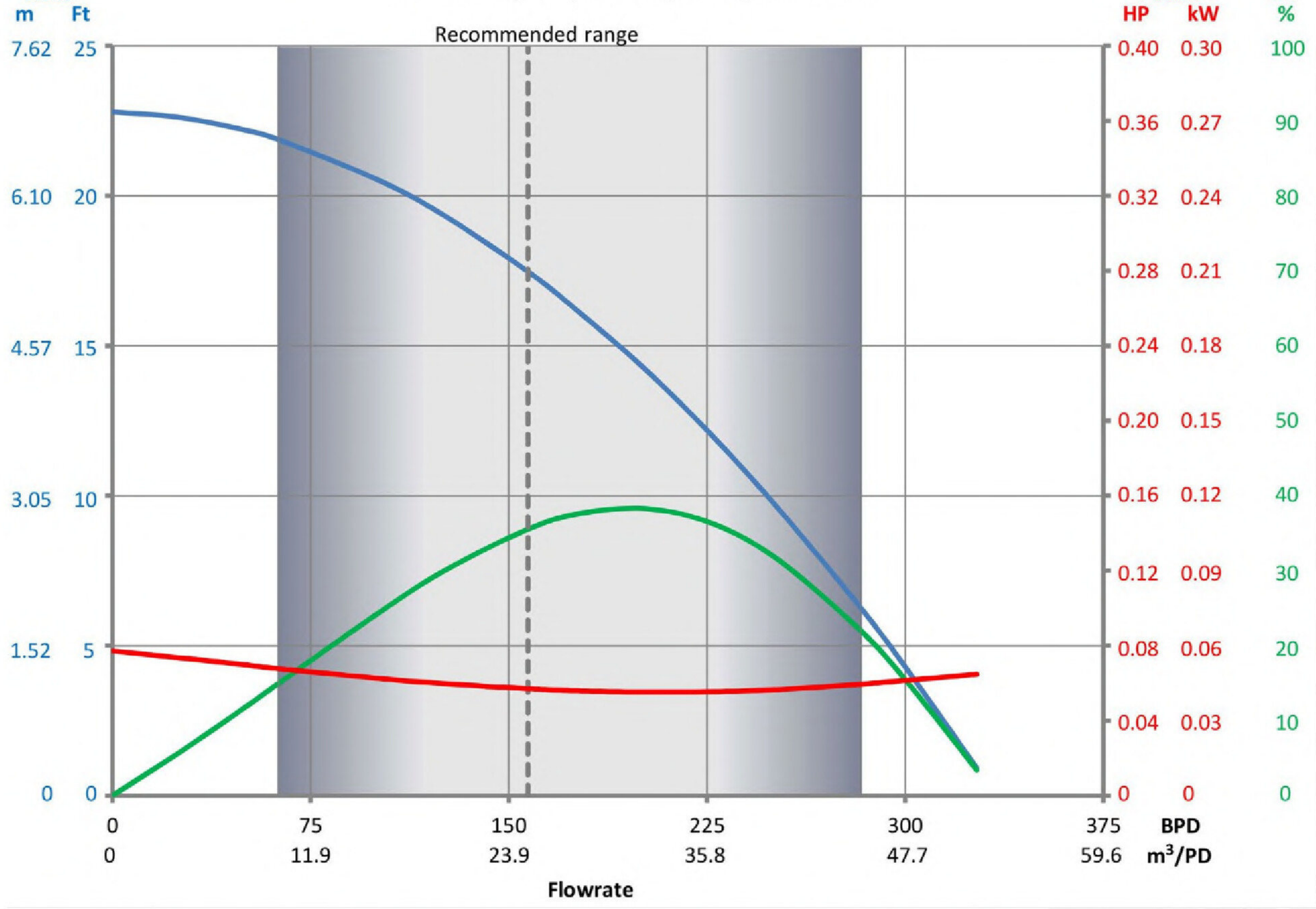
ESP 400-189 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



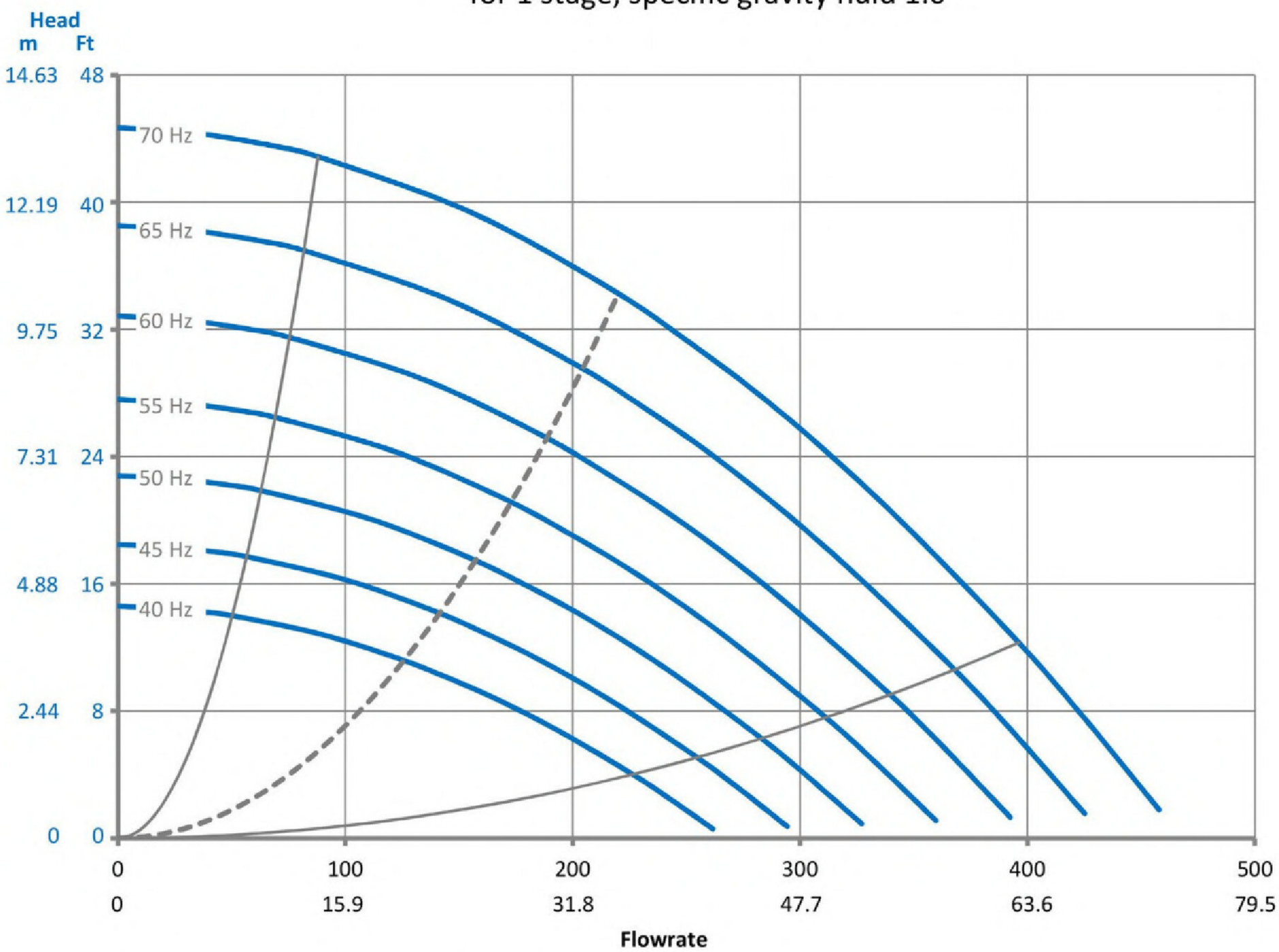
ESP 400-189 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



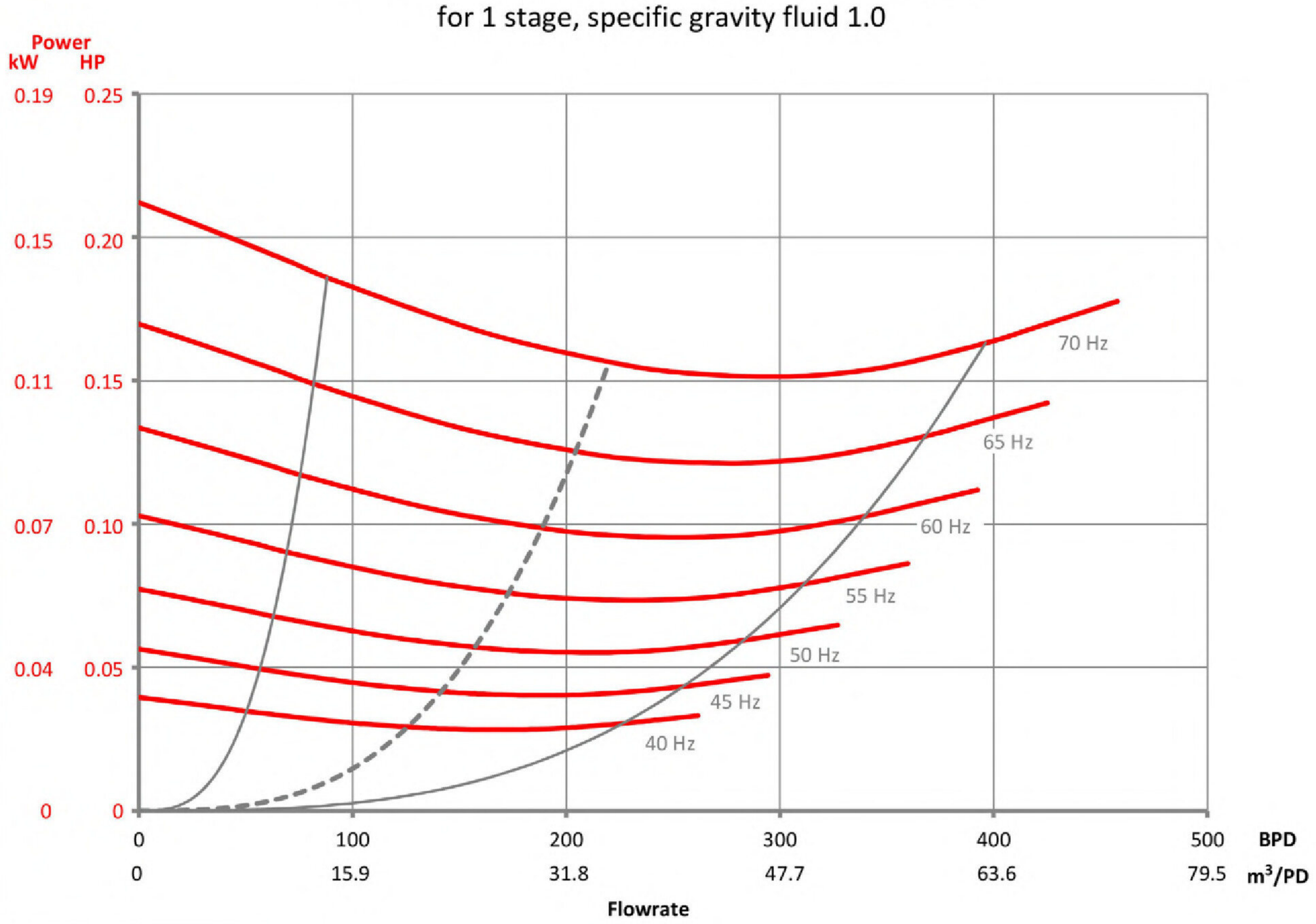
ESP 400-189 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-189 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	118	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	160	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	202	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	244	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2972 ft	906 m	11.8 HP	8.8 kW	13.9 HP	10.4 kW
13.12 ft	4.0 m	4029 ft	1228 m	15.9 HP	11.9 kW	18.9 HP	14.1 kW
16.41 ft	5.0 m	5087 ft	1550 m	20.1 HP	15.0 kW	23.9 HP	17.8 kW
19.69 ft	6.0 m	6144 ft	1873 m	24.3 HP	18.1 kW	28.8 HP	21.5 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2064 ft	629 m	6.8 HP	5.1 kW	8.1 HP	6.0 kW
13.12 ft	4.0 m	2798 ft	853 m	9.2 HP	6.9 kW	10.9 HP	8.2 kW
16.41 ft	5.0 m	3533 ft	1077 m	11.6 HP	8.7 kW	13.8 HP	10.3 kW
19.69 ft	6.0 m	4267 ft	1301 m	14.1 HP	10.5 kW	16.7 HP	12.4 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

ESP 400-226 Pump (Design 1)

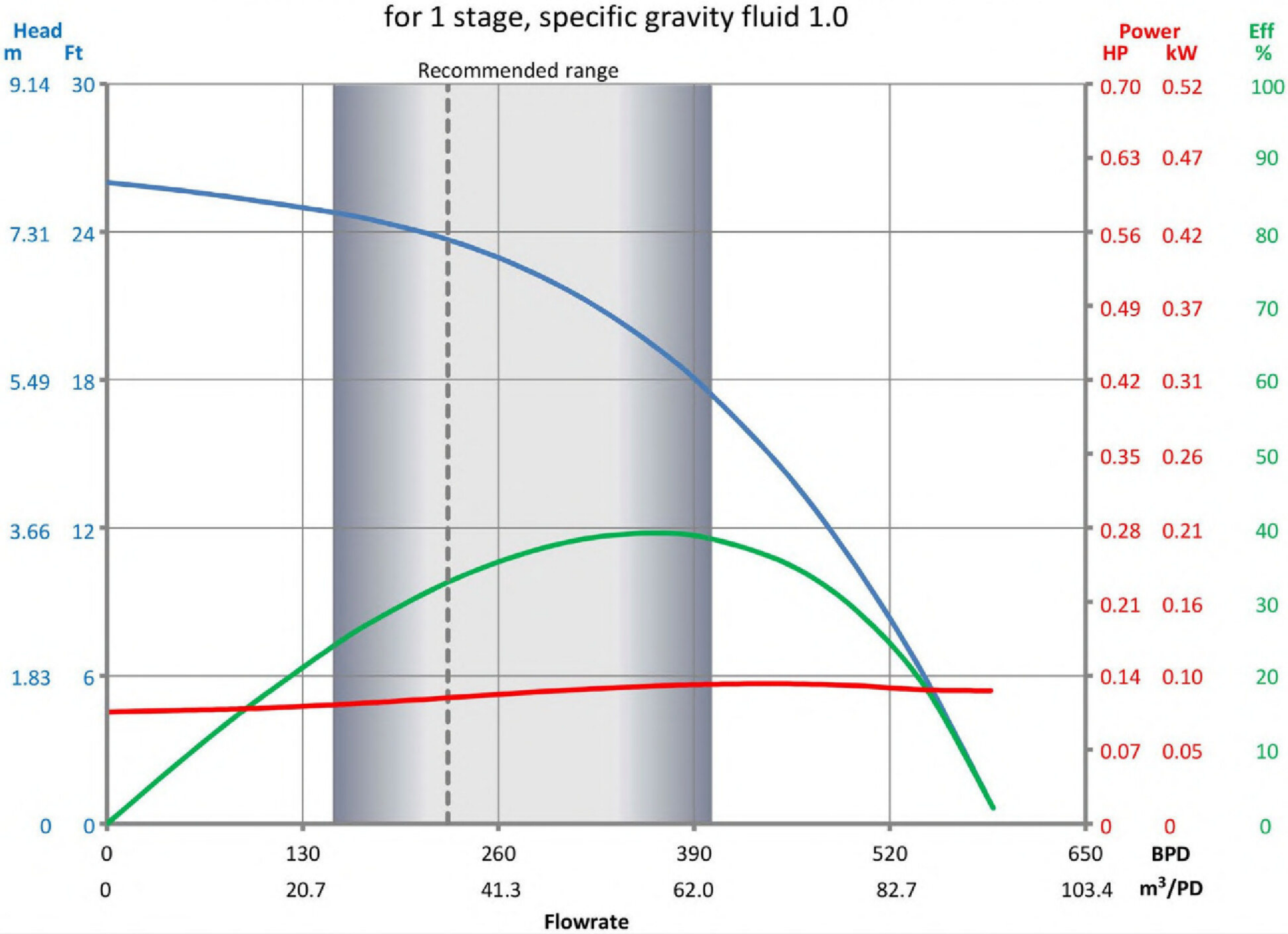
Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	226 BPD 36 m^3PD	189 BPD 30 m^3PD
Recommended Range	151…400 BPD 24…64 m^3PD	126…333 BPD 20…53 m^3PD
Head Per Stage	23.67 ft 7.21 m	16.44 ft 5.01 m
Power Per Stage	0.12 HP 0.09 kW	0.07 HP 0.052 kW
Efficiency	32.6 %	

Data performance summary for specific gravity fluid 1.0.

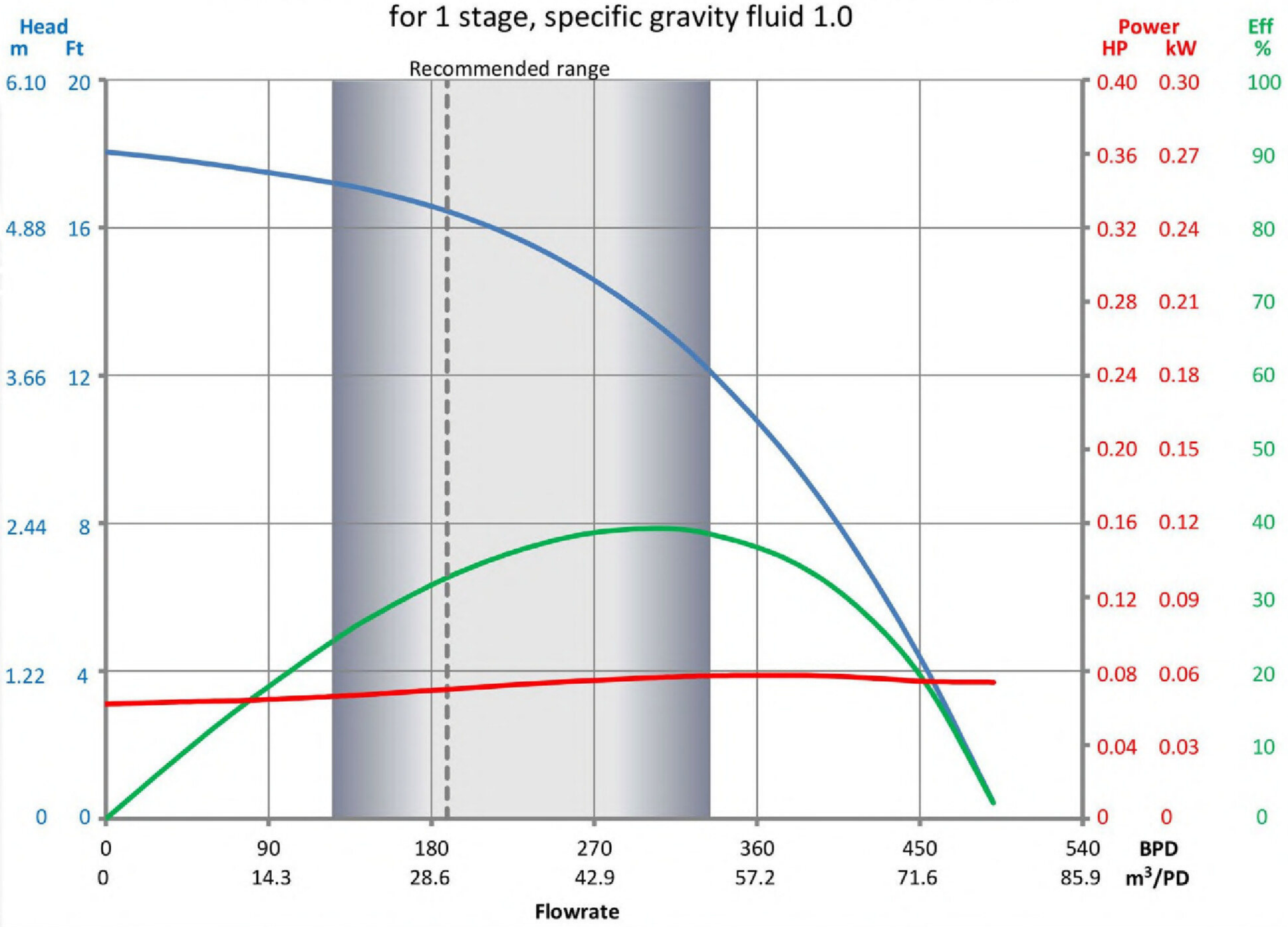
ESP 400-226 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



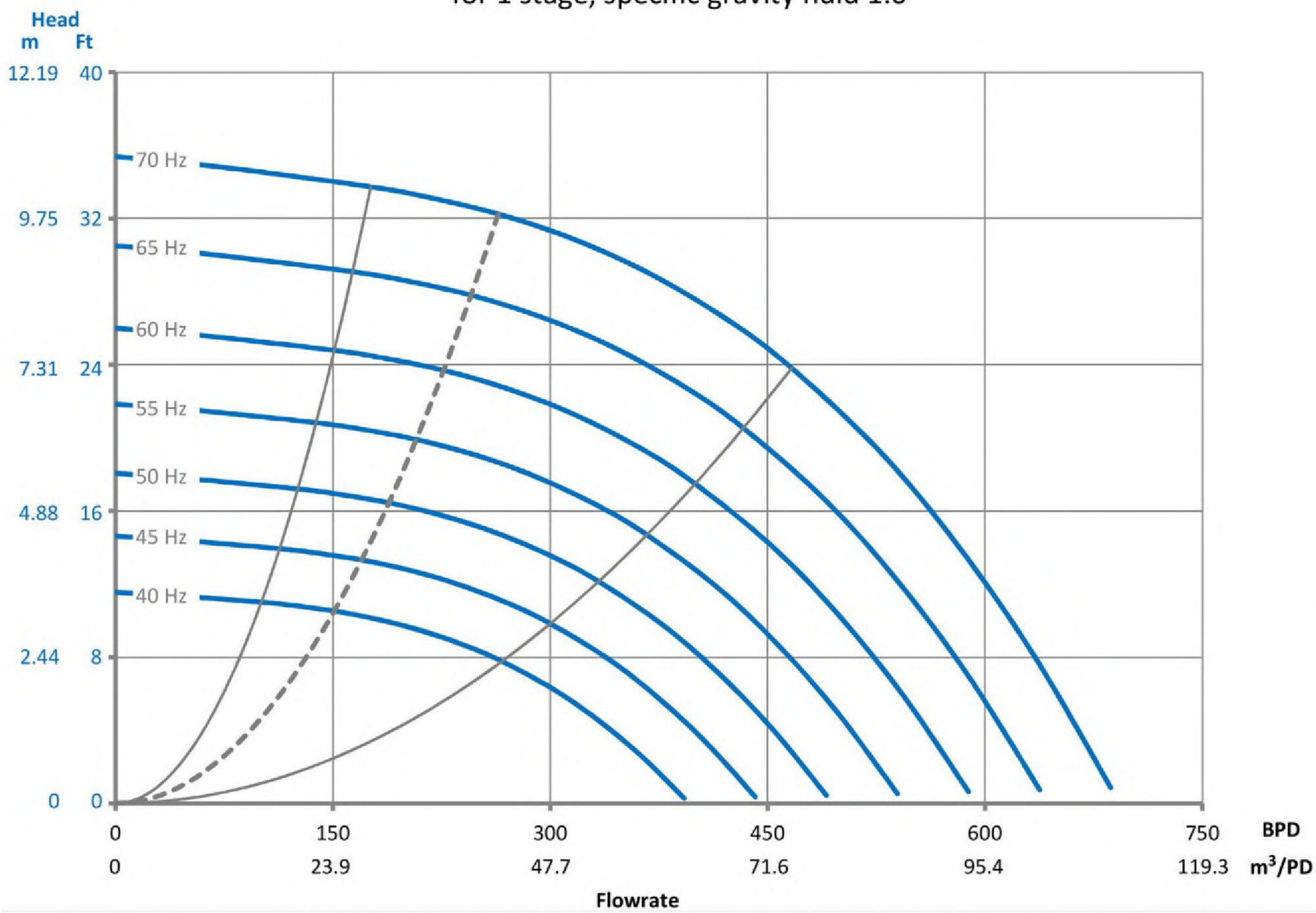
ESP 400-226 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



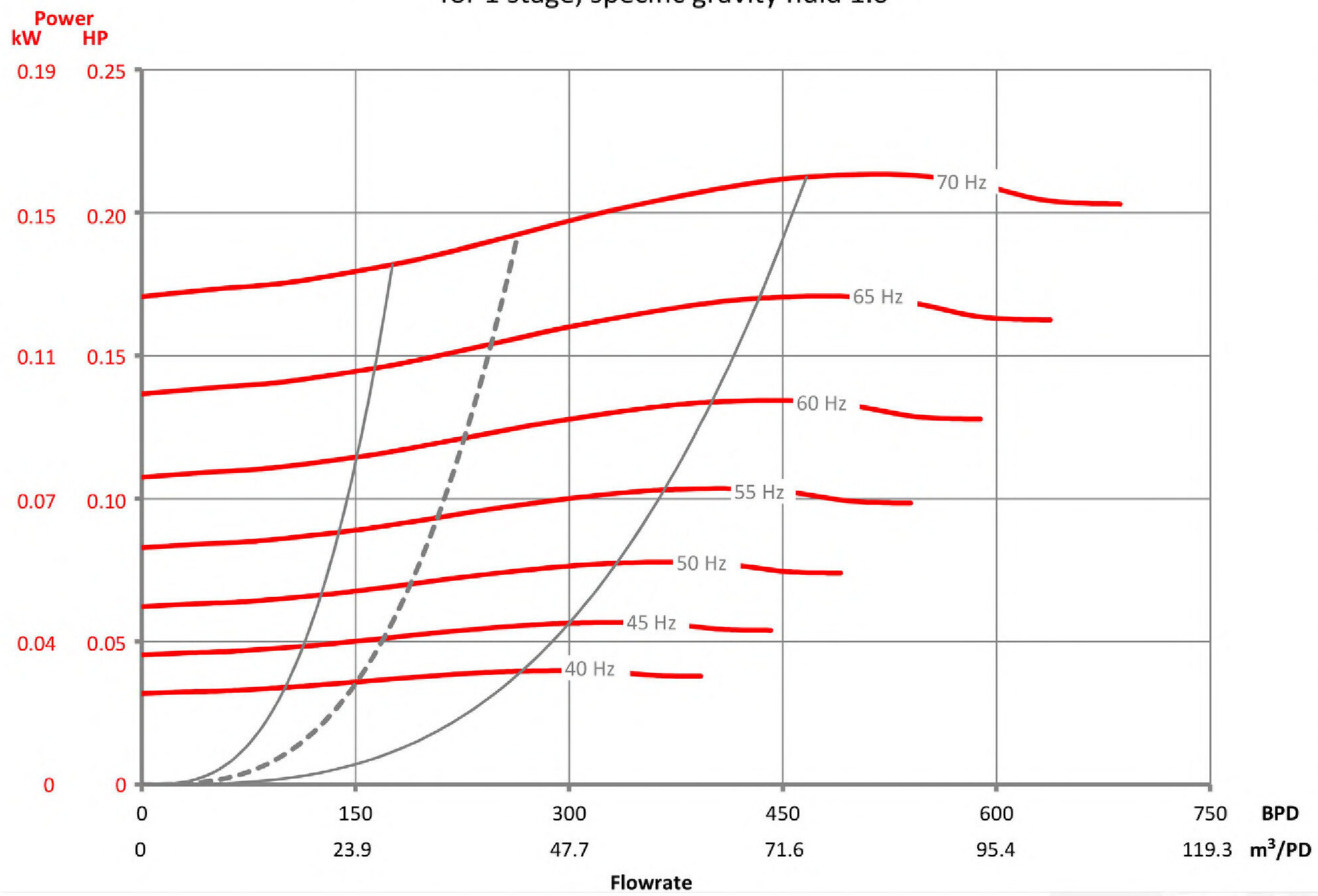
ESP 400-226 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-226 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	110	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	149	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	188	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	227	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2604 ft	794 m	13.2 HP	9.9 kW	14.8 HP	11.0 kW
13.12 ft	4.0 m	3527 ft	1075 m	17.9 HP	13.4 kW	20.0 HP	14.9 kW
16.41 ft	5.0 m	4450 ft	1356 m	22.6 HP	16.9 kW	25.3 HP	18.8 kW
19.69 ft	6.0 m	5373 ft	1638 m	27.3 HP	20.4 kW	30.5 HP	22.8 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1808 ft	551 m	7.7 HP	5.7 kW	8.6 HP	6.4 kW
13.12 ft	4.0 m	2449 ft	746 m	10.4 HP	7.7 kW	11.6 HP	8.6 kW
16.41 ft	5.0 m	3090 ft	942 m	13.1 HP	9.8 kW	14.6 HP	10.9 kW
19.69 ft	6.0 m	3731 ft	1137 m	15.8 HP	11.8 kW	17.6 HP	13.2 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

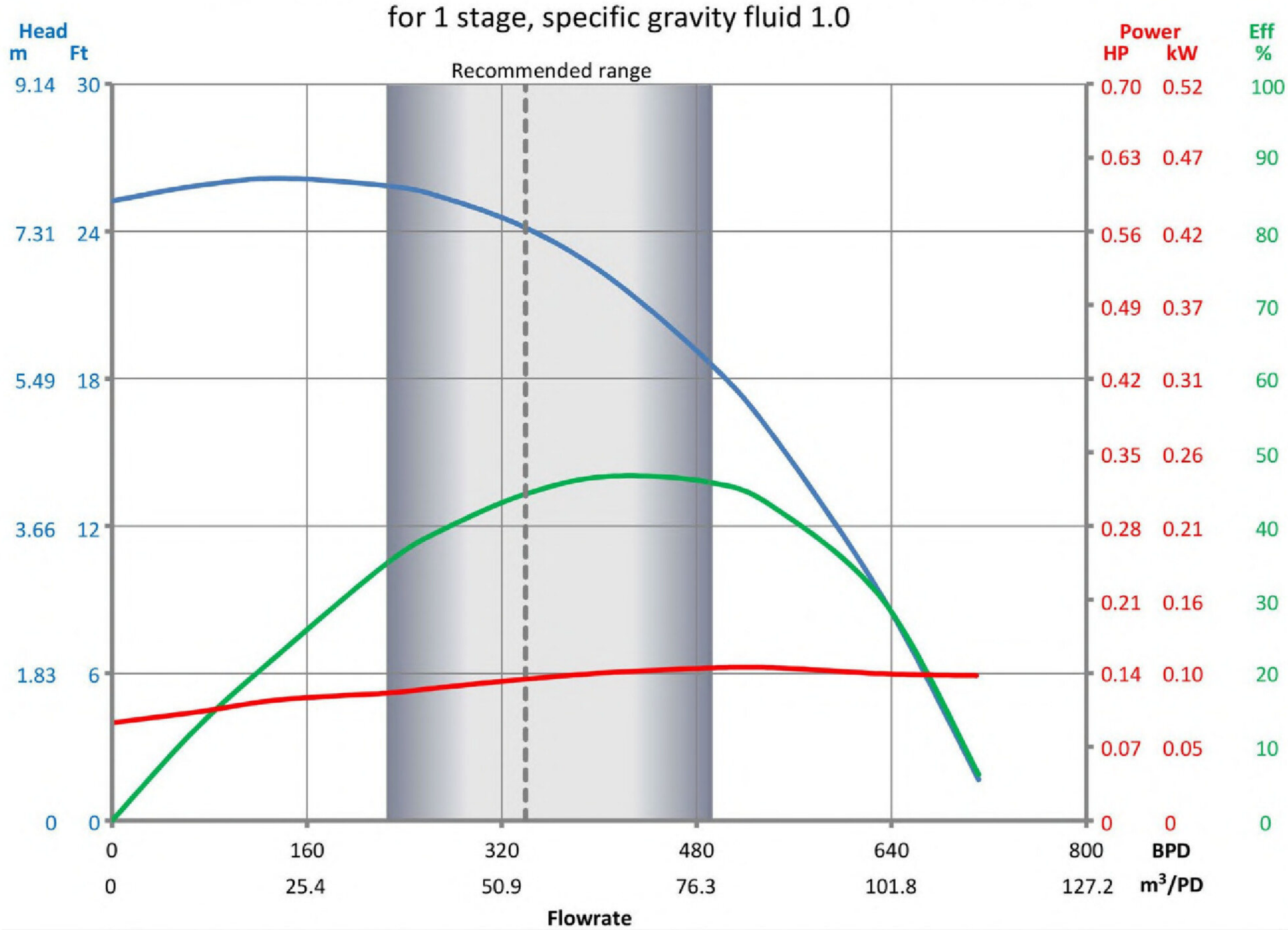
Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	340 BPD 54 m^3PD	283 BPD 45 m^3PD
Recommended Range	226…491 BPD 36…78 m^3PD	189…409 BPD 30…65 m^3PD
Head Per Stage	24.14 ft 7.36 m	16.77 ft 5.11 m
Power Per Stage	0.137 HP 0.102 kW	0.079 HP 0.059 kW
Efficiency	44.3 %	

Data performance summary for specific gravity fluid 1.0.

ESP 400-340 Pump (Design 1)

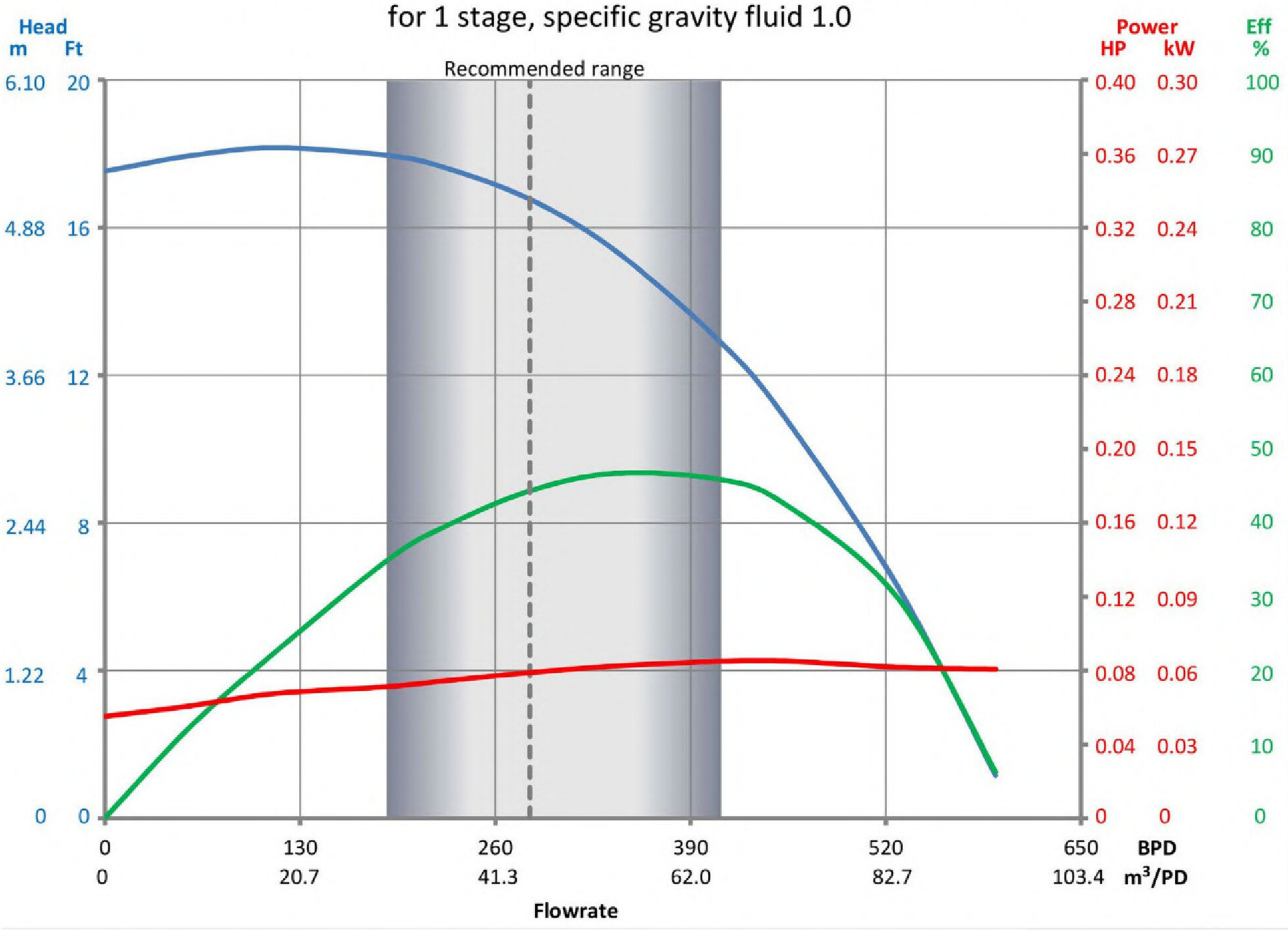
ESP 400-340 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



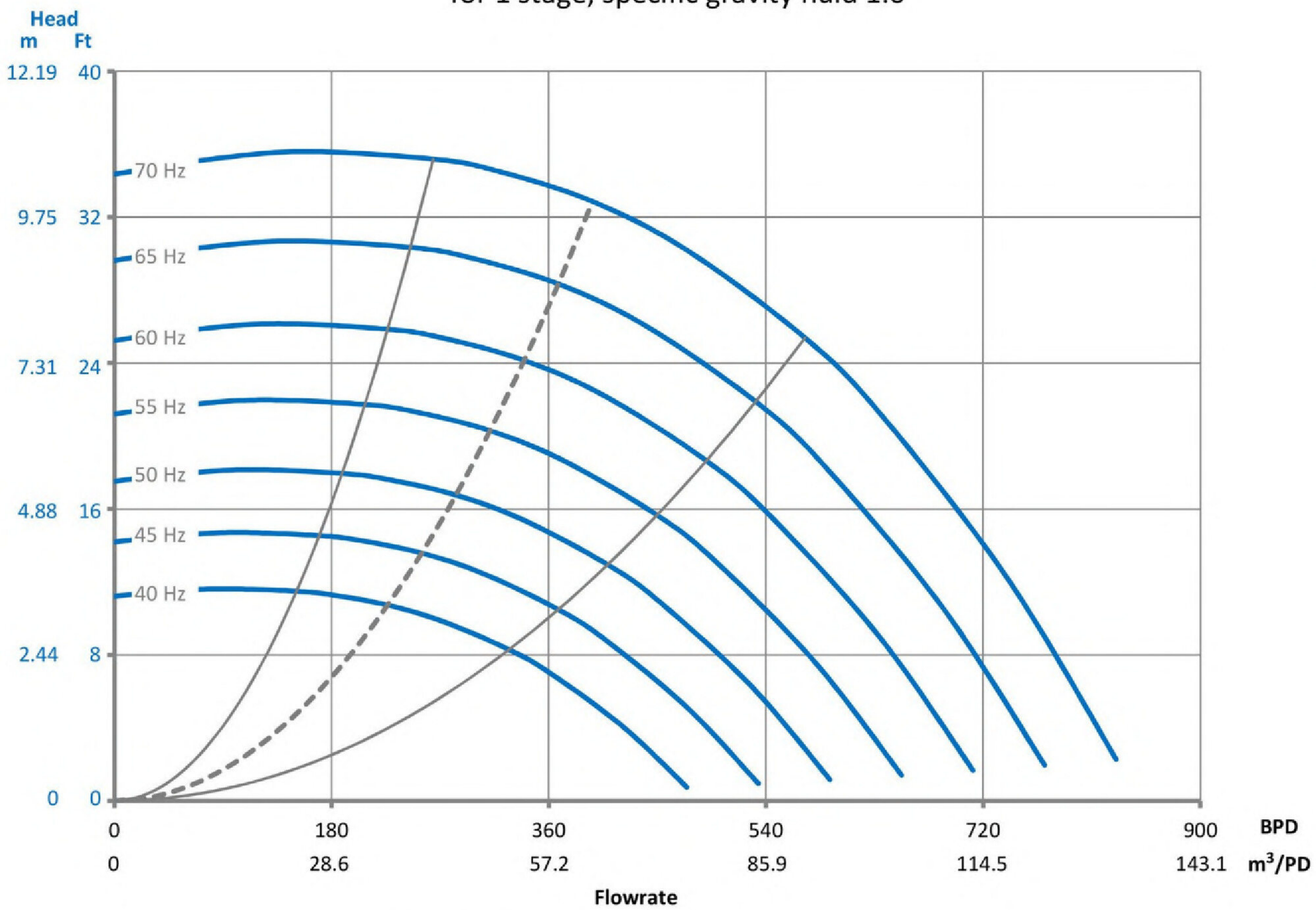
ESP 400-340 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



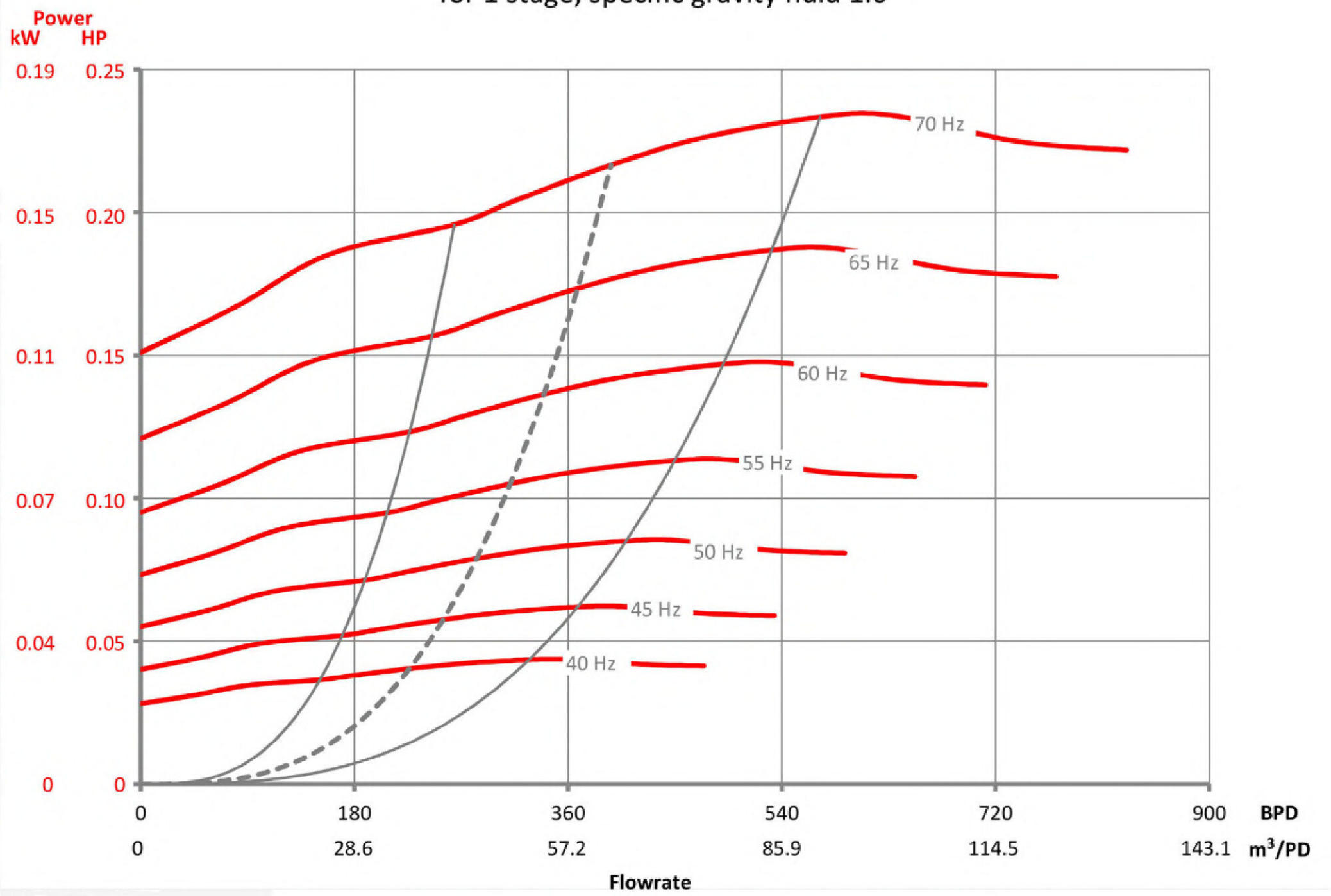
ESP 400-340 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-340 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	110	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	149	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	188	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	227	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2656 ft	809 m	15.0 HP	11.2 kW	16.1 HP	12.0 kW
13.12 ft	4.0 m	3597 ft	1096 m	20.4 HP	15.2 kW	21.7 HP	16.2 kW
16.41 ft	5.0 m	4539 ft	1383 m	25.7 HP	19.2 kW	27.4 HP	20.5 kW
19.69 ft	6.0 m	5480 ft	1670 m	31.0 HP	23.1 kW	33.1 HP	24.7 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1844 ft	562 m	8.7 HP	6.5 kW	9.3 HP	6.9 kW
13.12 ft	4.0 m	2498 ft	761 m	11.8 HP	8.8 kW	12.6 HP	9.4 kW
16.41 ft	5.0 m	3152 ft	961 m	14.9 HP	11.1 kW	15.9 HP	11.8 kW
19.69 ft	6.0 m	3806 ft	1160 m	18.0 HP	13.4 kW	19.2 HP	14.3 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

ESP 400-377 Pump (Design 1)

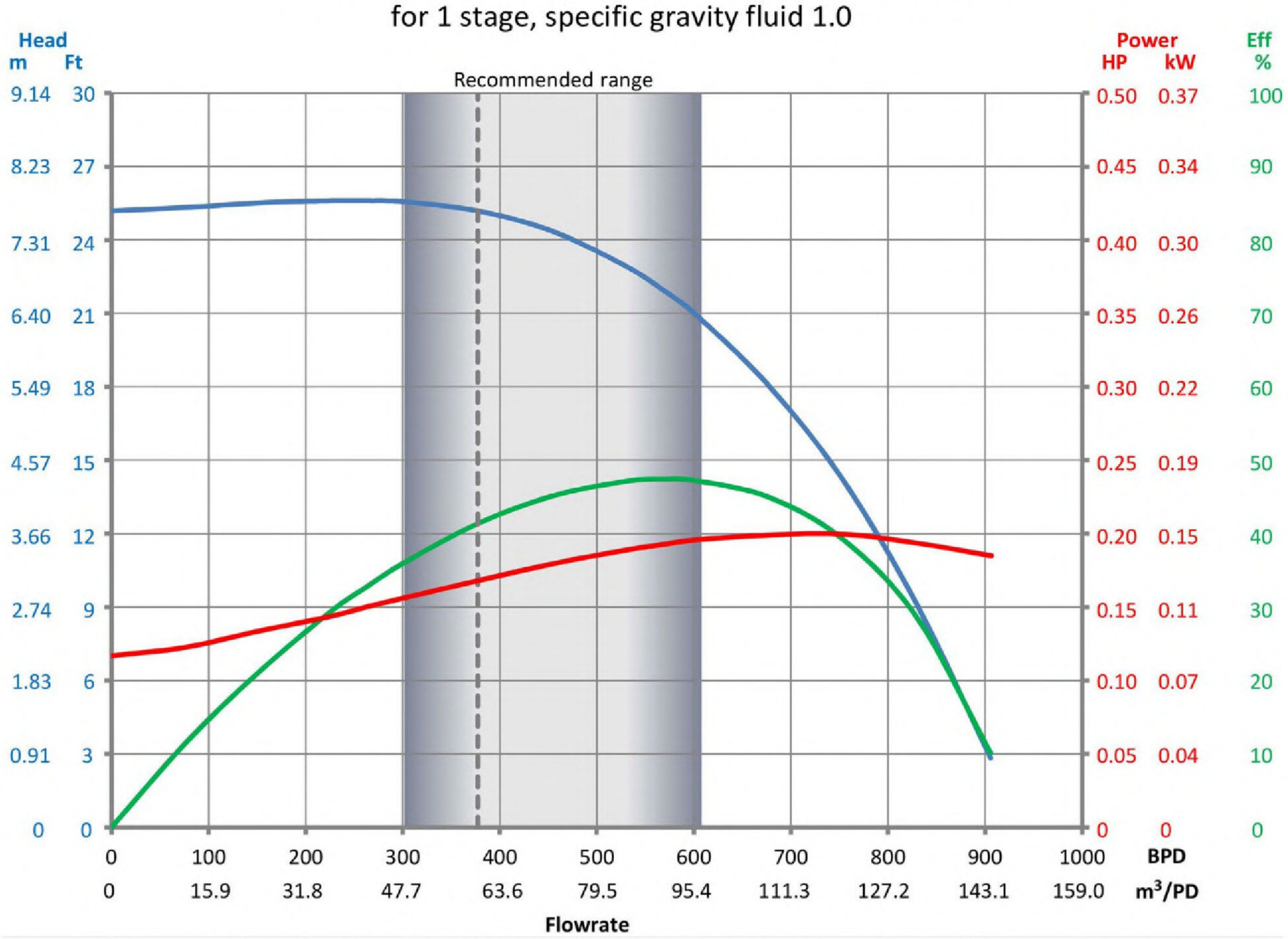
Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	377 BPD 60 m^3PD	314 BPD 50 m^3PD
Recommended Range	302…604 BPD 48…96 m^3PD	252…503 BPD 40…80 m^3PD
Head Per Stage	25.18 ft 7.68 m	17.49 ft 5.33 m
Power Per Stage	0.169 HP 0.126 kW	0.098 HP 0.073 kW
Efficiency	41.4 %	

Data performance summary for specific gravity fluid 1.0.

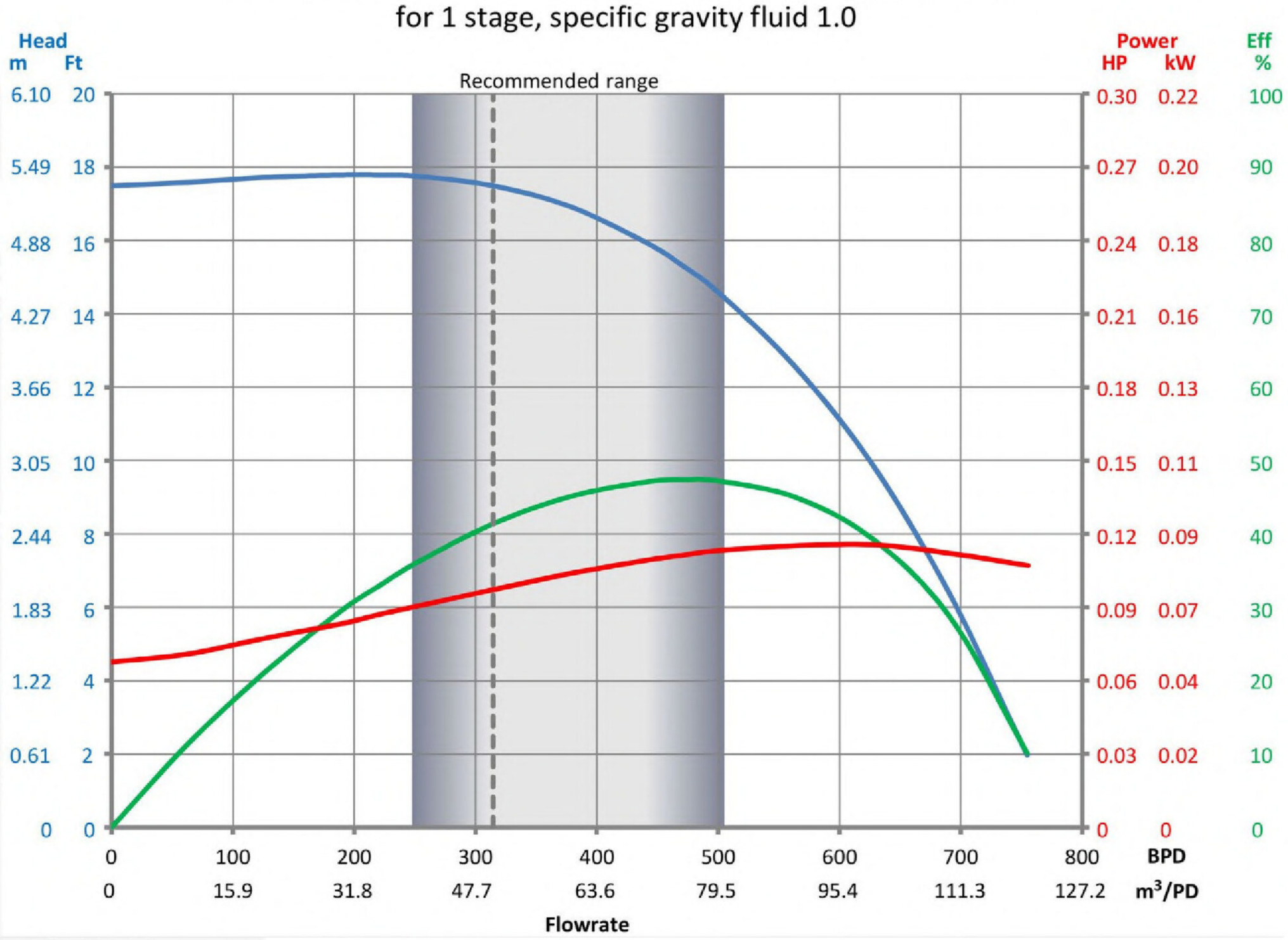
ESP 400-377 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



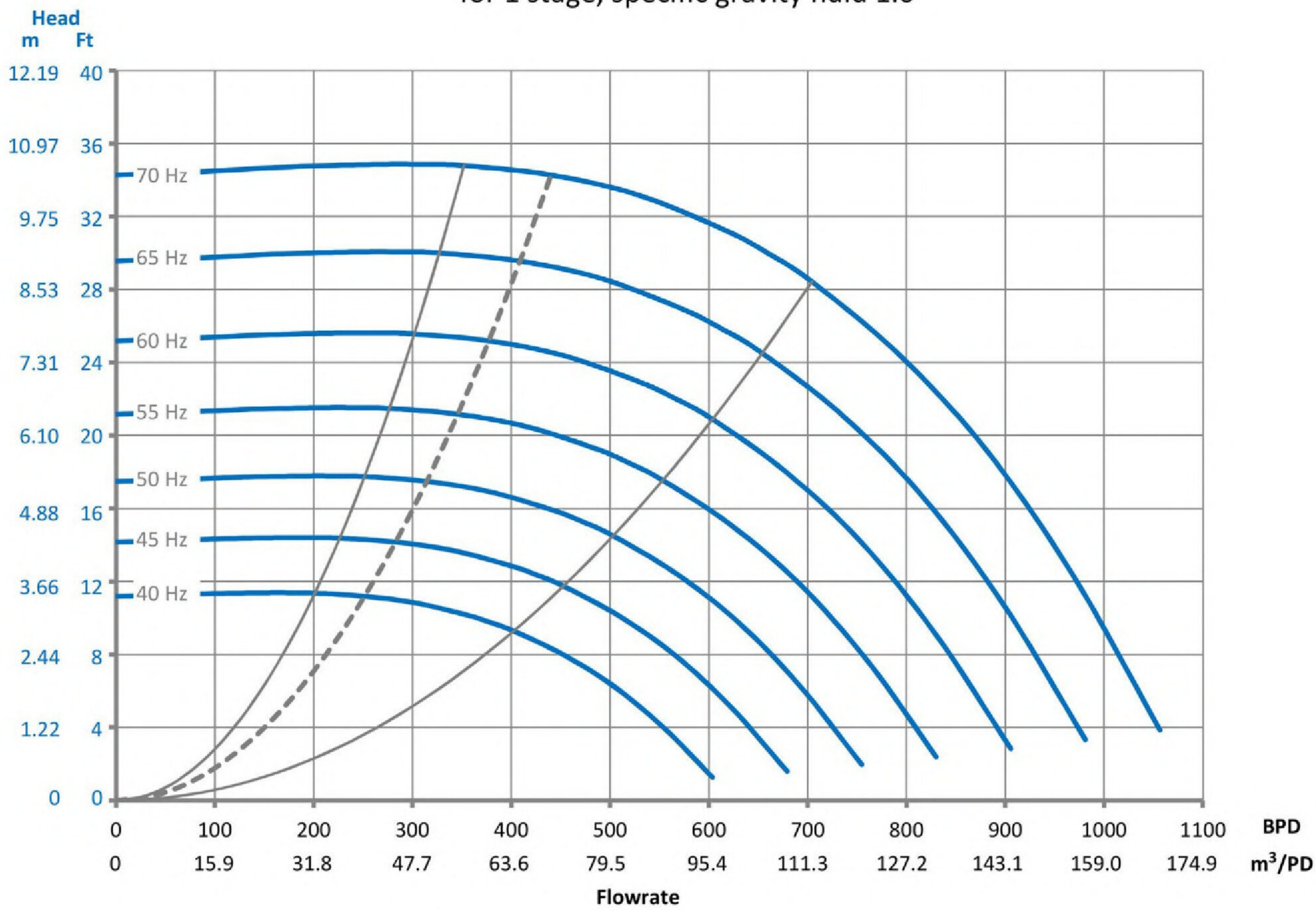
ESP 400-377 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



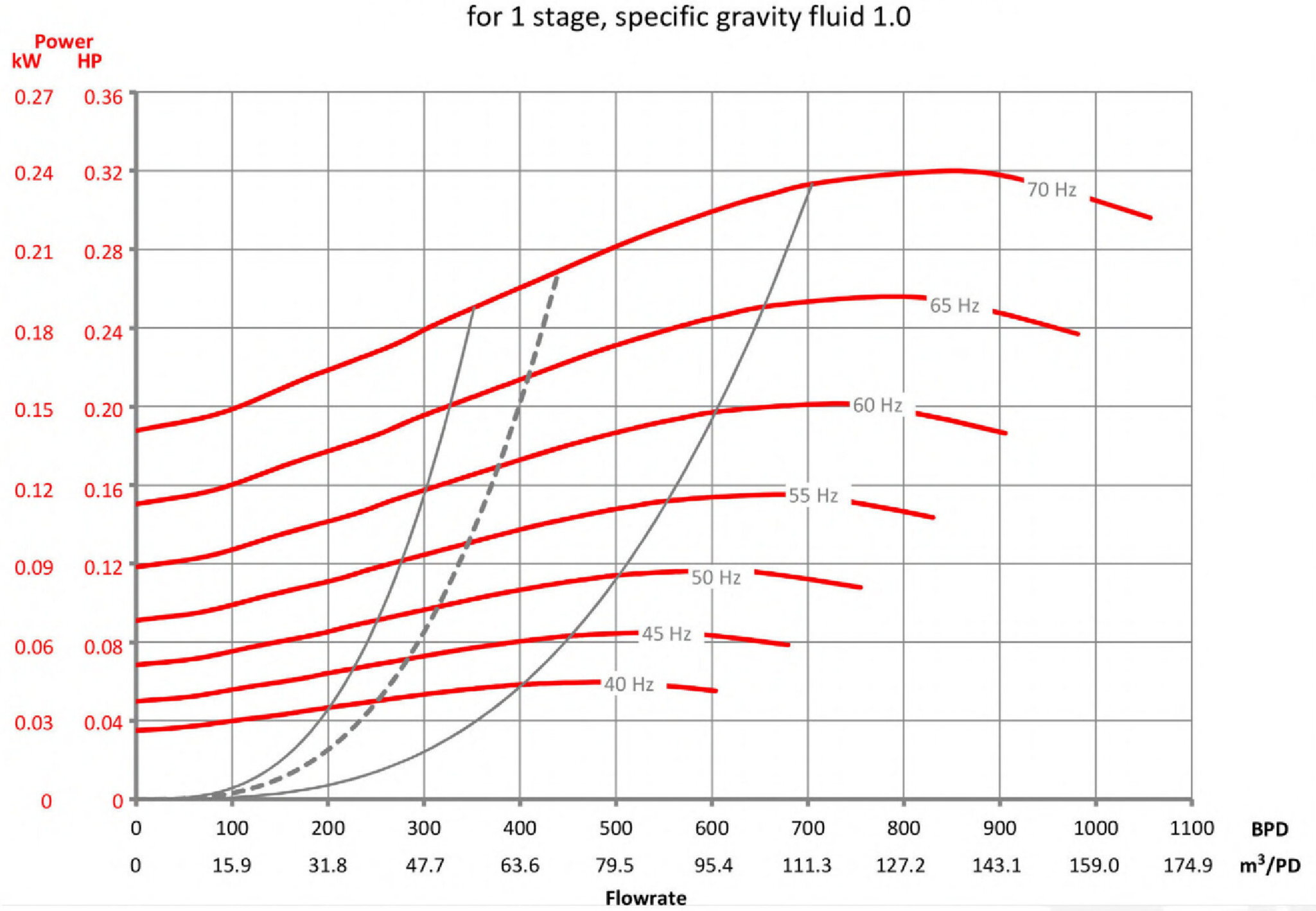
ESP 400-377 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-377 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	110	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	149	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	188	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	227	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2770 ft	844 m	18.6 HP	13.9 kW	21.7 HP	16.2 kW
13.12 ft	4.0 m	3752 ft	1144 m	25.2 HP	18.8 kW	29.3 HP	21.9 kW
16.41 ft	5.0 m	4734 ft	1443 m	31.8 HP	23.7 kW	37.0 HP	27.6 kW
19.69 ft	6.0 m	5716 ft	1742 m	38.4 HP	28.6 kW	44.7 HP	33.3 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1924 ft	586 m	10.8 HP	8.0 kW	12.5 HP	9.4 kW
13.12 ft	4.0 m	2606 ft	794 m	14.6 HP	10.9 kW	17.0 HP	12.7 kW
16.41 ft	5.0 m	3288 ft	1002 m	18.4 HP	13.7 kW	21.4 HP	16.0 kW
19.69 ft	6.0 m	3970 ft	1210 m	22.2 HP	16.6 kW	25.9 HP	19.3 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

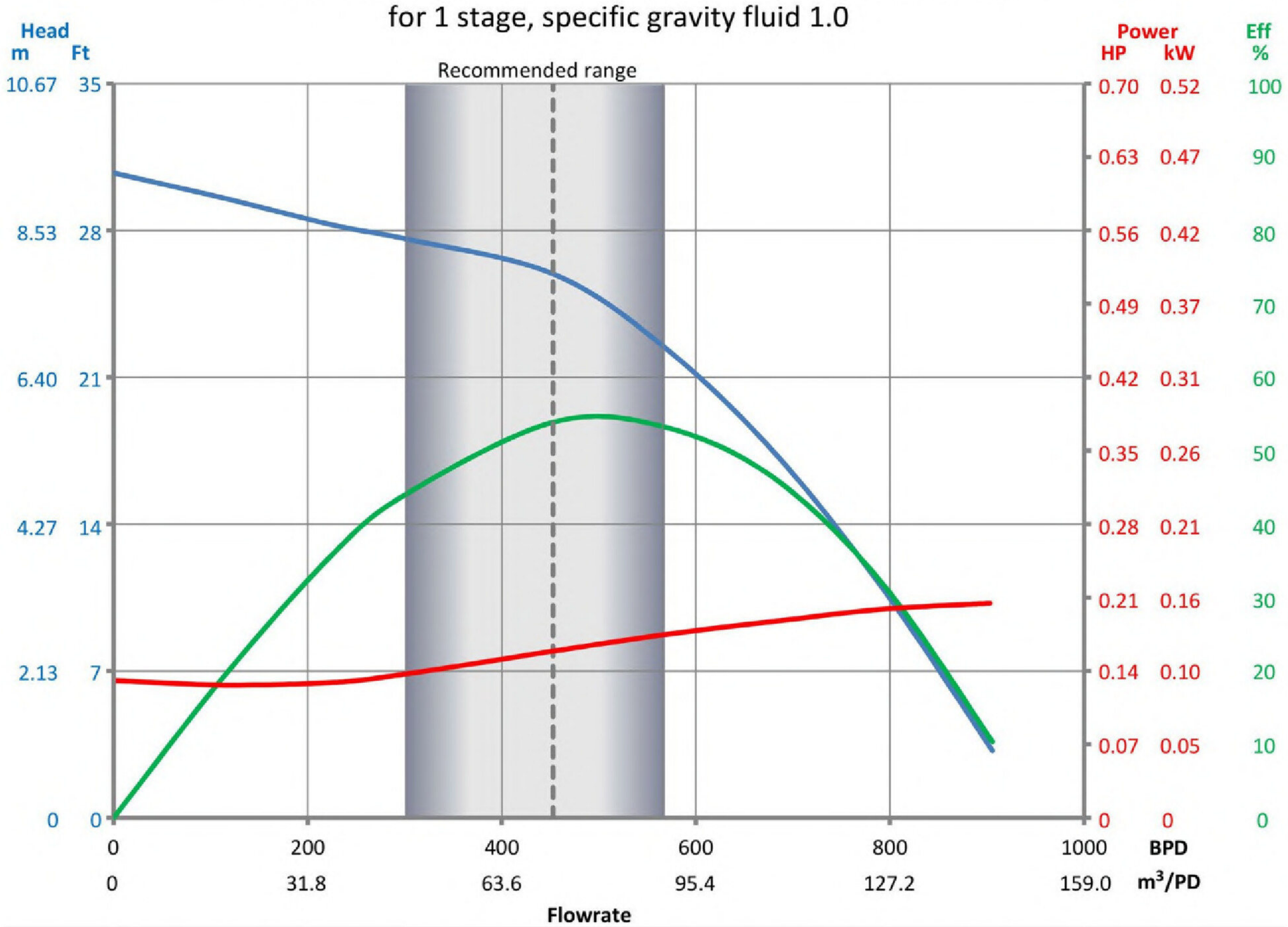
Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	453 BPD 72 m^3PD	377 BPD 60 m^3PD
Recommended Range	302…566 BPD 48…90 m^3PD	252…472 BPD 40…75 m^3PD
Head Per Stage	25.94 ft 7.91 m	18.01 ft 5.49 m
Power Per Stage	0.16 HP 0.119 kW	0.092 HP 0.069 kW
Efficiency	53.9 %	

Data performance summary for specific gravity fluid 1.0.

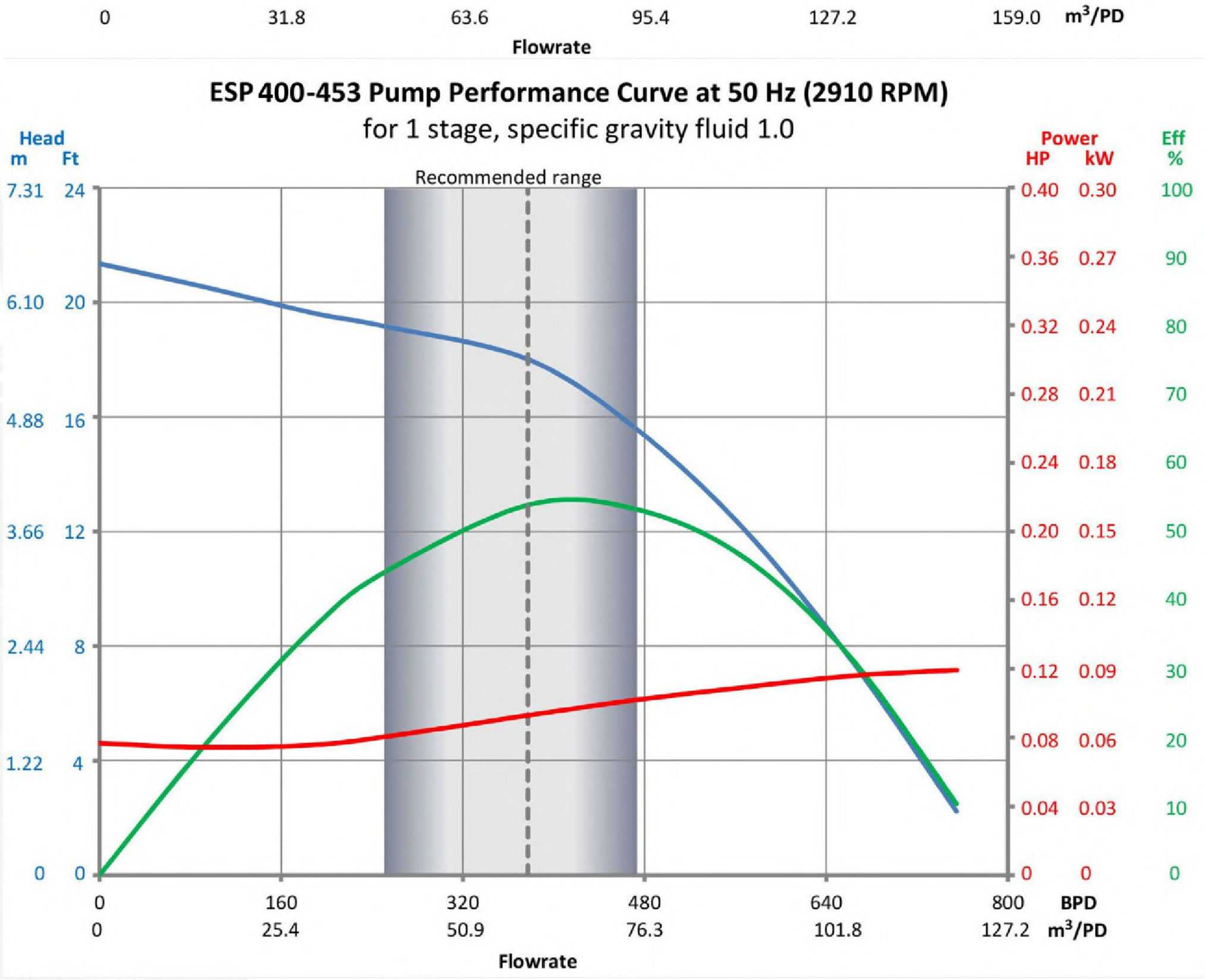
ESP 400-453 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



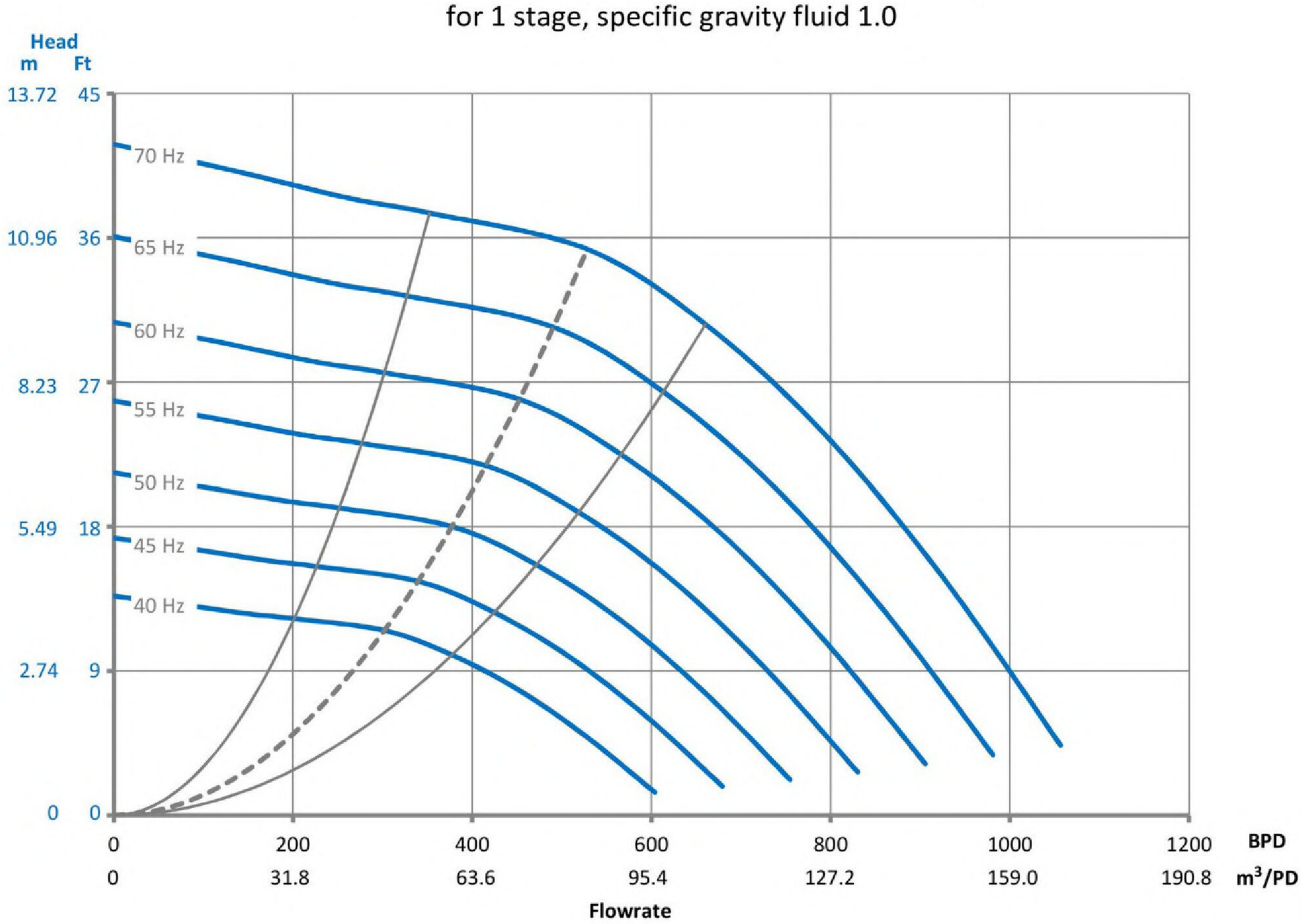
ESP 400-453 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



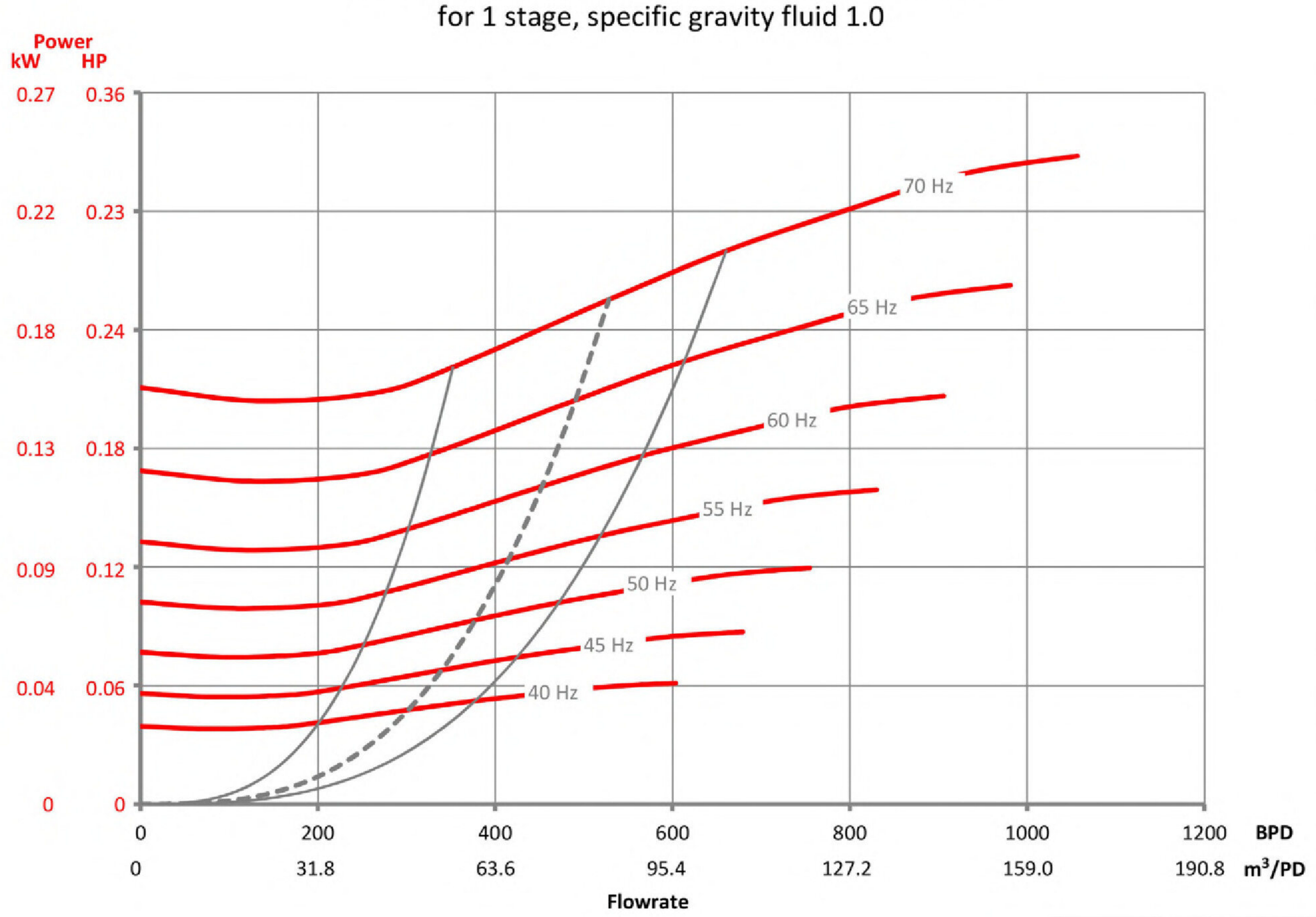
ESP 400-453 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-453 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	95	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	129	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	162	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	196	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2464 ft	751 m	15.2 HP	11.3 kW	16.7 HP	12.5 kW
13.12 ft	4.0 m	3346 ft	1020 m	20.6 HP	15.4 kW	22.7 HP	16.9 kW
16.41 ft	5.0 m	4202 ft	1281 m	25.9 HP	19.3 kW	28.5 HP	21.3 kW
19.69 ft	6.0 m	5084 ft	1549 m	31.3 HP	23.4 kW	34.5 HP	25.7 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1711 ft	522 m	8.8 HP	6.6 kW	9.7 HP	7.2 kW
13.12 ft	4.0 m	2324 ft	708 m	11.9 HP	8.9 kW	13.1 HP	9.8 kW
16.41 ft	5.0 m	2918 ft	889 m	15.0 HP	11.2 kW	16.5 HP	12.3 kW
19.69 ft	6.0 m	3530 ft	1076 m	18.1 HP	13.5 kW	20.0 HP	14.9 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in	
	101.6 mm	
Minimum Casing Size	5.5 in	
	139.7 mm	
Shaft Diameter	0.669 in	
	17 mm	
Shaft Cross-Sectional Area	0.352 in^2	
	226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP	80 HP
	72 kW	60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP	174 HP
	156 kW	130 kW
Rotational Direction	Clockwise	

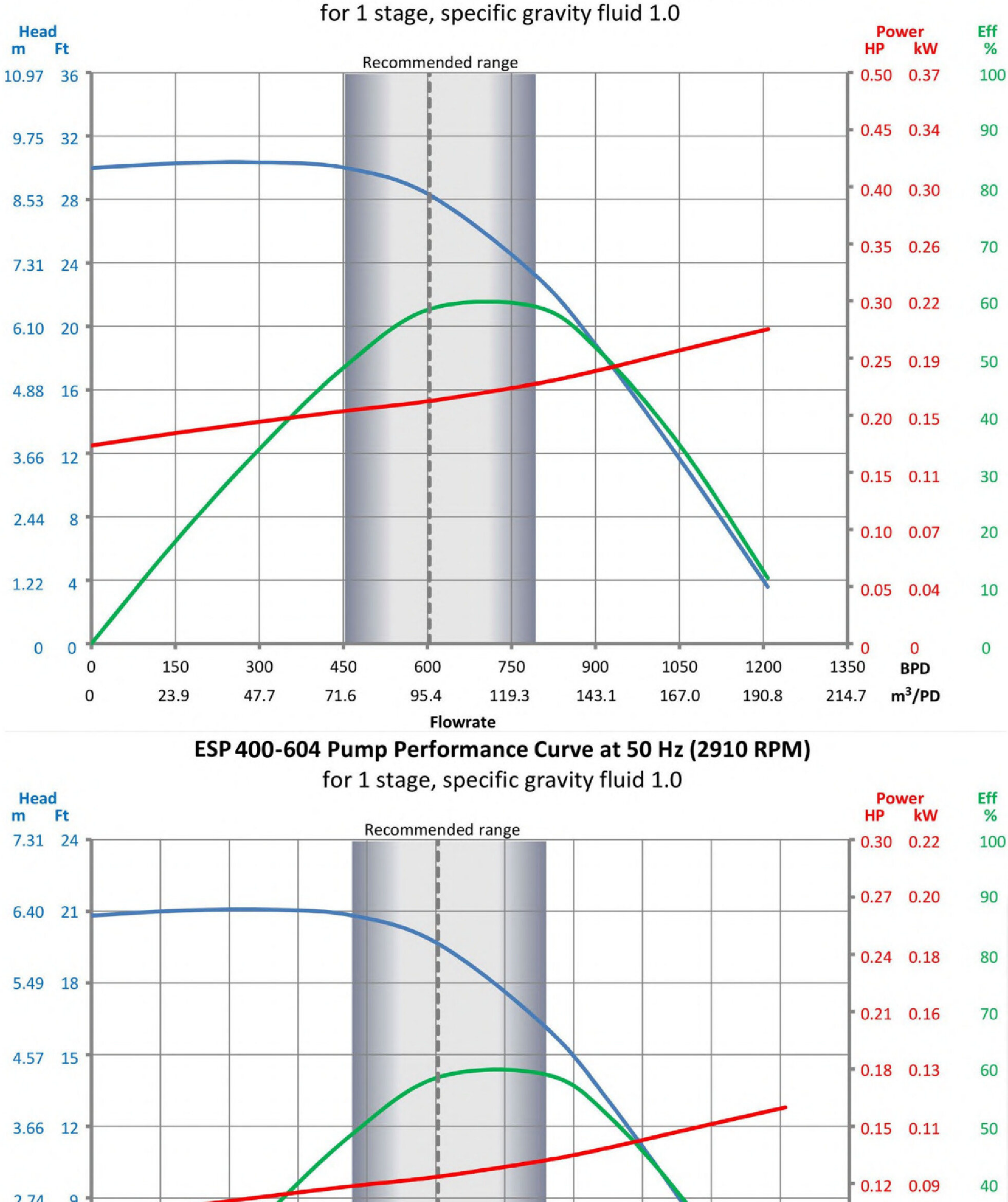
Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	604 BPD	503 BPD
	96 m^3PD	80 m^3PD
Recommended Range	453…792 BPD	377…660 BPD
	72…126 m^3PD	60…105 m^3PD
Head Per Stage	28.3 ft	19.65 ft
	8.63 m	5.99 m
Power Per Stage	0.215 HP	0.125 HP
	0.161 kW	0.093 kW
Efficiency	58.6 %	

Data performance summary for specific gravity fluid 1.0.

ESP 400-604 Pump (Design 1)

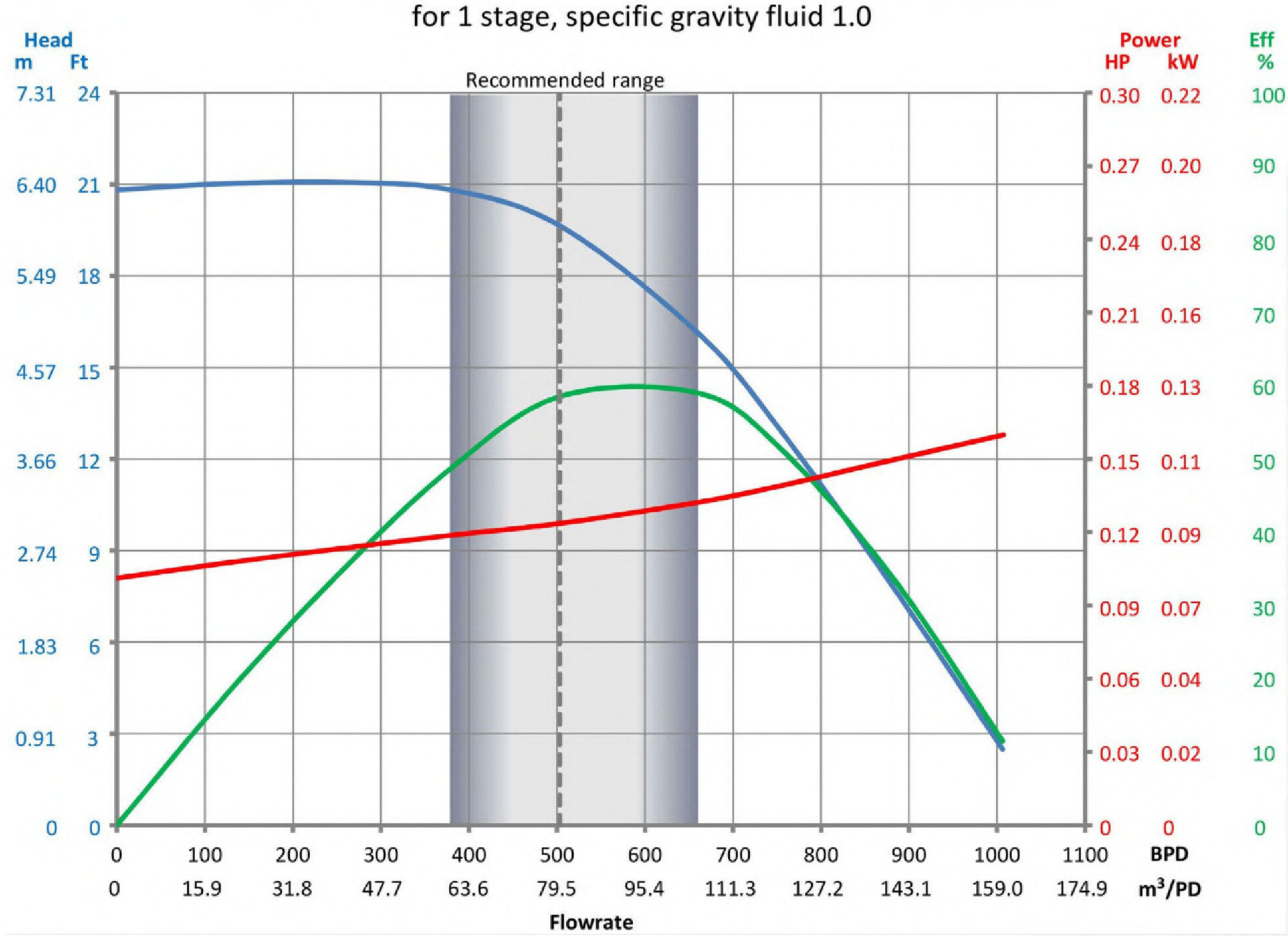
ESP 400-604 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



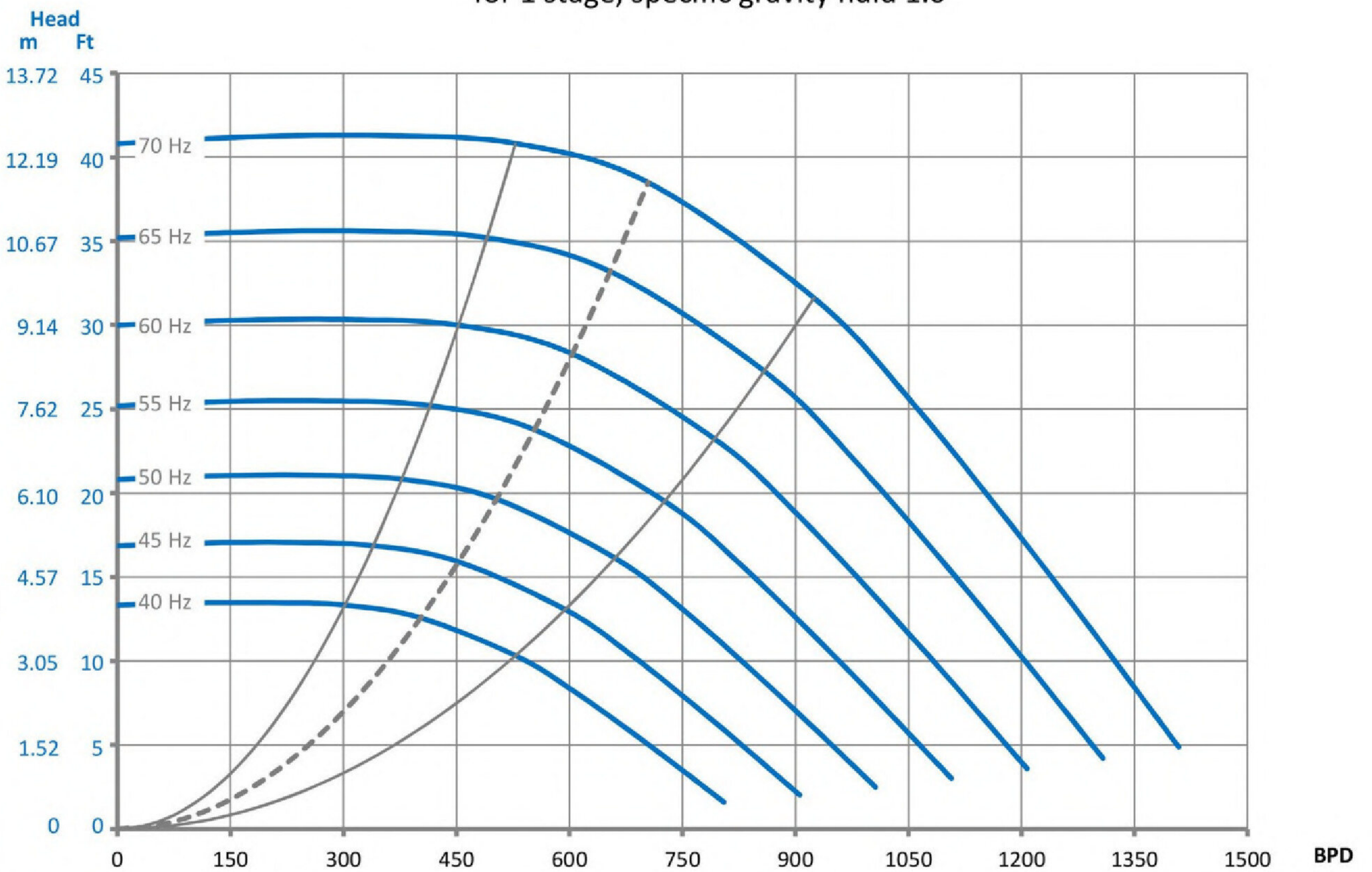
ESP 400-604 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



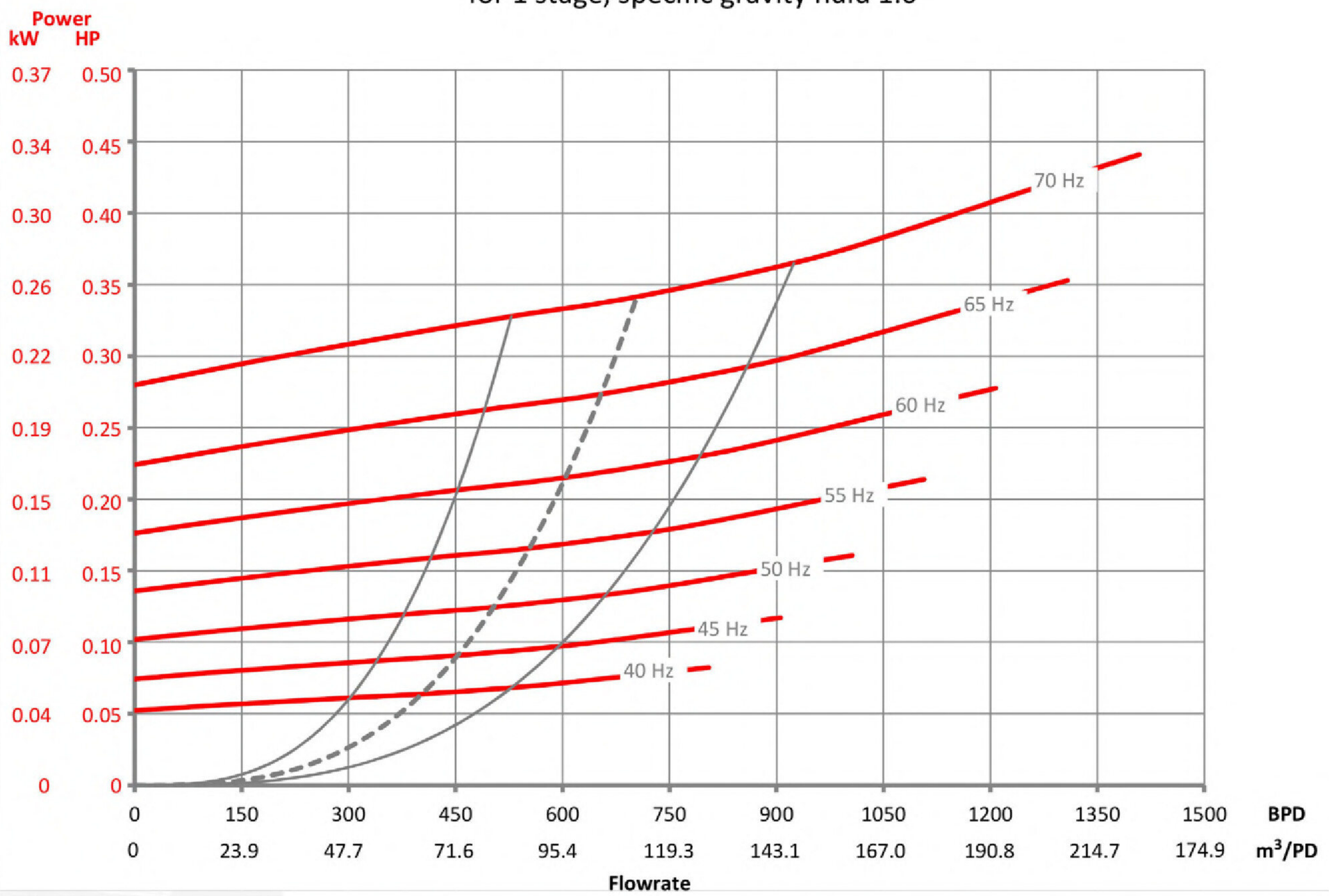
ESP 400-604 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-604 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	101	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	136	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	172	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	208	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2858 ft	871 m	21.8 HP	16.2 kW	23.2 HP	17.3 kW
13.12 ft	4.0 m	3849 ft	1173 m	29.3 HP	21.9 kW	31.2 HP	23.3 kW
16.41 ft	5.0 m	4868 ft	1484 m	37.1 HP	27.6 kW	39.4 HP	29.4 kW
19.69 ft	6.0 m	5887 ft	1794 m	44.8 HP	33.4 kW	47.7 HP	35.6 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1985 ft	605 m	12.6 HP	9.4 kW	13.4 HP	10.0 kW
13.12 ft	4.0 m	2673 ft	815 m	17.0 HP	12.6 kW	18.0 HP	13.5 kW
16.41 ft	5.0 m	3380 ft	1030 m	21.4 HP	16.0 kW	22.8 HP	17.0 kW
19.69 ft	6.0 m	4088 ft	1246 m	25.9 HP	19.3 kW	27.6 HP	20.6 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

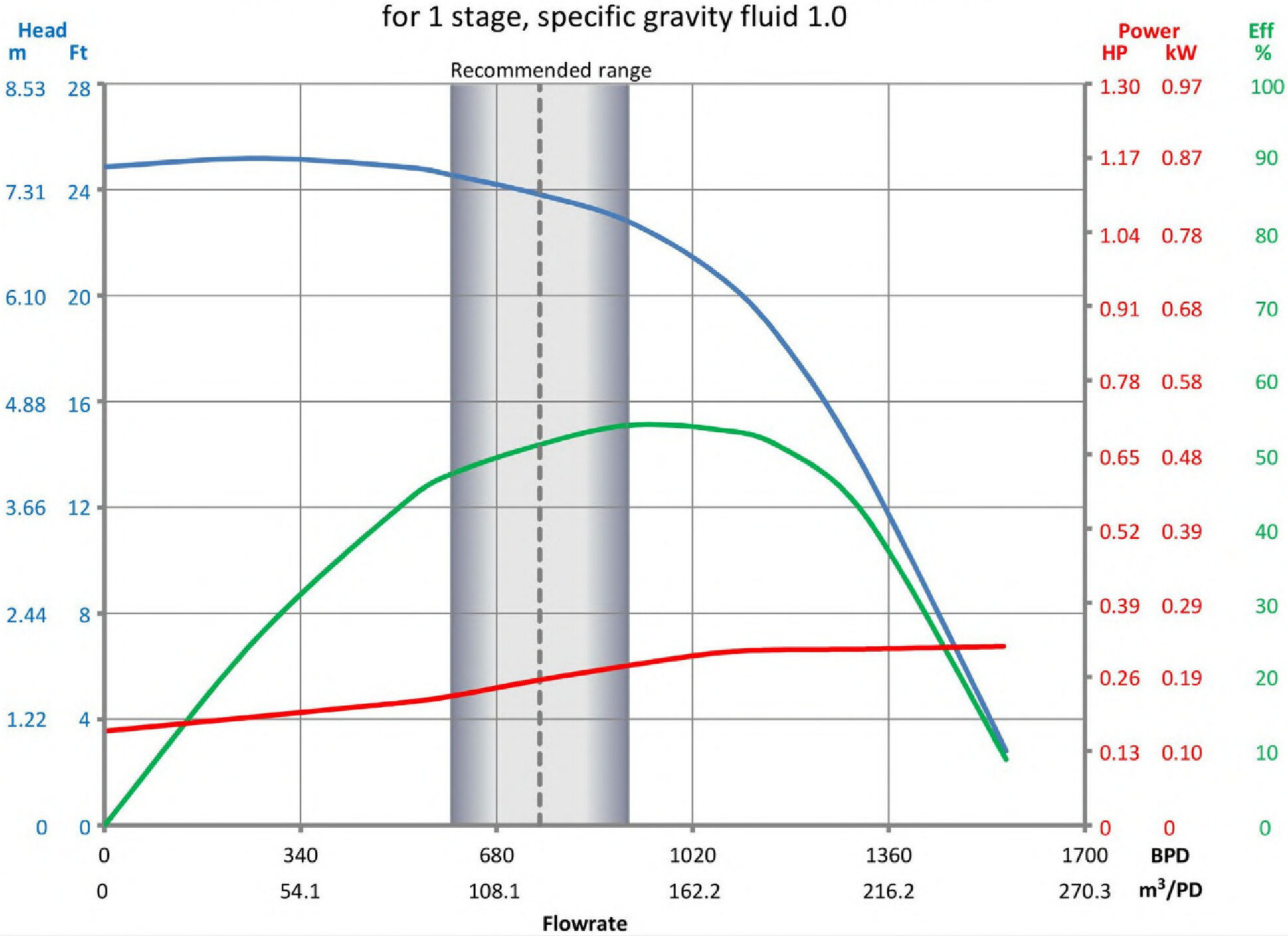
Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	755 BPD 120 m^3PD	629 BPD 100 m^3PD
Recommended Range	604…906 BPD 96…144 m^3PD	503…755 BPD 80…120 m^3PD
Head Per Stage	23.81 ft 7.26 m	16.54 ft 5.04 m
Power Per Stage	0.257 HP 0.192 kW	0.149 HP 0.111 kW
Efficiency	51.3 %	

Data performance summary for specific gravity fluid 1.0.

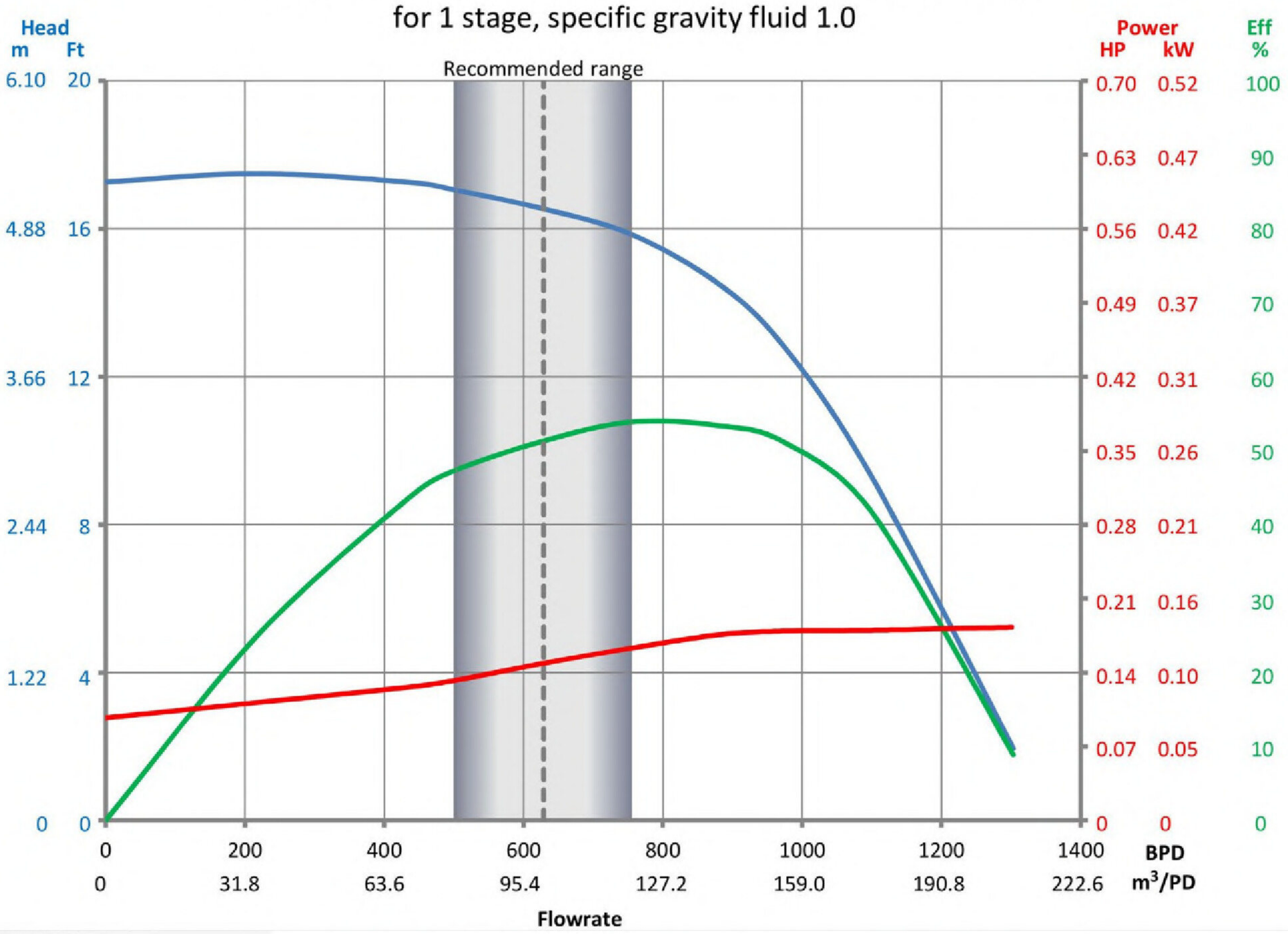
ESP 400-755 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



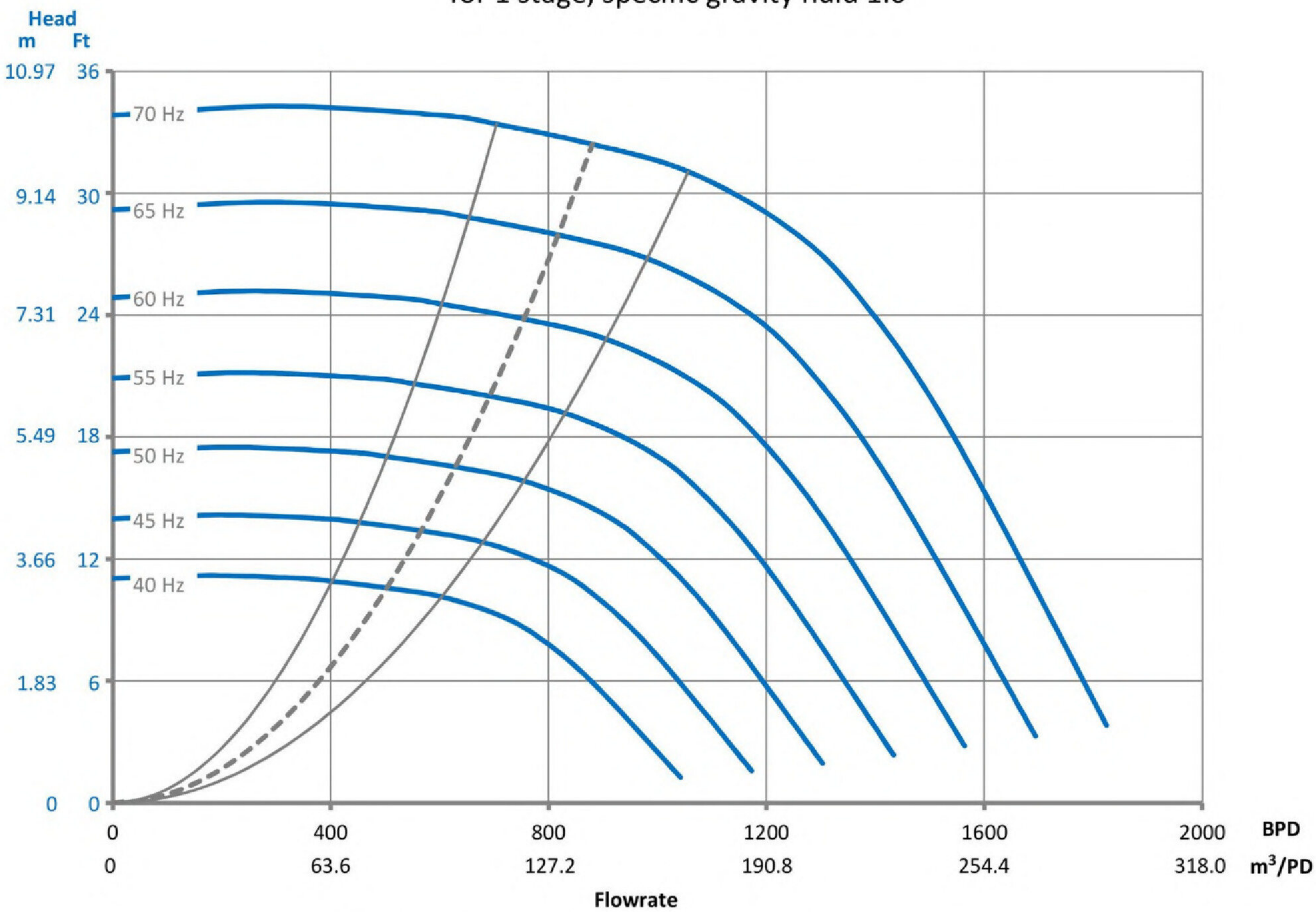
ESP 400-755 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



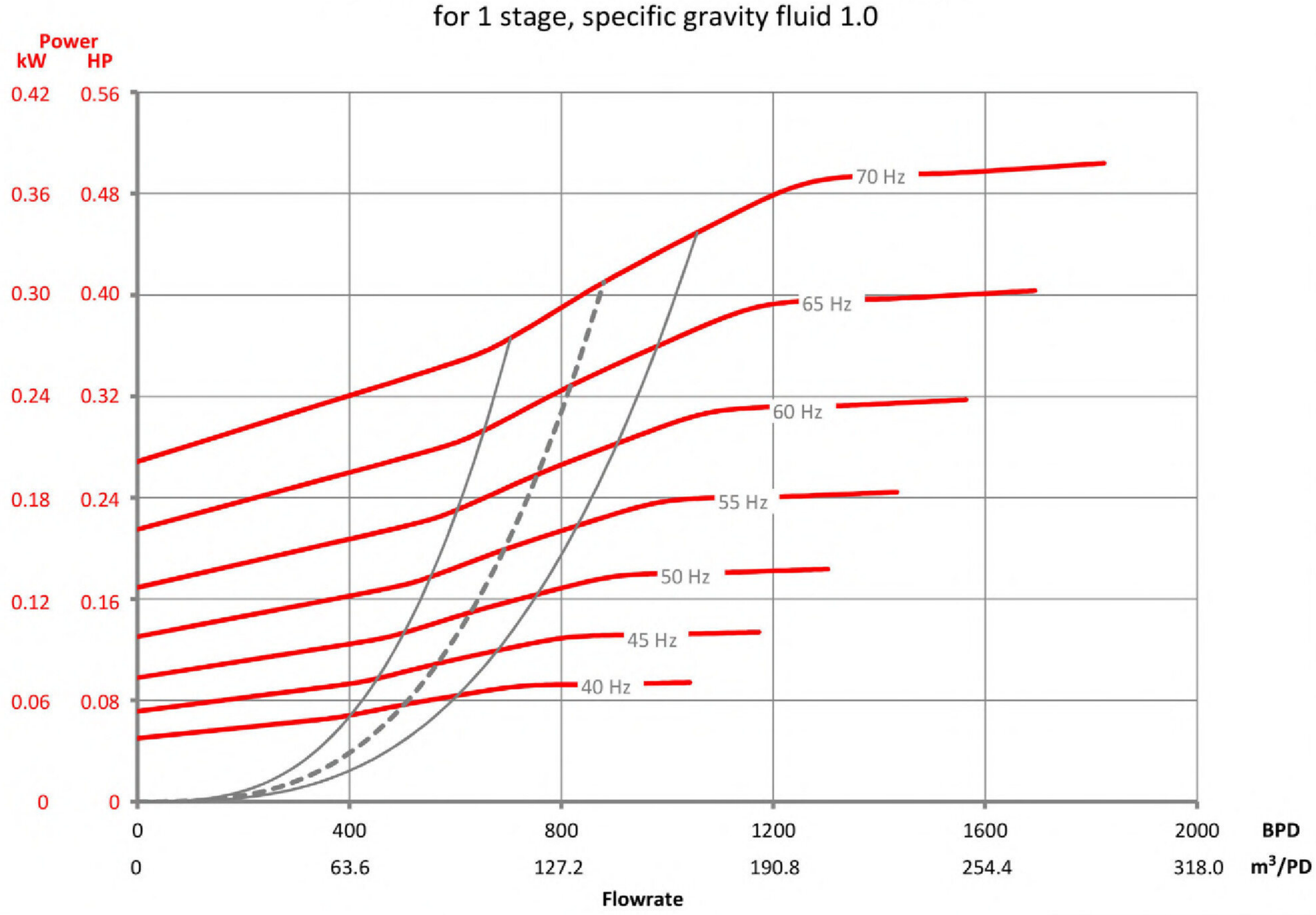
ESP 400-755 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-755 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	87	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	118	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	149	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	180	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2072 ft	631 m	22.4 HP	16.7 kW	24.6 HP	18.3 kW
13.12 ft	4.0 m	2810 ft	856 m	30.3 HP	22.6 kW	33.3 HP	24.9 kW
16.41 ft	5.0 m	3548 ft	1081 m	38.3 HP	28.6 kW	42.1 HP	31.4 kW
19.69 ft	6.0 m	4286 ft	1306 m	46.3 HP	34.5 kW	50.9 HP	37.9 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1439 ft	438 m	12.9 HP	9.7 kW	14.2 HP	10.6 kW
13.12 ft	4.0 m	1951 ft	595 m	17.6 HP	13.1 kW	19.3 HP	14.4 kW
16.41 ft	5.0 m	2464 ft	751 m	22.2 HP	16.5 kW	24.4 HP	18.2 kW
19.69 ft	6.0 m	2977 ft	907 m	26.8 HP	20.0 kW	29.4 HP	22.0 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

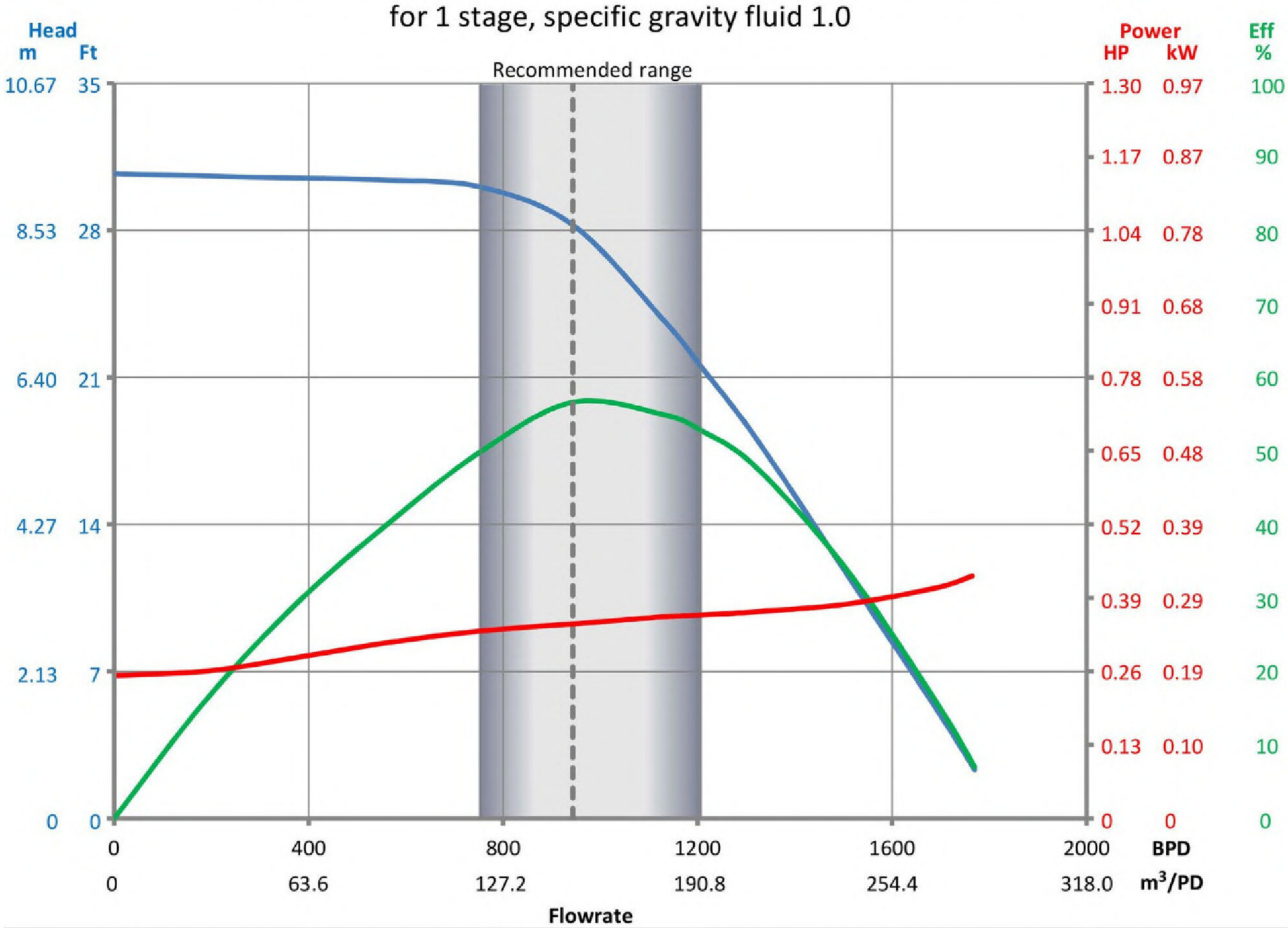
Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	943 BPD 150 m^3PD	786 BPD 125 m^3PD
Recommended Range	604…1208 BPD 96…192 m^3PD	503…1006 BPD 80…160 m^3PD
Head Per Stage	28.25 ft 8.61 m	19.62 ft 5.98 m
Power Per Stage	0.347 HP 0.259 kW	0.201 HP 0.15 kW
Efficiency	56.6 %	

Data performance summary for specific gravity fluid 1.0.

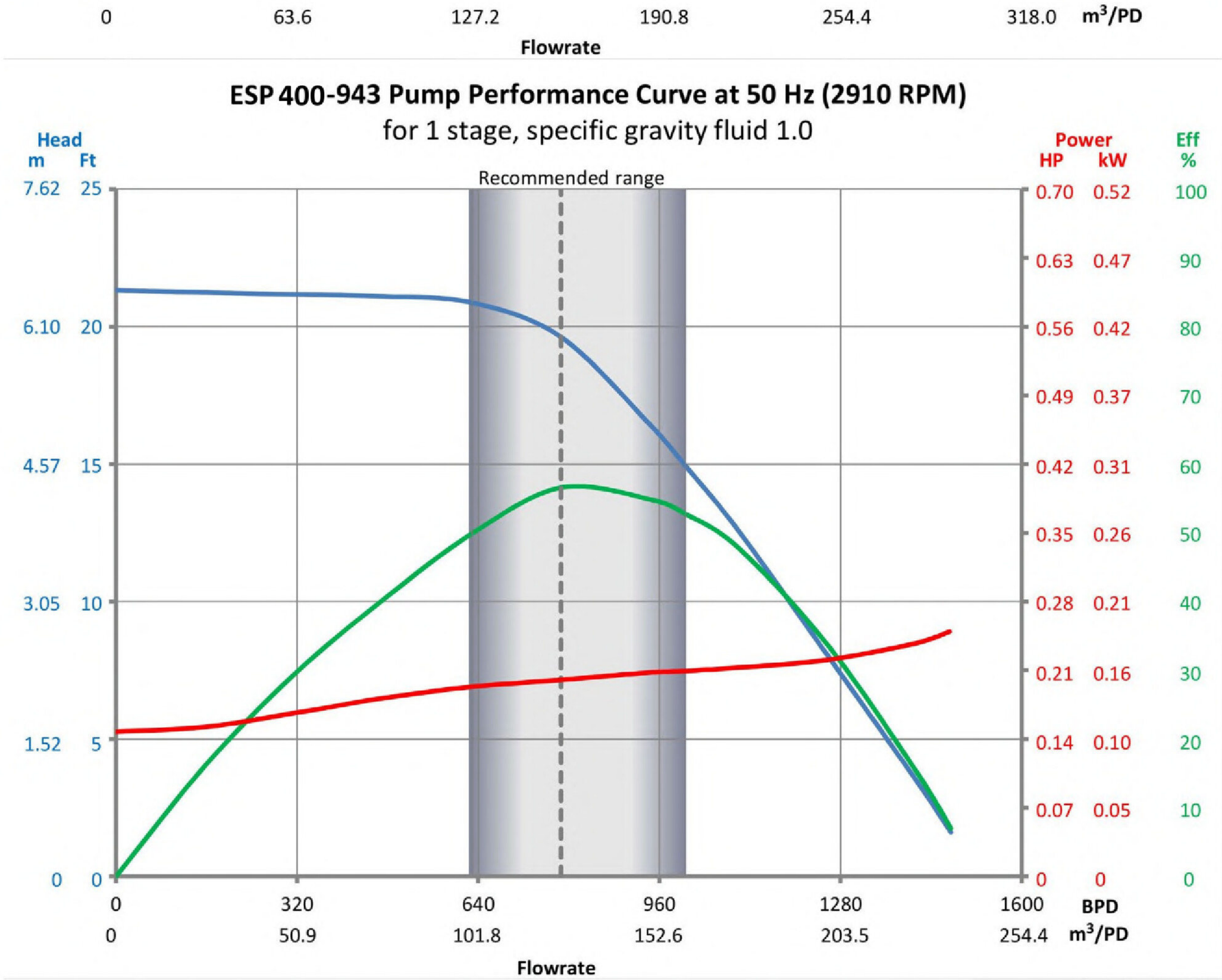
ESP 400-943 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



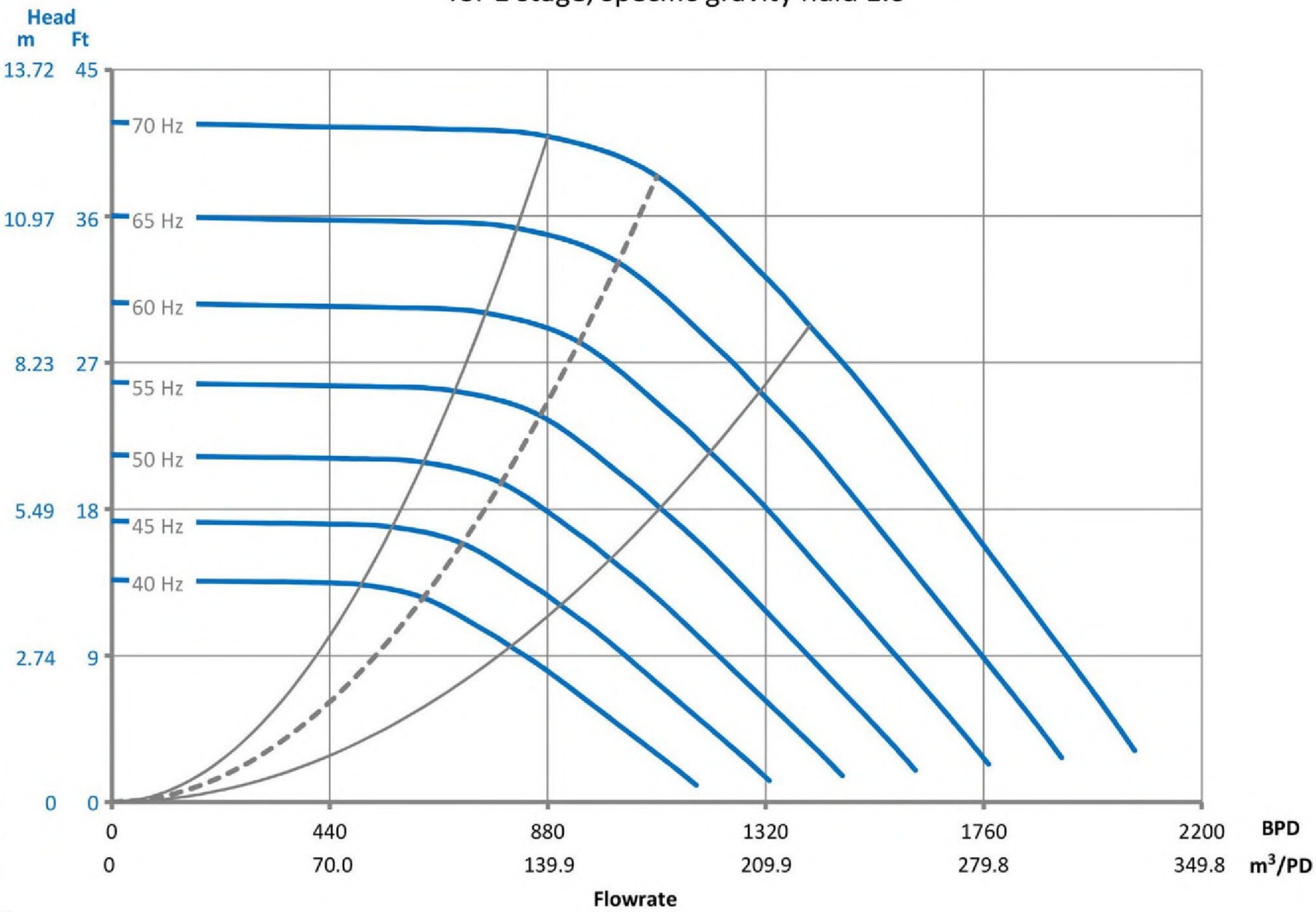
ESP 400-943 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



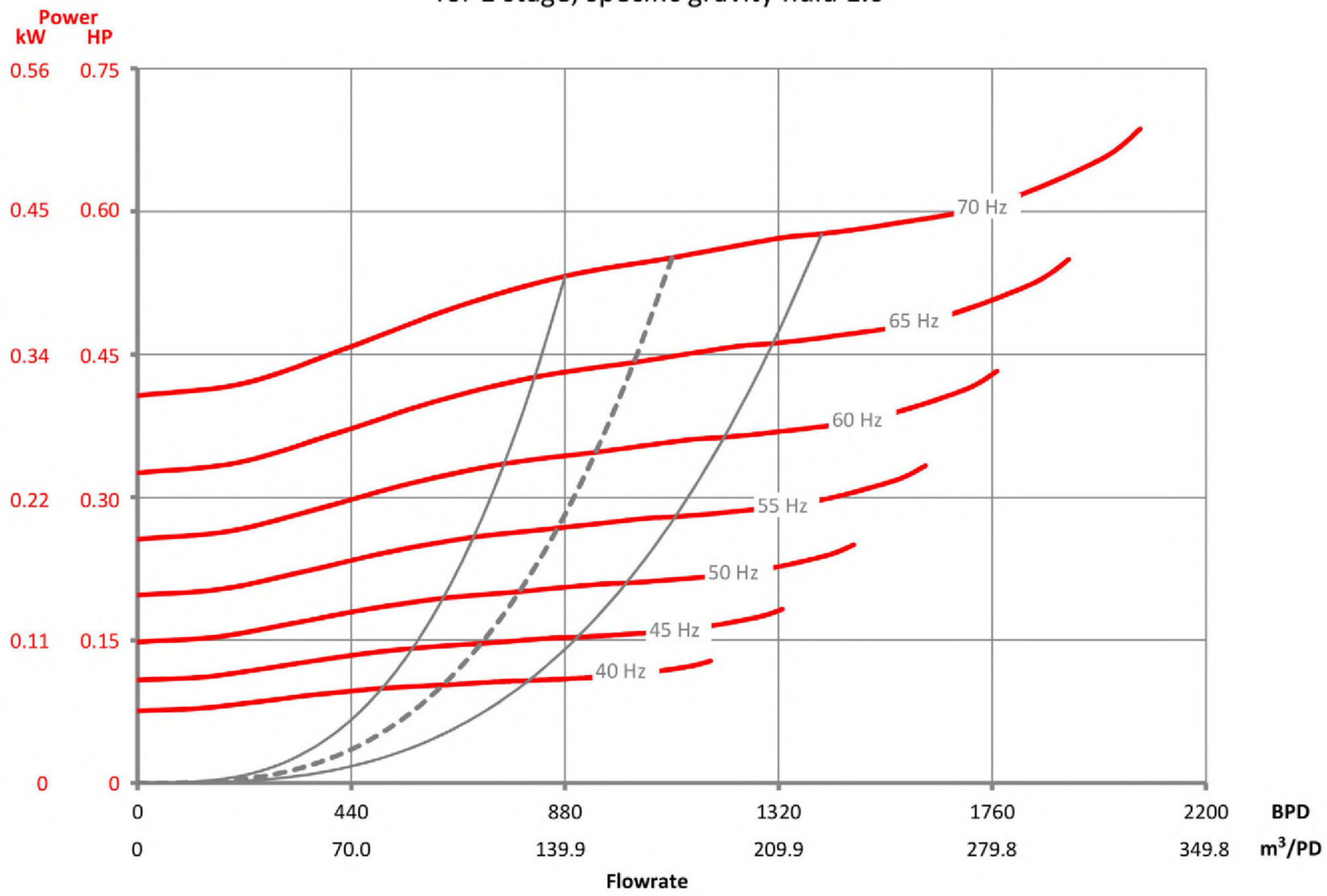
ESP 400-943 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-943 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	87	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	118	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	149	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	180	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	2458 ft	749 m	30.2 HP	22.6 kW	31.6 HP	23.6 kW
13.12 ft	4.0 m	3334 ft	1016 m	41.0 HP	30.6 kW	42.9 HP	32.0 kW
16.41 ft	5.0 m	4210 ft	1283 m	51.8 HP	38.6 kW	54.2 HP	40.4 kW
19.69 ft	6.0 m	5086 ft	1550 m	62.5 HP	46.7 kW	65.5 HP	48.8 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1707 ft	520 m	17.5 HP	13.1 kW	18.3 HP	13.7 kW
13.12 ft	4.0 m	2315 ft	706 m	23.7 HP	17.7 kW	24.8 HP	18.5 kW
16.41 ft	5.0 m	2923 ft	891 m	30.0 HP	22.4 kW	31.4 HP	23.4 kW
19.69 ft	6.0 m	3532 ft	1076 m	36.2 HP	27.0 kW	37.9 HP	28.3 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.787 in 20 mm	
Shaft Cross-Sectional Area	0.487 in^2 314.16 mm^2	
Standard Shaft Power Limit (Brake-Power)	153 HP 114 kW	127 HP 95 kW
High Strength Shaft Power Limit (Soft Start)	367 HP 274 kW	306 HP 228 kW
Rotational Direction	Clockwise	

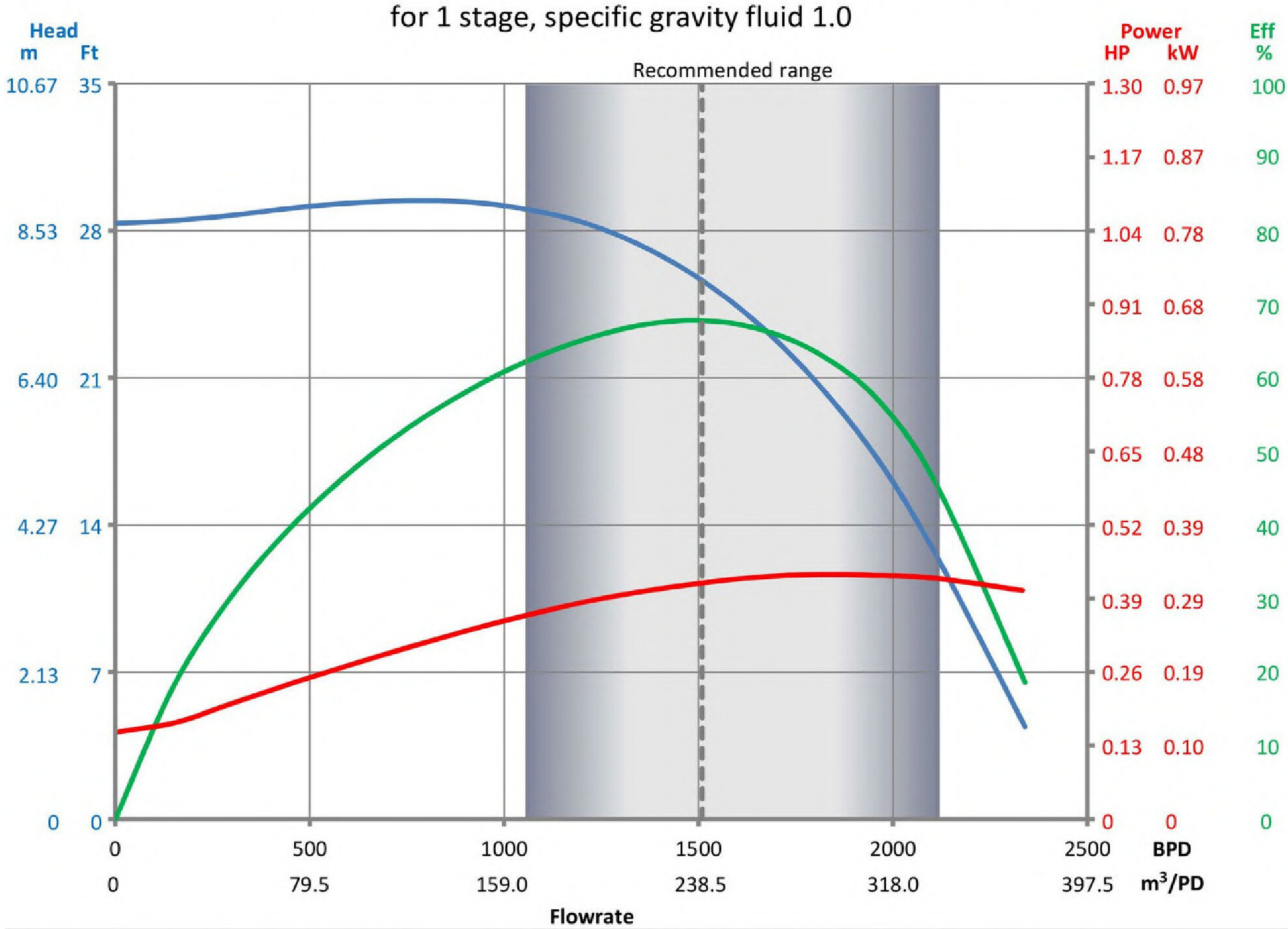
Performance Summary	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Nominal Flowrate	1509 BPD 240 m^3PD	1258 BPD 200 m^3PD
Recommended Range	1057…2113 BPD 168…336 m^3PD	881…1761 BPD 140…280 m^3PD
Head Per Stage	25.61 ft 7.8 m	17.78 ft 5.42 m
Power Per Stage	0.422 HP 0.314 kW	0.244 HP 0.182 kW
Efficiency	67.8 %	

Data performance summary for specific gravity fluid 1.0.

ESP 400-1509 Pump (Design 1)

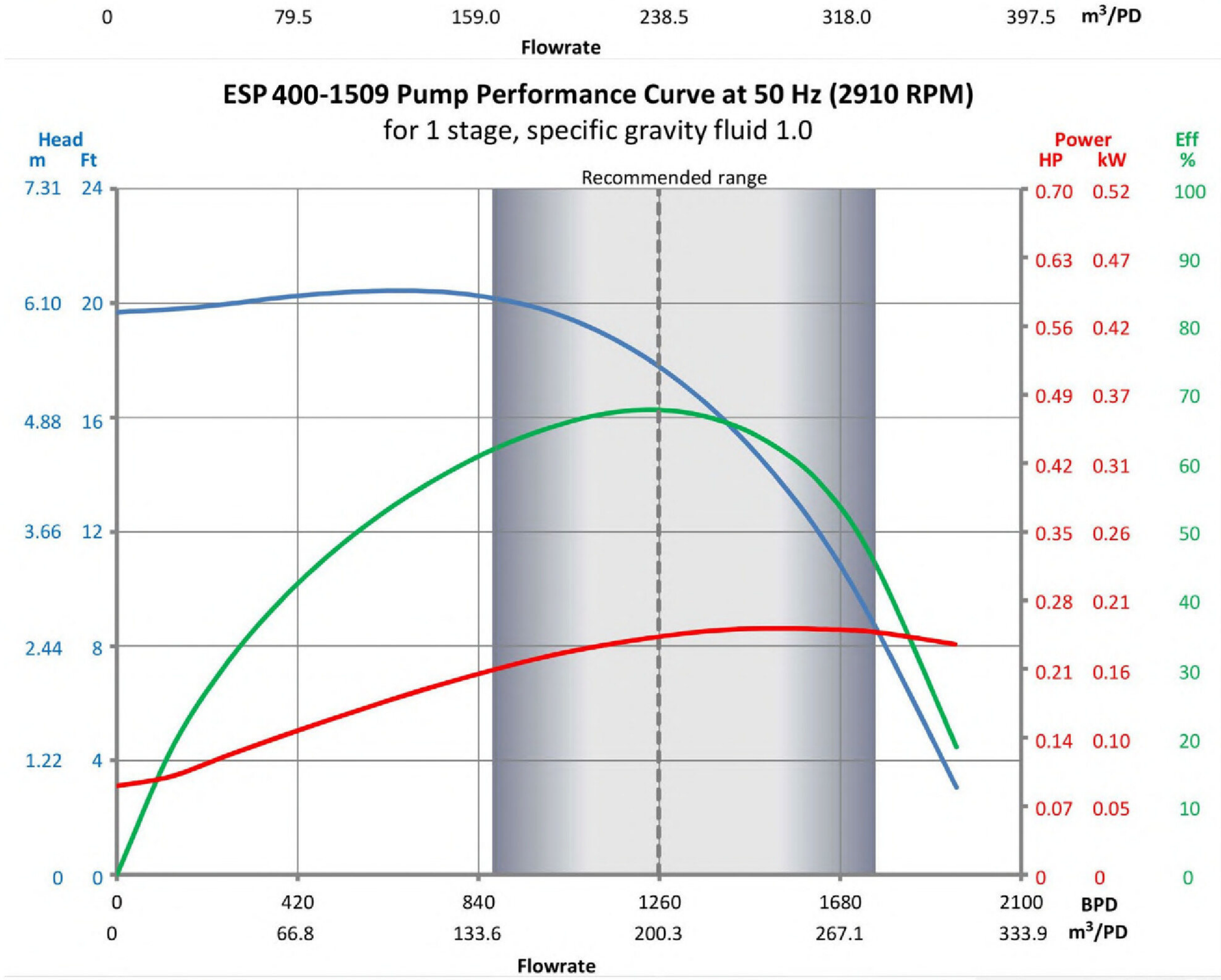
ESP 400-1509 Pump Performance Curve at 60 Hz (3492 RPM)

for 1 stage, specific gravity fluid 1.0



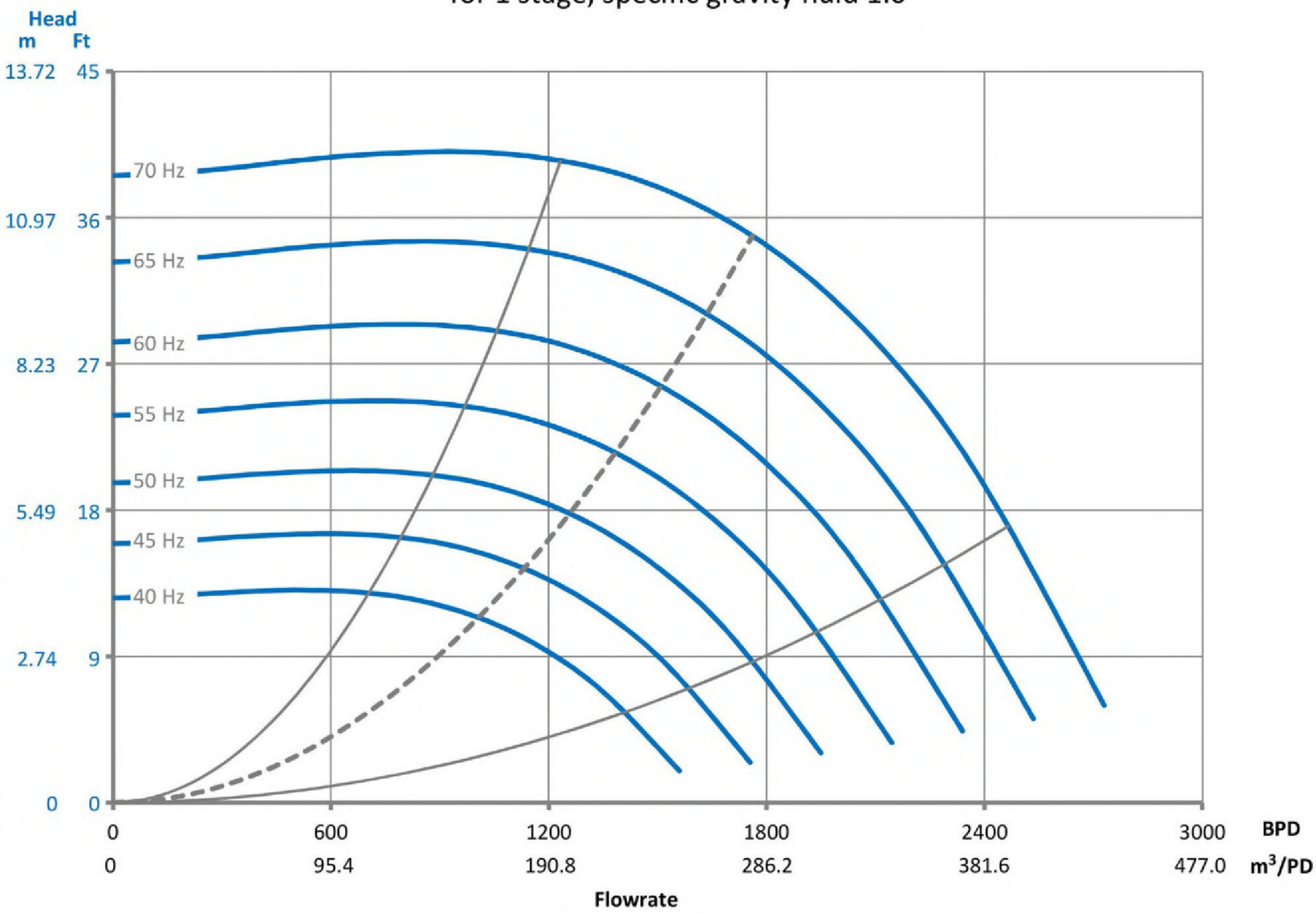
ESP 400-1509 Pump Performance Curve at 50 Hz (2910 RPM)

for 1 stage, specific gravity fluid 1.0



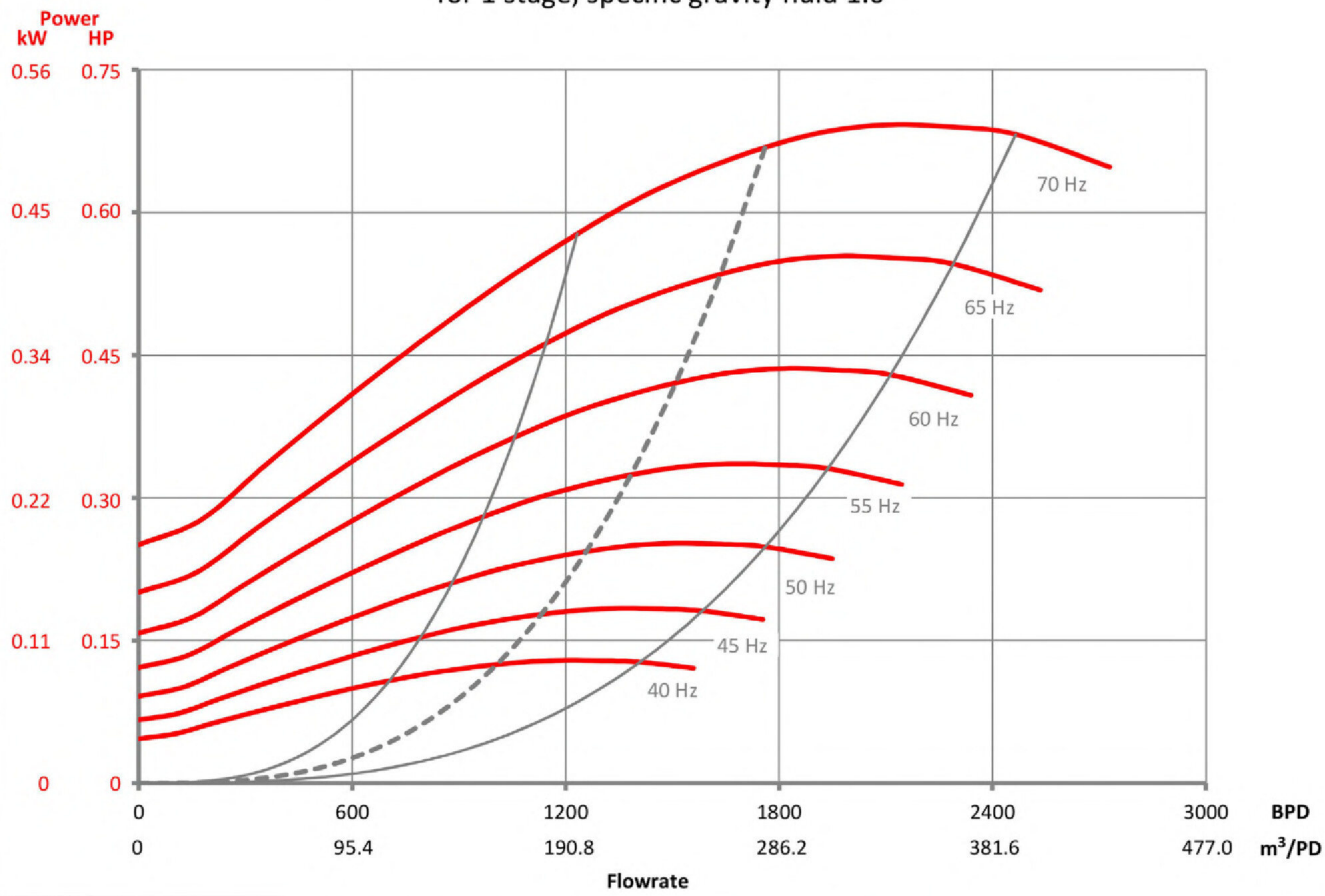
ESP 400-1509 Pump Multi-Frequency Curve - Head

for 1 stage, specific gravity fluid 1.0



ESP 400-1509 Pump Multi-Frequency Curve - Power

for 1 stage, specific gravity fluid 1.0



Two-Support Stages, Material Stages – Niresist
Floater Pump
With Axial Support of Shaft, Wear-Resistant

Housing Length		Technical Data					
		Length		Weight		Number	
						Stages	Intermediate Bearings
9.84 ft	3.0 m	10.54 ft	3.212 m	247 lb	112 kg	57	5
13.12 ft	4.0 m	13.82 ft	4.212 m	320 lb	145 kg	78	7
16.41 ft	5.0 m	17.10 ft	5.212 m	392 lb	178 kg	98	9
19.69 ft	6.0 m	20.38 ft	6.212 m	463 lb	210 kg	118	11

Housing Length		Performance Summary Data at 60 Hz (3492 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1460 ft	445 m	24.0 HP	17.9 kW	24.4 HP	18.2 kW
13.12 ft	4.0 m	1997 ft	609 m	32.9 HP	24.5 kW	33.4 HP	24.9 kW
16.41 ft	5.0 m	2510 ft	765 m	41.3 HP	30.8 kW	42.0 HP	31.3 kW
19.69 ft	6.0 m	3022 ft	921 m	49.7 HP	37.1 kW	50.6 HP	37.7 kW

Housing Length		Performance Summary Data at 50 Hz (2910 RPM)					
		Head		Power		Power max *	
9.84 ft	3.0 m	1014 ft	309 m	13.9 HP	10.4 kW	14.1 HP	10.5 kW
13.12 ft	4.0 m	1387 ft	423 m	19.0 HP	14.2 kW	19.3 HP	14.4 kW
16.41 ft	5.0 m	1743 ft	531 m	23.9 HP	17.8 kW	24.3 HP	18.1 kW
19.69 ft	6.0 m	2098 ft	640 m	28.8 HP	21.5 kW	29.3 HP	21.8 kW

Data performance summary for specific gravity fluid 1.0.

* Maximum power for the entire recommended range of flowrate.

Note: The head scale can be compressed or expanded.

Input Module

The input module is designed for input of formation fluid into electric submersible pump cavity. Shaft diameter 0.669 in (17 mm).

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.669 in 17 mm	
Shaft Cross-Sectional Area	0.352 in^2 226.98 mm^2	
Standard Shaft Power Limit (Brake-Power)	97 HP 72 kW	80 HP 60 kW
High Strength Shaft Power Limit (Soft Start)	209 HP 156 kW	174 HP 130 kW
Rotational Direction	Clockwise	

Type of Base Design	Technical Data			
	Length		Weight	
MV400UI	0.64 ft	0.195 m	22 lb	10 kg

Input Module

The input module is designed for input of formation fluid into electric submersible pump cavity. Shaft diameter 0.787 in (20 mm).

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in 101.6 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	0.787 in 20 mm	
Shaft Cross-Sectional Area	0.487 in^2 314.16 mm^2	
Standard Shaft Power Limit (Brake-Power)	153 HP 114 kW	127 HP 95 kW
High Strength Shaft Power Limit (Soft Start)	367 HP 274 kW	306 HP 228 kW
Rotational Direction	Clockwise	

Type of Base Design	Technical Data			
	Length		Weight	
MV400UI	0.64 ft	0.195 m	22 lb	10 kg

Check Valve

The check valve is designed for passage of fluid only in one direction. It automatically prevents fluid back flow and retains fluid in production tubing, reduces load on electric motor during startup of electric submersible pump.

Technical Data	Data
Housing Diameter	3.5 in
	89 mm
Minimum Casing Size	5.5 in
	139.7 mm

Type of Base Design	Technical Data				
	Length		Weight		Design feature
KZV400	0.69 ft	0.21 m	14 lb	6.3 kg	With poppet valve

Sludge Trap

The sludge trap is designed for protection of check valve and internal cavity of the electric submersible pump from mechanical impurities that may be inside the production tubing and be settled during installation and operation of electric submersible pump.

Technical Data	Data
Housing Diameter	3.5 in
	89 mm
Minimum Casing Size	5.5 in
	139.7 mm

Type of Base Design	Technical Data					
	Length (Without Sludge Tube)		Weight		Sludge Tube Length	
SH400	0.49 ft	0.15 m	21 lb	9.7 kg	4.92 ft	1.5 m

Drain Valve

The drain valve is designed for draining fluid from production tubing, which is retained by check valve. Absence of fluid simplifies dismounting of production tubing and lifting the electric submersible pump from the well.

Technical Data	Data
Housing Diameter	3.5 in
	89 mm
Minimum Casing Size	5.5 in
	139.7 mm

Type of Base Design	Technical Data			
	Length		Weight	
KZL400	0.57 ft	0.175 m	11 lb	5 kg

Gas Separator

400 Series Gas Separator

400 Series Gas Separator

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in	
	101.6 mm	
Shaft Diameter	0.787 in	
	20 mm	
Shaft Cross-Sectional Area	0.487 in^2	
	314.16 mm^2	
Shaft Power Limit (Brake-Power)	314 HP	261 HP
	234 kW	195 kW
Shaft Power Limit (Soft Start)	367 HP	306 HP
	274 kW	228 kW
Rotational Direction	Clockwise	

Type of Base Design	Technical Data			
	Length		Weight	
GS400-200	2.46 ft	0.75 m	54 lb	24.6 kg

Type of Base Design	Performance Summary Data at 60 Hz (3492 RPM)					
	Nominal Flowrate		Working Range		Power max *	
GS400-200	1509 BPD	240 m^3PD	75…1887 BPD	12…300 m^3PD	2.32 HP	1.73 kW

Type of Base Design	Performance Summary Data at 50 Hz (2910 RPM)					
	Nominal Flowrate		Working Range		Power max *	
GS400-200	1258 BPD	200 m^3PD	63…1572 BPD	10…250 m^3PD	1.34 HP	1.00 kW

Data performance summary for specific gravity fluid 1.0.
* Maximum power for the entire working range of flowrate.

Gas Separator-Disperser

400 Series Gas Separator-Disperser

400 Series Gas Separator-Disperser

Technical Data	Data at 60 Hz (3492 RPM)	Data at 50 Hz (2910 RPM)
Housing Diameter	4.00 in	
	101.6 mm	
Shaft Diameter	0.787 in	
	20 mm	
Shaft Cross-Sectional Area	0.487 in^2	
	314.16 mm^2	
Shaft Power Limit (Brake-Power)	314 HP	261 HP
	234 kW	195 kW
Shaft Power Limit (Soft Start)	367 HP	306 HP
	274 kW	228 kW
Rotational Direction	Clockwise	

Type of Base Design	Technical Data			
	Length		Weight	
GSD400-200	3.37 ft	1.0265 m	74 lb	33.5 kg

Type of Base Design	Performance Summary Data at 60 Hz (3492 RPM)					
	Nominal Flowrate		Working Range		Power max *	
GSD400-200	1509 BPD	240 m^3PD	75…2642 BPD	12…420 m^3PD	2.32 HP	1.73 kW

Type of Base Design	Performance Summary Data at 50 Hz (2910 RPM)					
	Nominal Flowrate		Working Range		Power max *	
GSD400-200	1258 BPD	200 m^3PD	63…2201 BPD	10…350 m^3PD	1.34 HP	1.00 kW

Data performance summary for specific gravity fluid 1.0.
* Maximum power for the entire working range of flowrate.

Motor Seal

400 Series Motor Seal

Technical Data	Data at 60 Hz	Data at 50 Hz
Housing Diameter	4.00 in 101.6 mm	
Shaft Diameter	0.984 in 25 mm	
Shaft Cross-Sectional Area	0.761 in^2 490.87 mm^2	
Shaft power limit (Brake-Power)	354 HP 264 kW	295 HP 220 kW
Rubber Maximum Operating Temperature	392 °F 200 °C	
Rotational Direction	Clockwise	

Type of Base Design	Technical Data					
	Length		Weight		Number and Type of Chambers	Oil Volume
P400M5	8.25 ft	2.515 m	157 lb	71 kg	3 Labyrinth/Bag/Bag	7.6
P400M5U	8.25 ft	2.515 m	157 lb	71 kg	3 Labyrinth/Bag/Bag	7.6

Type of Base Design	Performance Summary Data at 60 Hz			
	Maximum Thrust Bearing Load		Power max for High Load Thrust Bearing	
P400M5	368 lb	167 kg	-	-
P400M5U	1378 lb	625 kg	2.21 HP	1.65 kW

Type of Base Design	Performance Summary Data at 50 Hz			
	Maximum Thrust Bearing Load		Power max for High Load Thrust Bearing	
P400M5	441 lb	200 kg	-	-
P400M5U	1654 lb	750 kg	2.21 HP	1.65 kW

Motor

456 Series Motor

Technical Data	Data at 60 Hz	Data at 50 Hz
Housing Diameter	4.56 in 115.8 mm	
Minimum Casing Size	5.5 in 139.7 mm	
Shaft Diameter	1.181 in 30 mm	
Shaft Cross-Sectional Area	1.096 in^2 706.86 mm^2	
Maximum Power (Single Section)	201 HP 150 kW	168 HP 125 kW
Maximum Power (Total)	402 HP 300 kW	335 HP 250 kW
Maximum Internal Temperature	374 °F 190 °C	
Rotational Direction	Clockwise	

Type of Base Design	Section Name	Technical Data				
		Length		Weight		Number of Rotor Cores
ED22-456M5	Single	7.09 ft	2.160 m	342 lb	155 kg	4
ED28-456M5	Single	8.37 ft	2.550 m	408 lb	185 kg	5
ED32-456M5	Single	9.65 ft	2.940 m	474 lb	215 kg	6
ED36-456M5	Single	10.93 ft	3.330 m	540 lb	245 kg	7
ED40-456M5	Single	10.93 ft	3.330 m	540 lb	245 kg	7
ED45-456M5	Single	12.21 ft	3.720 m	606 lb	275 kg	8
ED50-456M5	Single	13.48 ft	4.110 m	673 lb	305 kg	9
ED56-456M5	Single	14.76 ft	4.500 m	739 lb	335 kg	10
ED63-456M5	Single	16.04 ft	4.890 m	805 lb	365 kg	11
ED63-456M5M1	Single	16.04 ft	4.890 m	805 lb	365 kg	11
ED70-456M5	Single	17.32 ft	5.280 m	871 lb	395 kg	12
ED80-456M5	Single	19.88 ft	6.060 m	1001 lb	454 kg	14
ED90-456M5	Single	21.16 ft	6.450 m	1076 lb	488 kg	15
ED90-456M5M1	Single	21.16 ft	6.450 m	1032 lb	468 kg	15
ED100-456M5	Single	22.44 ft	6.840 m	1142 lb	518 kg	16
ED110-456M5	Single	23.72 ft	7.230 m	1206 lb	547 kg	17
ED125-456M5	Single	26.28 ft	8.010 m	1338 lb	607 kg	19
ED70-456M5V	Upper	17.31 ft	5.275 m	873 lb	396 kg	12
ED70-456M5N	Lower	17.14 ft	5.225 m	867 lb	393 kg	12
Assembled	-	34.45 ft	10.500 m	1740 lb	789 kg	24
ED80-456M5V	Upper	19.87 ft	6.055 m	1005 lb	456 kg	14
ED80-456M5N	Lower	19.70 ft	6.005 m	997 lb	452 kg	14
Assembled	-	39.57 ft	12.060 m	2002 lb	908 kg	28
ED90-456M5V	Upper	21.15 ft	6.445 m	1080 lb	490 kg	15
ED90-456M5N	Lower	20.98 ft	6.395 m	1074 lb	487 kg	15
Assembled	-	42.13 ft	12.840 m	2154 lb	977 kg	30
ED100-456M5V	Upper	22.43 ft	6.835 m	1140 lb	517 kg	16
ED100-456M5N	Lower	22.26 ft	6.785 m	1140 lb	517 kg	16
Assembled	-	44.69 ft	13.620 m	2280 lb	1034 kg	32
ED110-456M5V	Upper	23.71 ft	7.225 m	1213 lb	550 kg	17
ED110-456M5N	Lower	23.54 ft	7.175 m	1206 lb	547 kg	17
Assembled	-	47.25 ft	14.400 m	2419 lb	1097 kg	34
ED125-456M5V	Upper	26.26 ft	8.005 m	1343 lb	609 kg	19
ED125-456M5N	Lower	26.10 ft	7.955 m	1338 lb	607 kg	19
Assembled	-	52.36 ft	15.960 m	2681 lb	1216 kg	38

Type of Base Design	Section Name	Performance Summary Data at 60 Hz			
		Power		Voltage	Amperage
ED22-456M5	Single	35.4 HP	26.4 kW	864 V	24 A
ED28-456M5	Single	45.0 HP	33.6 kW	1092 V	24.5 A
ED32-456M5	Single	51.5 HP	38.4 kW	1260 V	24.5 A
ED36-456M5	Single	57.9 HP	43.2 kW	1488 V	23.5 A
ED40-456M5	Single	64.3 HP	48.0 kW	1536 V	25 A
ED45-456M5	Single	72.4 HP	54.0 kW	1740 V	25 A
ED50-456M5	Single	80.4 HP	60.0 kW	1920 V	25 A
ED56-456M5	Single	90.1 HP	67.2 kW	2184 V	24.5 A
ED63-456M5	Single	101.3 HP	75.6 kW	2400 V	25 A
ED63-456M5M1	Single	101.3 HP	75.6 kW	1680 V	36 A
ED70-456M5	Single	112.6 HP	84.0 kW	2580 V	26 A
ED80-456M5	Single	128.7 HP	96.0 kW	2412 V	32 A
ED90-456M5	Single	144.8 HP	108.0 kW	2280 V	38 A
ED90-456M5M1	Single	144.8 HP	108.0 kW	2604 V	33 A
ED100-456M5	Single	160.9 HP	120.0 kW	2472 V	39 A
ED110-456M5	Single	176.9 HP	132.0 kW	2292 V	46 A
ED125-456M5	Single	201.1 HP	150.0 kW	2664 V	46 A
ED70-456M5V	Upper	112.6 HP	84.0 kW	1284 V	52 A
ED70-456M5N	Lower	112.6 HP	84.0 kW	1320 V	52 A
Assembled	-	225.2 HP	168.0 kW	2604 V	52 A
ED80-456M5V	Upper	128.7 HP	96.0 kW	1200 V	63 A
ED80-456M5N	Lower	128.7 HP	96.0 kW	1224 V	63 A
Assembled	-	257.4 HP	192.0 kW	2424 V	63 A
ED90-456M5V	Upper	144.8 HP	108.0 kW	1122 V	76 A
ED90-456M5N	Lower	144.8 HP	108.0 kW	1158 V	76 A
Assembled	-	289.5 HP	216.0 kW	2280 V	76 A
ED100-456M5V	Upper	160.9 HP	120.0 kW	1200 V	79 A
ED100-456M5N	Lower	160.9 HP	120.0 kW	1236 V	79 A
Assembled	-	321.7 HP	240.0 kW	2436 V	79 A
ED110-456M5V	Upper	176.9 HP	132.0 kW	1320 V	80 A
ED110-456M5N	Lower	176.9 HP	132.0 kW	1356 V	80 A
Assembled	-	353.9 HP	264.0 kW	2676 V	80 A
ED125-456M5V	Upper	201.1 HP	150.0 kW	1488 V	80 A
ED125-456M5N	Lower	201.1 HP	150.0 kW	1548 V	80 A
Assembled	-	402.1 HP	300.0 kW	3036 V	80 A

Type of Base Design	Section Name	Performance Summary Data at 50 Hz			
		Power		Voltage	Amperage
ED22-456M5	Single	29.5 HP	22.0 kW	720 V	24 A
ED28-456M5	Single	37.5 HP	28.0 kW	910 V	24.5 A
ED32-456M5	Single	42.9 HP	32.0 kW	1050 V	24.5 A
ED36-456M5	Single	48.3 HP	36.0 kW	1240 V	23.5 A
ED40-456M5	Single	53.6 HP	40.0 kW	1280 V	25 A
ED45-456M5	Single	60.3 HP	45.0 kW	1450 V	25 A
ED50-456M5	Single	67.0 HP	50.0 kW	1600 V	25 A
ED56-456M5	Single	75.1 HP	56.0 kW	1820 V	24.5 A
ED63-456M5	Single	84.5 HP	63.0 kW	2000 V	25 A
ED63-456M5M1	Single	84.5 HP	63.0 kW	1400 V	36 A
ED70-456M5	Single	93.8 HP	70.0 kW	2150 V	26 A
ED80-456M5	Single	107.2 HP	80.0 kW	2010 V	32 A
ED90-456M5	Single	120.6 HP	90.0 kW	1900 V	38 A
ED90-456M5M1	Single	120.6 HP	90.0 kW	2170 V	33 A
ED100-456M5	Single	134.0 HP	100.0 kW	2060 V	39 A
ED110-456M5	Single	147.5 HP	110.0 kW	1910 V	46 A
ED125-456M5	Single	167.6 HP	125.0 kW	2220 V	46 A
ED70-456M5V	Upper	93.8 HP	70.0 kW	1070 V	52 A
ED70-456M5N	Lower	93.8 HP	70.0 kW	1100 V	52 A
Assembled	-	187.7 HP	140.0 kW	2170 V	52 A
ED80-456M5V	Upper	107.2 HP	80.0 kW	1000 V	63 A
ED80-456M5N	Lower	107.2 HP	80.0 kW	1020 V	63 A
Assembled	-	214.5 HP	160.0 kW	2020 V	63 A
ED90-456M5V	Upper	120.6 HP	90.0 kW	935 V	76 A
ED90-456M5N	Lower	120.6 HP	90.0 kW	965 V	76 A
Assembled	-	241.3 HP	180.0 kW	1900 V	76 A
ED100-456M5V	Upper	134.0 HP	100.0 kW	1000 V	79 A
ED100-456M5N	Lower	134.0 HP	100.0 kW	1030 V	79 A
Assembled	-	268.1 HP	200.0 kW	2030 V	79 A
ED110-456M5V	Upper	147.5 HP	110.0 kW	1100 V	80 A
ED110-456M5N	Lower	147.5 HP	110.0 kW	1130 V	80 A
Assembled	-	294.9 HP	220.0 kW	2230 V	80 A
ED125-456M5V	Upper	167.6 HP	125.0 kW	1240 V	80 A
ED125-456M5N	Lower	167.6 HP	125.0 kW	1290 V	80 A
Assembled	-	335.1 HP	250.0 kW	2530 V	80 A

KHEMZ-IPEC

“KHEMZ-IPEC”

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