Pumping happiness across the Globe

Tormac PUMPS

THE TORMAC STABLE OF THROUGHBREDS

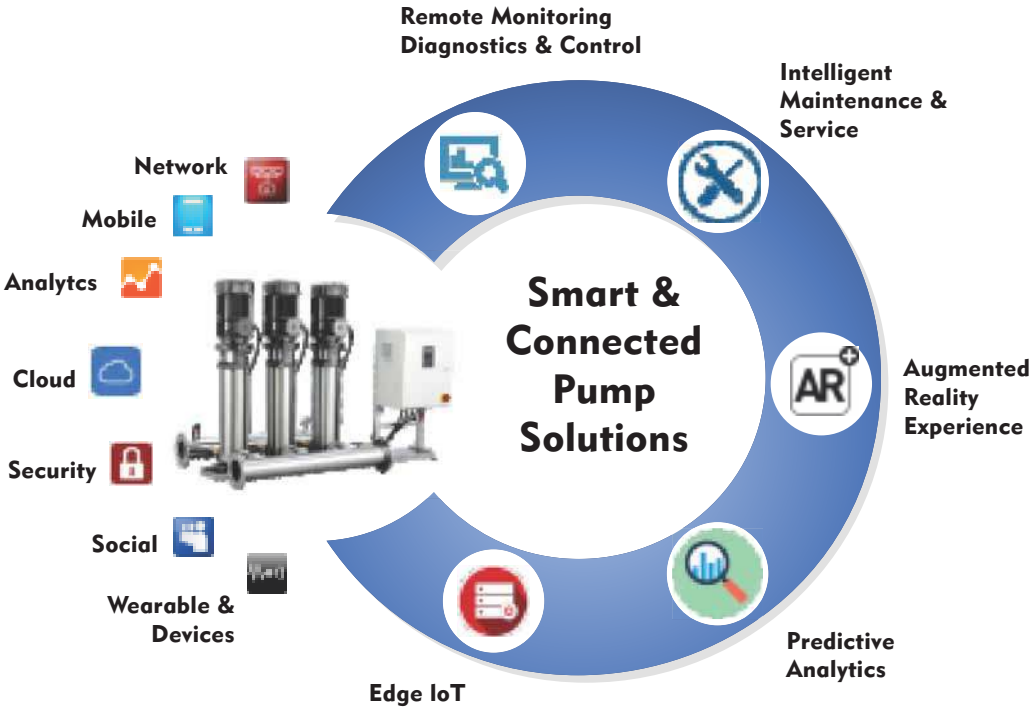
THE TRUSTED CHOICE FOR PRESSURE BOOSTING.

PRESSURE BOOSTING SYSTEM - **TH & TV SERIES**

Product from an ISO 9001 COMPANY

CE

INTELLIGENT PUMPING SOLUTIONS



Remote Monitoring Diagnostics & Control

Connect control panel with RS 485 GSM gateway, controller with cloud based analytics software with secured web/mobile apps

- Frequency
- Pressure
- Current
- Voltage
- Pump Status
- Pump Diagnostics

Augmented Reality Experience

HoloLens/Real wear/Tablet based AR experience to know more on Pump Assembly, Pump Analytics, Pump Real Time values and Digital - Real world integration

Edge IoT Control

Edge level controller to check alerts and diagnostics and control the pump at edge level instead of server or cloud

Intelligent Maintenance & Service

Mobile and QR code based application for Preventive maintenance, customer service and break down service

- Preventive Checklist
- Email notification
- Ticketing System
- Mobile app notification

Predictive Analytics

- Predictive alerts based on critical parameters correlations and machine learning
- Recommend actions for the conditions & alerts for faster decision making & control

GENERAL

Tormac's Pressure Booster Systems are built with care using advanced technology and controlling devices/equipments that ensure efficient operation and energy saving. Nowadays pressure booster system becomes an essential part of all buildings including individual houses. Tormac's pressure booster systems are designed to meet wide range of applications and are customized to meet customer's requirements.

These pressure booster systems are built with all stainless steel Tormac vertical/horizontal multistage pumps powered by Tormac's IR-CLASS MOTORS. The control system is made with PLC/Micro controller / VFD for constant pressure, energy saving and fail-safe automatic operation. These systems are supplied as complete package including, manifold, pressure vessel, control panel with VFD/PLC/Micro controller, check/gate valves, pressure gauge, transmotters etc.,

Much importance is given to reduce the noise level to ensure trouble free and quiet operation and intense care is taken to ensure lesser space occupation and make the system affordable across the world. It also serves as a best alternative for traditional over head tank system and thereby reduces water pollution and constructional cost etc.,

Simply saying Tormac's pressure booster systems are highly reliable, more efficient, silent in operation, affordable, smart and are customized to suit any requirements.

MODEL IDENTIFICATION CODE

T •• -•/•••• - • - • •• - • - • - • - •

Series Name TV/TH

Hydro System

Pump Model

No of Pumps	
1	4
2	5
3	6

M. Seal Combinations	
SSV	Sic/Sic/FKM
TCV	TC/Car/FKM
SCE	Sic/Car/EPDM

Pump MOC	
C	CI Version
S	SS 304 Version
N	SS 316 Version

Manifold MOC	
1	MS - GI Hot Dipped Galvanized
2	SS 304
3	SS 316

Control Panel Type / Design	
P	Smart Controller (One VFD + PT + RS 485)
P+	Smart Controller (One VFD + PT + RS 485) + DV-DT Choke/Sine Wave
P-Smart	Smart Controller (One VFD + PT + RS 485) + Remote monitoring
E	Smart Controller Constant Speed + PS + BMS Alert
E+	Smart Controller Constant Speed + PS + RS 485
M	Multi Master (Individual VFD + HMI + PLC + PT + RS 485) (Without Bypass)
M+	Multi Master (Individual VFD + HMI + PLC + PT + RS 485) (With Bypass)
I	Multi Master (Motor mounted VFD + HMI + Panel mounted PLC + PT + RS 485)

CX	Customized Design in Control Panel
MX	Customized Design in Manifold
OX	Customized Design in Other than Above

Pressure Tank	This digit is applicable for with supply only. (T - Pressure Tank, 453 - Tank Capacity)

Motor IE Class

TV SERIES

APPLICATIONS

These kind of booster sets are used for boosting water supply applications in the following facilities :

- Hotels
- Offices
- Public and Private healthcare system
- Industries
- Public buildings
- Theaters
- Other commercial buildings

BOOSTER SETS COMPONENTS AND MATERIALS

Vertical Multistage Pumps	Tormac - TVC / TVS / TVN Series Pumps
Control Panel	Tormac - Fixed / Variable Speed Control Panel
Isolating Valves	Threaded Ball Valve / Butterfly Valve
NRV	Threaded NRV / Wafer Type / Dual Plate Checkvalve
Pressure Feedbacks	Pressure Switch / Pressure Transmitter
Pressure Gauge	3/8' BSP Threaded / NPT
Suction and Delivery Manifold	MS with GI Hot Dipped Galvanized / SS
Base Frame	MS with GI Hot Dipped Galvanized / SS

PUMP SPECIFICATIONS - 50Hz

Max. Flow	1200 m^3/hr
Max. Head	320 m
Max. Power	110 kW
Liquid Temperature Ranges	-10°C to 90°C

PUMP SPECIFICATIONS - 50Hz

Max. Flow	3170 gpm / 720 m^3/hr
Max. Head	980 ft / 300 m
Max. Power	45 kW (60 HP)
Liquid Temperature Ranges	14°F to 194°F (-10°C to 90°C)

Pumped Liquids :

- Clear water without abrasives
- Non-aggressive and Non-explosive water

Advantages :

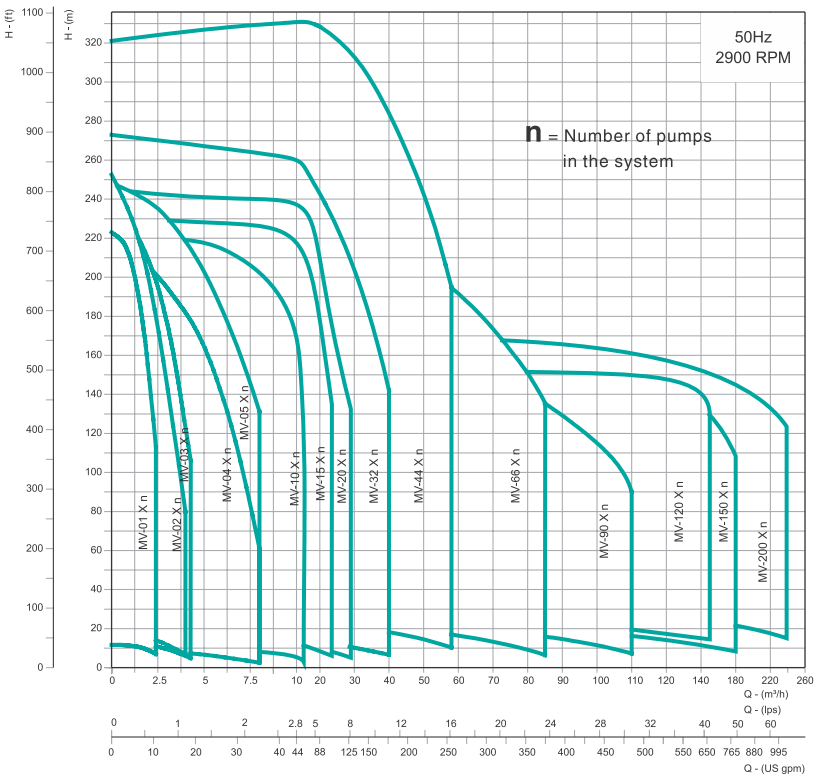
- Sophisticated water pressure throughout the building round the clock and ensures Efficient & Constant Water Pressure Management.
- No manual interference to operate the pumping system.
- Low noise & Vibration level, tough & reliable, low operating & maintenance cost
- Pressure comfort for modern bathroom gadgets.
- Due to multiple pumps operating in parallel, failure of single pump does not lead to complete system breakdown.
- Reliable automation.

Key Features and Controls :

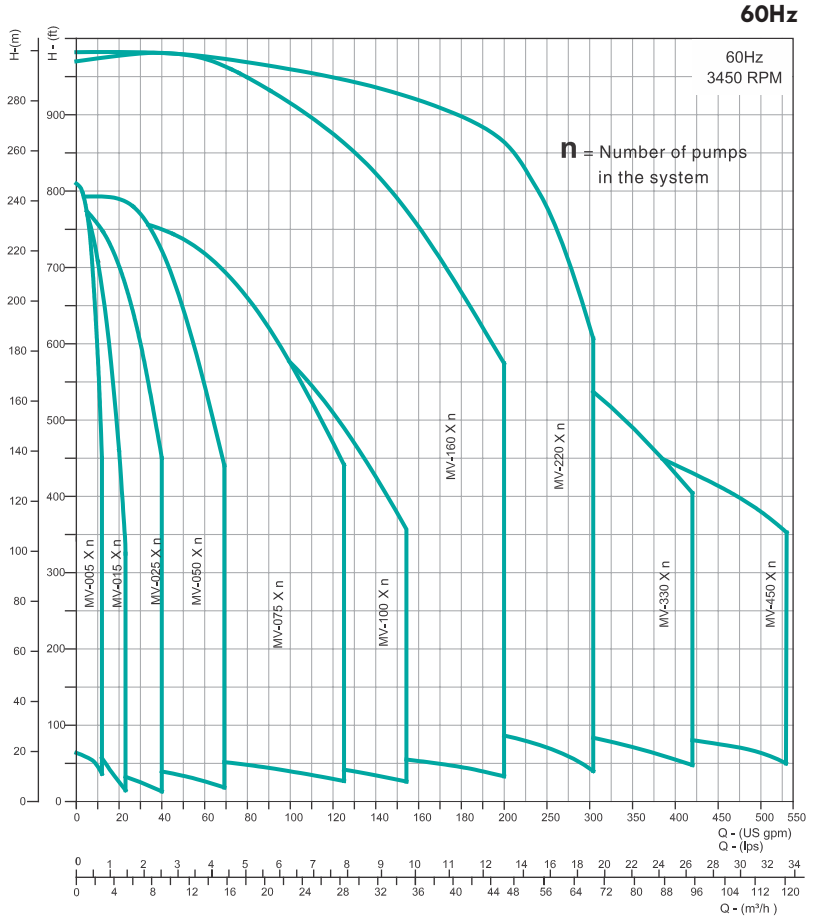
- **Pump Operational Features :** Floating Inventor - Cascading - Faulty Pump Isolation - Elapsed Running Hours - Maintenance call/Life Timer - Graphical Status indication - Manual Operation - Warm up - Soft Start
- **Pressure Feedback Features :** Actual pressure setting - Set Point setting - Calibration - Low & High pressure Cut Off
- **Protection Functions :** Pump dry Run (By Float & By CT) - Single phase prevention - Pump Overload - Emergency Off - Limit ON/OFF Frequency - Phase Sequence - Passwords - Phase reversal preventer - Current Transformer based Protection (Individual Motor) - Warm Up
- **Alarms - Visual/Audible :** Pump Dry Run (By Float & By CT) - Faulty Pump - Limit ON/OFF Frequency - Single phase prevention - Pump Overload - Emergency Off - Phase Sequence - VFD Fault - Phase Reversal Preventer.
- **Communications :** Modbus RS 485 (optional)
  (Optional : Ethernet)

PERFORMANCE CURVES - TV & TH SERIES

50Hz



60Hz



THBS SERIES

KEY FEATURES

- Automatic cascade control of pumps by means of one / two pressure switches.
- Automatic change-over at any start / stop cycle
- Start & Stop delays to prevent simultaneous starting / stopping of the 2 pumps.
- Dry running protection by means of current sensing program.
- Automatic circuit breaker protecting the motor against short circuit and overload.
- Simple & Robust construction.

APPLICATIONS

- Residential
- Apartments
- Small Farms
- Washing System
- Gardening
- Hospitals
- Hotels
- Schools
- Small Industries
- Sprinkler System

PUMP SPECIFICATION - 50Hz

Max. Flow	28 m^3/hr
Max. Head	50 m
Max. Power	2.2 kW
Liquid Temperature ranges	0°C to 90°C

PUMP SPECIFICATION - 60Hz

Max. Flow	120 gpm / 28 m^3/hr
Max. Head	220 feet / 67 m
Max. Power	3 kW (4 HP)
Liquid Temperature ranges	-32°F to 194°F (0°C to 90°C)

PUMPED LIQUIDS

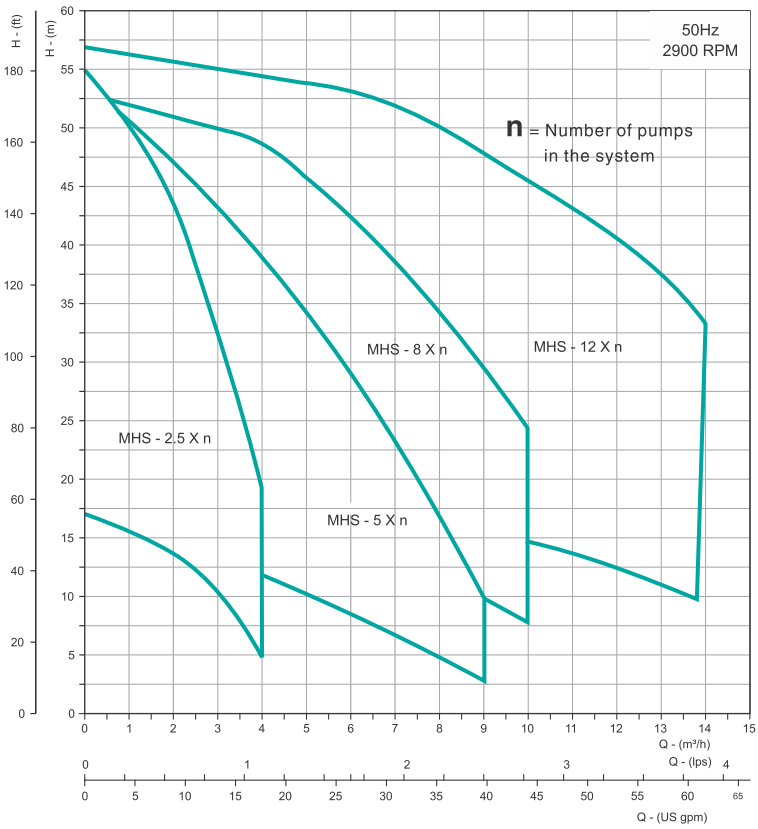
- Clear water without abrasives
- Non-aggressive and Non-explosive water

BOOSTER SETS COMPONENTS AND MATERIALS

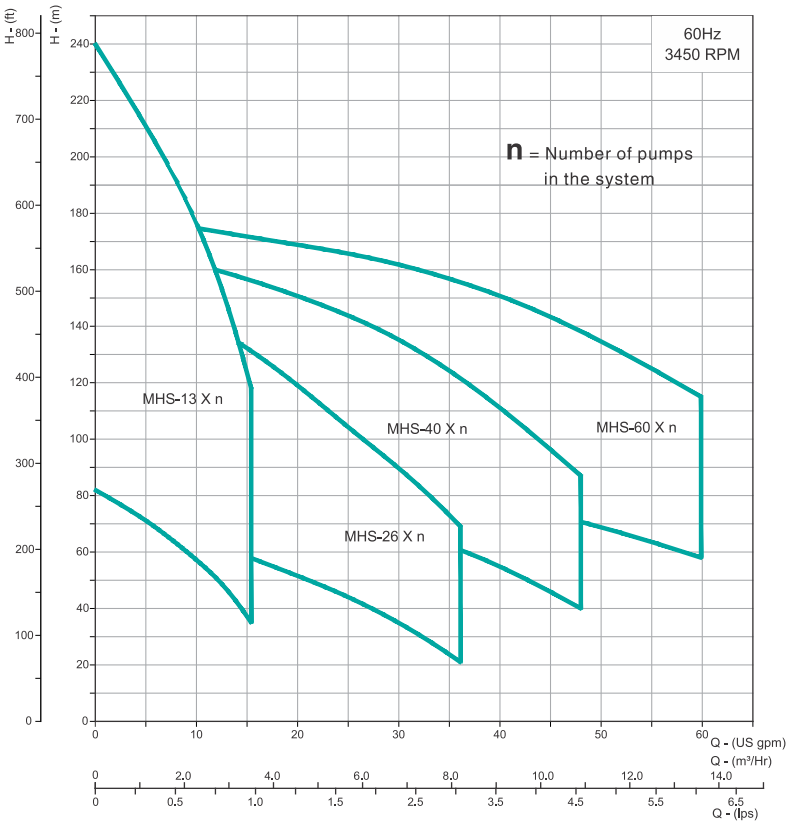
Horizontal Multistage Pumps	Tormac - TH Series Pumps
Control Panel	Tormac - Fixed / Variable Speed Control Panel
Isolating Valves	Threaded Ball Valve / Butterfly Valve
NRV	Threaded NRV / Wafer Type / Dual Plate Checkvalve
Pressure feedbacks	Pressure Switch / Pressure Transmitter
Pressure Gauge	3/8' BSP Threaded
Suction and delivery manifold	MS with GI Hot Dipped Galvanised / SS
Base frame	MS with GI Hot Dipped Galvanised / SS

PERFORMANCE CURVES - THB SERIES

50Hz



60Hz



TECHNICAL INFORMATION FEATURES - TV, TH & THB SERIES

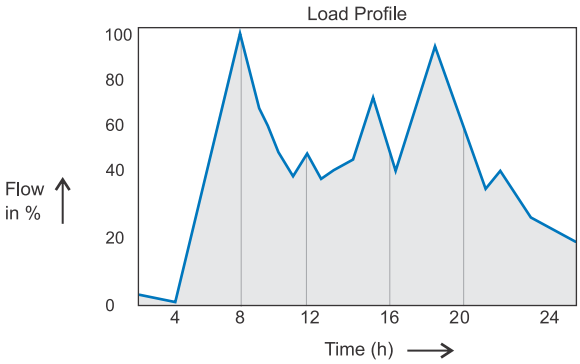
FEATURES	E Series	P Series	P-Smart Series	M Series	I Series
Controller Interface					
Ammeter & Voltmeter	✓	✓	✓	✓	✓
BMS Alert & Test Run	✓	✓	✓	✗	✗
Cascade	✓	✓	✓	✓	✓
Dry Run	CT	CT/Float	CT/Float	Float	Float
Emergency Off	✓	✓	✓	✓	✓
Error Log	✗	✓	✓	✓	✓
Remote Monitor / Access	✗	✗	✓	✗	✗
Fault Pump Isolation	✓	✓	✓	✓	✓
Float Switch Provision	✓	✓	✓	✓	✓
Floating Inverter	✗	✓	✓	✗	✗
Graphical Interface	✗	✓	✓	✓	✓
HMI	✗	✓	✓	✓	✓
Limit ON/OFF Frequency	✓	✓	✓	✗	✗
Maintenance Call	✗	✓	✓	✓	✓
Overload Protection	✓	✓	✓	✓	✓
Password Protection	✓	✓	✓	✓	✓
Pressure Lock	✗	✓	✓	✗	✗
Pressure switch	✓	✗	✗	✗	✗
Pressure Transmitter	✗	✓	✓	✓	✓
RS 485 Modbus	✗	✓	✓	✓	✓
Single Phase Design	✓	✗	✗	✗	✗
Single Phase Preventer	✓	✓	✓	✓	✓
Phase Reversal	✓	✓	✓	✓	✓
Standby Pump Selection	✗	✓	✓	✗	✗
Warm UP	✗	✓	✓	✗	✗

SIZING THE SYSTEM FLOW

Below a few examples of how to calculate the right flow and examples of related load profile in graph.

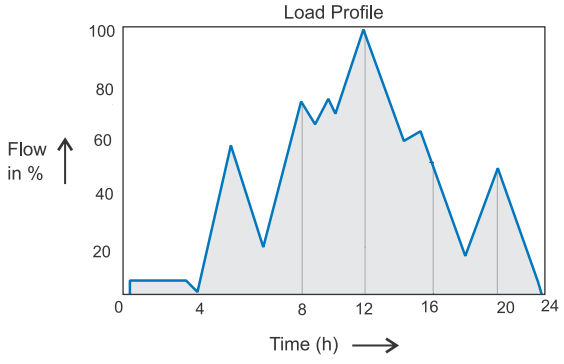
Residential Apartment

Calculation of Maximum Flow for system design	Example in m^3		Example in gallons	
Units	1 Flat	100 Flats	1 Flats	100 Flats
Total Consumption per Flat / Year	183 m^3	18300 m^3	48344 gallons	4834400 gallons
Consupmtion Period	365 day/year	(18300/365)	365 day/year	(4834400/365)
Average Consumption per day	0.5 m^3	50.14 m^3	132.45 gallon	13245 gallon
Factor for maximum Consumption	1.3	(50.14 x 1.3)	1.3	(13245 x 1.3)
Maximum Consumption per day for a period of 24 hrs	0.65 m^3	65.18 m^3	172.19 gallons	17219 gallons
Factors for peak flow (per hour of 24 hrs)	1.7	(65.18 x 1.7)/24	1.7	(17219*1.7)/24
Required flow per hour	0.046 m^3/hr	0.046 m^3/hr	12.18 gph (0.203 gpm)	1218 gph (20.3 gpm)



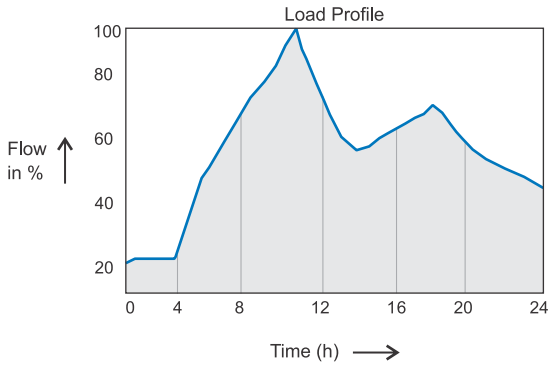
School / College / Education Institution

Calculation of Maximum Flow for system design	Example in m^3		Example in gallons	
Units	1 Student	800 Student	1 Student	100 Student
Total Consumption per Student / Year	8 m^3	6400 m^3	2113 gallons	1690400 gallons
Consupmtion Period	200 day/year	(6400/200)	200 day/year	(1690400/200)
Average Consumption per day	0.4 m^3	32 m^3	10.57 gallon	8452 gallon
Factor for maximum Consumption	1.3	(32 x 1.3)	1.3	(8452 x 1.3)
Maximum Consumption per day for a period of 8 hrs	0.052 m^3	41.6 m^3	13.73 gallons	10988 gallons
Factors for peak flow (per hour of 8 hrs)	2.5	(41.6 x 2.5)/8	2.5	(10988x2.5)/8
Required flow per hour	0.016 m^3/hr	12.8 m^3/hr	4.29 gph (0.072 gpm)	3432 gph (57 gpm)



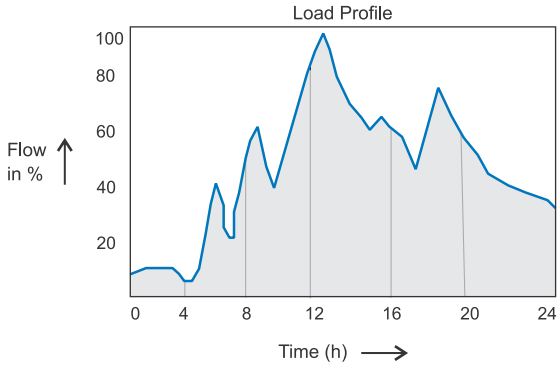
Hospital

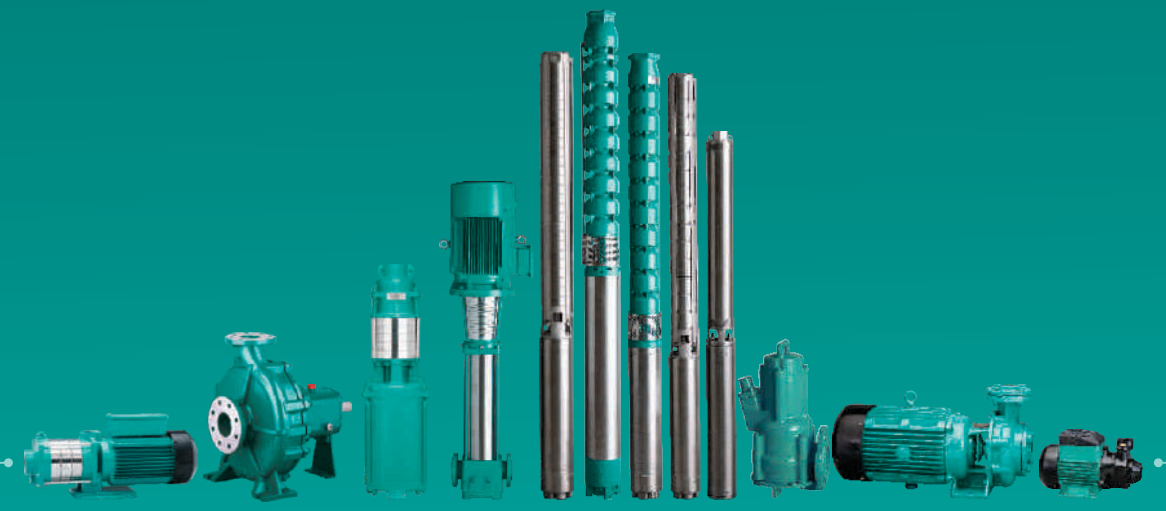
Calculation of Maximum Flow for system design	Example in m³		Example in gallons	
Units	1 Bed	200 Beds	1 Bed	200 Beds
Total Consumption per Bed / Year	300 m³	60000 m³	79252 gallons	15850400 gallons
Consupmtion Period	365 day/year	(60000/365)	365 day/year	(15850400/365)
Average Consumption per day	0.8 m³	164.38 m³	217.12 gallon	43426 gallon
Factor for maximum Consumption	1.2	(164.38 x 1.2)	1.2	(43426 x 1.2)
Maximum Consumption per day for a period of 24 hrs	0.96 m³	197.26 m³	260.54 gallons	52111 gallons
Factors for peak flow (per hour of 24 hrs)	3	(197.26x3)/24	3	(52111x3)/24
Required flow per hour	0.12 m³/hr	24.66 m³/hr	32.5 gph (0.54 gpm)	6501 gph (108.3 gpm)



Commercial Office

Calculation of Maximum Flow for system design	Example in m³		Example in gallons	
Units	1 Person	400 Persons	1 Person	400 Persons
Total Consumption per Person/Year	10 m³	4000 m³	2642 gallons	1056800 gallons
Consupmtion Period	250 day/year	(4000/250)	250 day/year	(1056800/250)
Average Consumption per day	0.04 m³	16 m³	10.57gallon	4227.2 gallon
Factor for maximum Consumption	1.3	16 x 1.3	1.3	(4227.2 x 1.3)
Maximum Consumption per day for a period of 12 hrs	0.052 m³	20.8 m³	13.74 gallons	5495 gallons
Factors for peak flow (per hour of 12 hrs)	2.5	(20.8x2.5)/12	2.5	(5495x2.5)/12
Required flow per hour	0.011 m³/hr	4.3m³/hr	2.86 gph (0.048 gpm)	1145gph (19 gpm)





THE POWER BEHIND THE FORCE

Naargo Industries Private Limited, one of the leading manufacturers of latest state of art, large range of pumps and motors, is managed by veterans who are in the pump industry for almost half a century. The products are employed in various applications like irrigation, domestic, civil construction, de-watering etc; The Company has a strong distribution network in India for sales & service and a strong global presence.

Quality is the key factor in Naargo's products. The expansive infrastructure and environment accredited with ISO 9001 quality certification, latest engineering softwares, high-tech machinery, futuristic pumping technology and high caliber workforce facilitate the production of flawless and efficient products on par with international standards under the brand name of "Tormac". The well equipped R & D wing stays alive to the changing global trends and comes out with viable solutions for innovative product development and upgradation.

The Products currently available include Stainless Steel Submersible Pumps, 4" Thermoplastic Submersible Pumps, 6" & 8" Cast Iron Submersible Pumps, Submersible Motors and Controls, Centrifugal Pumps, Inline Booster Pumps, Jet Self-priming Pumps and Peripheral Pumps.

The power, performance and endurance of the products backed by the uncompromising teamwork and value systems will certainly propel the company's growth towards new horizons in the pump industry.

IC-IBF-A/23-E5

Naargo Industries Private Limited,
No. 2, Gem Garden, Atthipalayam Juntion, Ganapathy, Coimbatore - 641 006, INDIA.
Tel : +91 978 6522622, Fax : +91 422 2531956
email : tormac@tormacpumps.com web : www.tormacpumps.com

Tormac PUMPS