



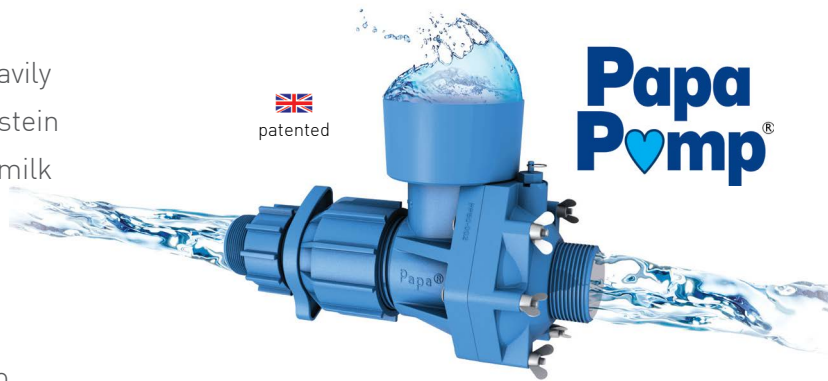
A Devon Dairy Farm saved over £30,000 per year with a multi Papa Pump System

The Maristow Estate on the edge of Dartmoor was heavily reliant on mains supply to water their herd of 450 Holstein Friesian Dairy Cows which produce 4 million litres of milk per year.

The farm had plenty of water in the Tavy Valley below, but needed it up at the farm on top of the hill. They decided to put in a 6 pump system using the zero energy Papa Pump pumping water from the natural springs on their farm. The pumps used the natural power of flowing water to pressurise a portion of the flow which can then be pushed over a large distance and up to impressive heights. They used 2 pump chambers in the valley with 3 pumps in each, delivering water up to the farm. The 6 pumps were able to deliver 14,400 cubic metres per year and save the farm over £30,000 on their annual mains water bill, which paid for the full installation within 3 years.

The farm also used solar powered pumps to push the water through UV filters to kill any bugs - again at no extra running cost.

You would expect the local water company to be disappointed with the loss in revenue, but in fact South West Water positively encourage it with their 'Upstream Thinking' programme. If they can encourage farmers to keep livestock out of watercourse, the quality of water will improve and they will spend less on treating the water for human consumption and it also helps the environment.



the pump that uses no fuel!



There are 450 Holstein Friesian Dairy Cows on the Maristow Estate



The large water tank at the farm is constantly supplied by the Papa Pumps.



Water is captured high on the hill where there are natural springs.



Installing the supply pipe from the supply tank to the pump chamber.



3 Papa Pumps with delivery ports connected to one delivery pipe.

continues overleaf

The Farmer's View...

Dairy Farming consumes a huge amount of water in milk production and it represents a very big saving for us if we can use our natural resources to reduce our reliance on mains water.

I think that in the future, there will be greater demands on water supplies in the country and if we can use our natural resources on the estate, it's got to be good for the environment and our business.

John Allen - Maristow Farm Manager



Multi Pump Systems

If your supply flow is large and you need more water delivered, you can use a multi pump system.

To estimate your delivery flow, use the chart opposite and multiply the stated delivery flows by the number of pumps in your system.

Therefore if you have a 6 pump system, the following examples can be calculated:

For a **2 metre Supply Head** and a required **Delivery Head of 31 metres** the **Delivery Amount** can be calculated as $2592 \times 6 = 15,552$ litres per day.

For a **9 metre Supply Head** and a required **Delivery Head of 62 metres** the **Delivery Amount** can be calculated as $9072 \times 6 = 54,432$ litres per day.

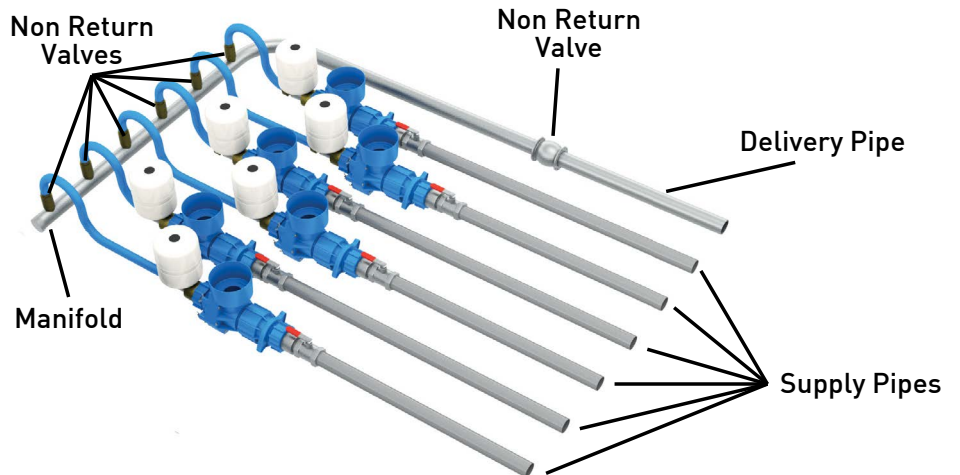
Papa Pump Performance Chart
Delivery Flow (litres/day)



(based on 60 litres/min through the Papa Pump)

Supply Head (Fall)	feet	metres	Figures shown are amount of water delivered in litres/day																		
100	31											25920	20736	17280	15120						
75	23											25920	19008	17280	15120	11232					
50	15											25920	17280	15120	12096	10368	7776				
40	12											20736	16416	12096	9504	8208	6048				
35	11											24192	18144	14688	10368	8208	6912	5184			
30	9											20736	16416	12096	9072	6912	6048	4320			
25												25920	17280	15552	10368	7776	6048	4752	3456		
20	6											25920	20736	14688	12096	7776	6048	4752	3888	2592	
15												25920	19008	14688	11232	8640	5616	3888	3024	2592	1728
10	3		25920	20736	17280	13824	11232	6912	5184	3024	2160	1728	1296	864							
9			23328	19008	15552	12096	9504	6048	4320	2592	1728	1296	864								
8			20736	17280	13824	10368	7776	5184	3456	2160	1728	1296	864								
7			18144	14688	12096	8640	6912	4320	3024	1728	1296	864	864								
6	2		15552	12096	9504	6912	5184	3456	2592	1728	1296	864									
5			12096	10368	7776	5184	4320	2592	1728	1296	864										
4			8640	6480	4752	3888	2592	1728	1296	864											
3	1		5184	4320	3456	2592	1728	864	432												
2			3456	2160	1728	1296	864	432													
	6	7.5	9	12	15	23	31	46	62	77	92	123	metres								
	20	25	30	40	50	75	100	150	200	250	300	400	feet								

Contact Water Powered Technologies or your distributor



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