



Energy Savings Level & Pump Controllers

Economy Pumping

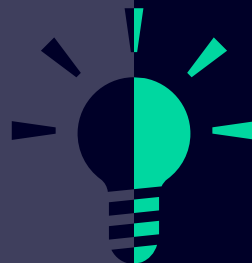
Beyond pump control Ultrasonic and radar sensors



Capitalize on level pump controllers

A level and pump controller can:

- Control 1-6 pumps
- Totalize pumped volume
- Prolong the lifetime of pumps with alternating and exercising
- **Save money using energy saving pump routines**



Ultrasonic or radar options are available along with a comprehensive suite of functionality for all level applications.



Advanced level and pump controllers offer the quickest and easiest way to solve difficult level monitoring and control solutions.

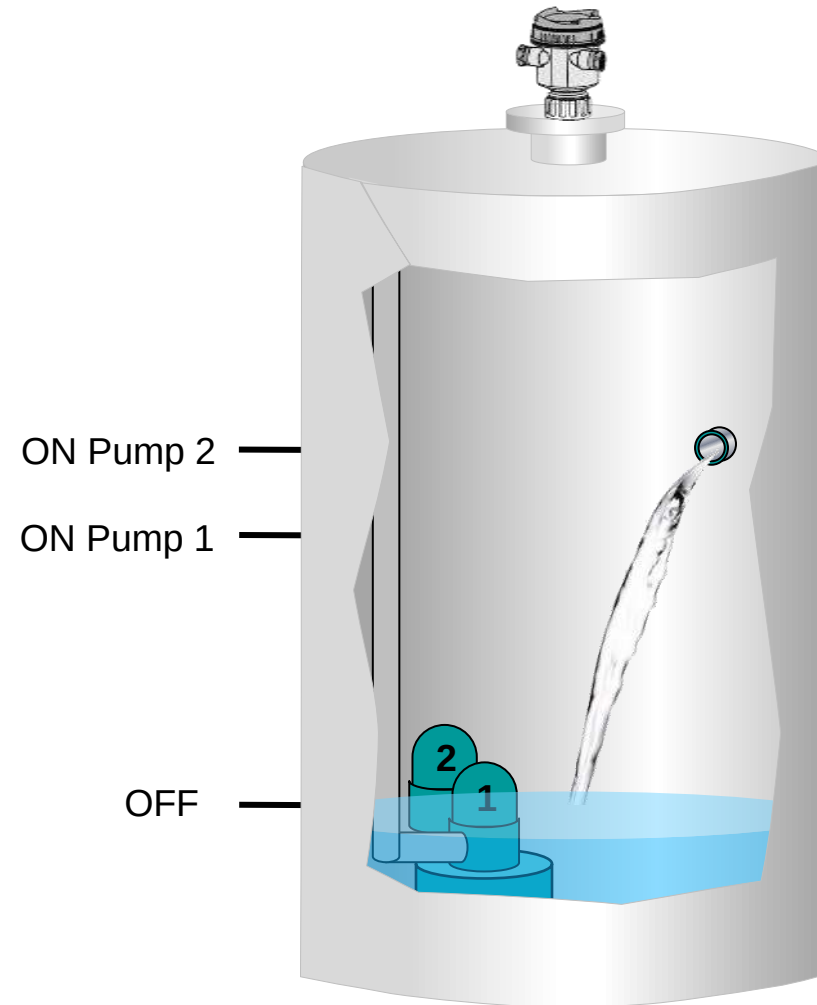
Pump control modes



Single pump	Alternate duty	Fixed duty	Service ratio
Starts single pump based on level set points	Starts pumps based on the duty schedule and always leads with a new pump	Starts pumps based on individual setpoints and always starts and stops the same pumps in the same sequence	Starts pumps based on user-defined ratio of running time
Mode type			
Assist: Multiple pumps will run at the same time		Back-up: Only one pump will run at a time	

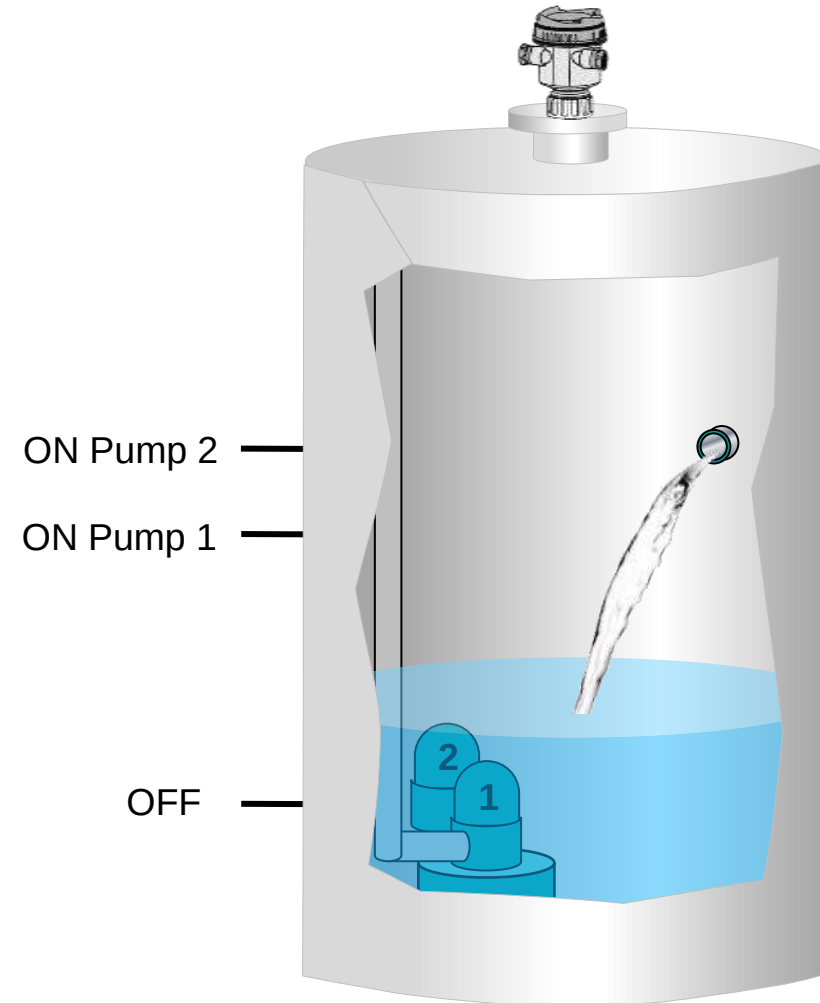
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- Starts pumps based on the duty schedule and always leads with a new pump



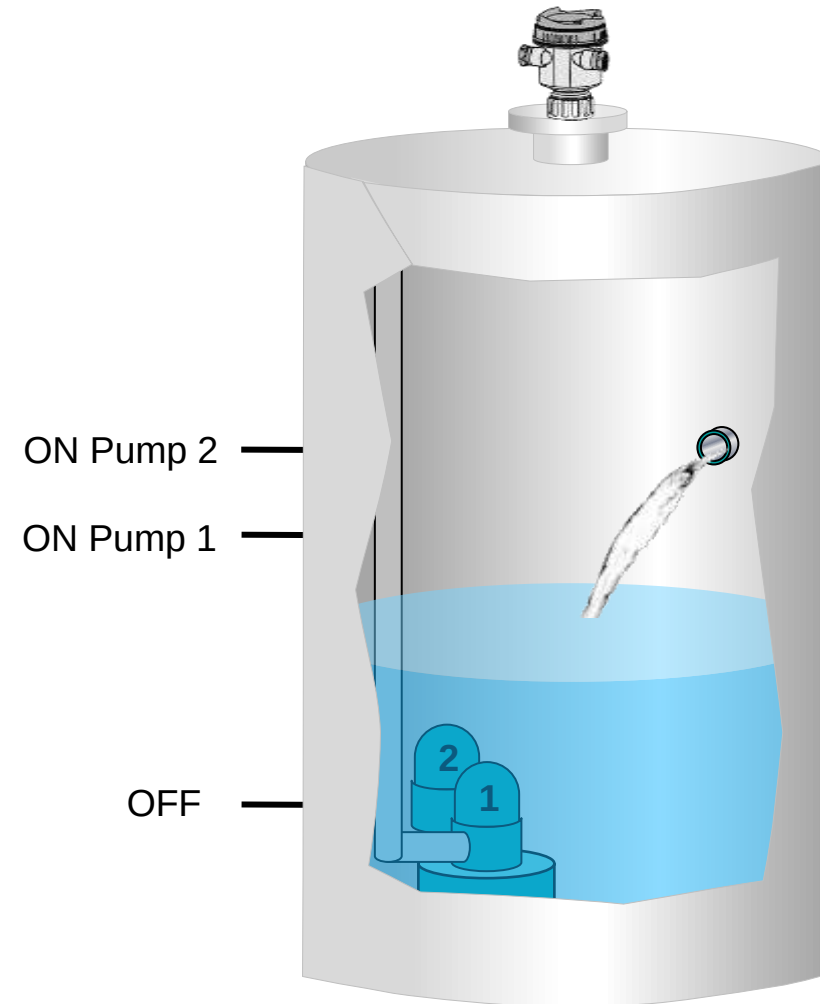
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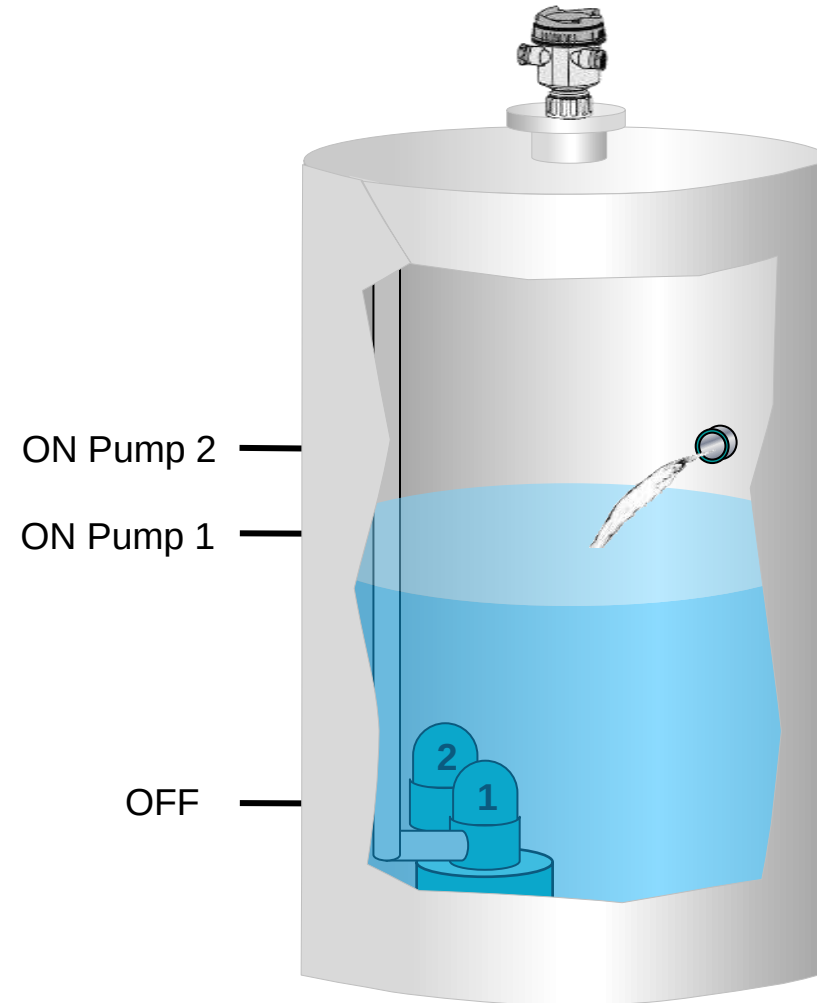
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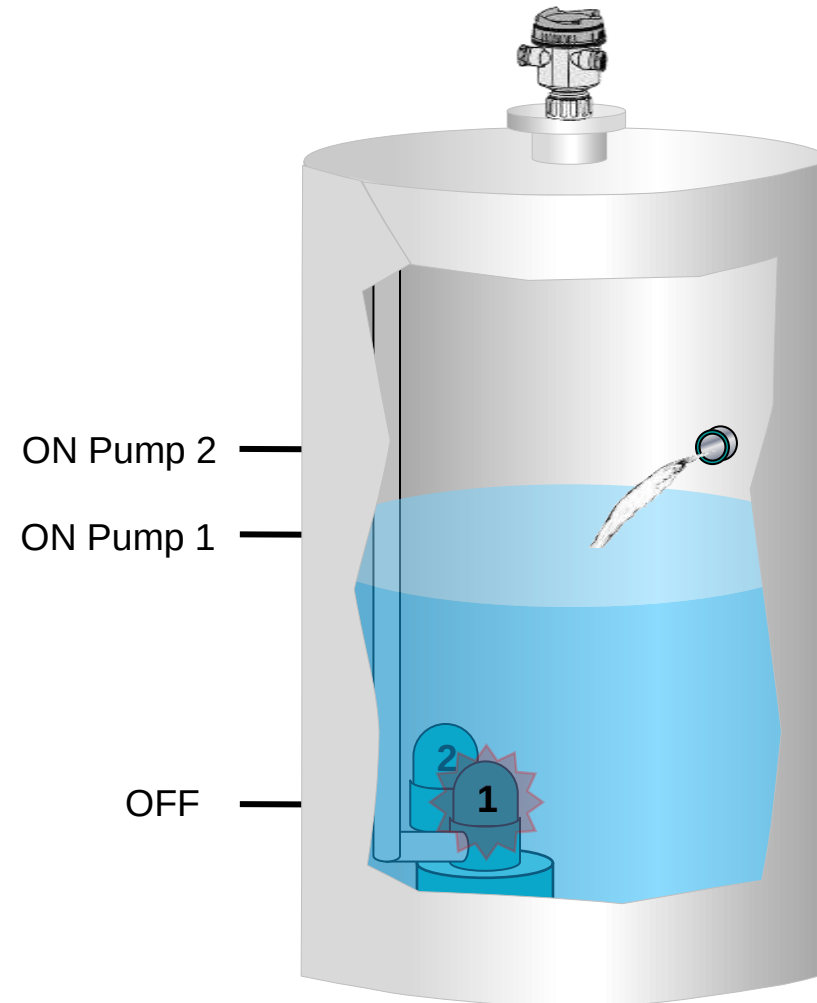
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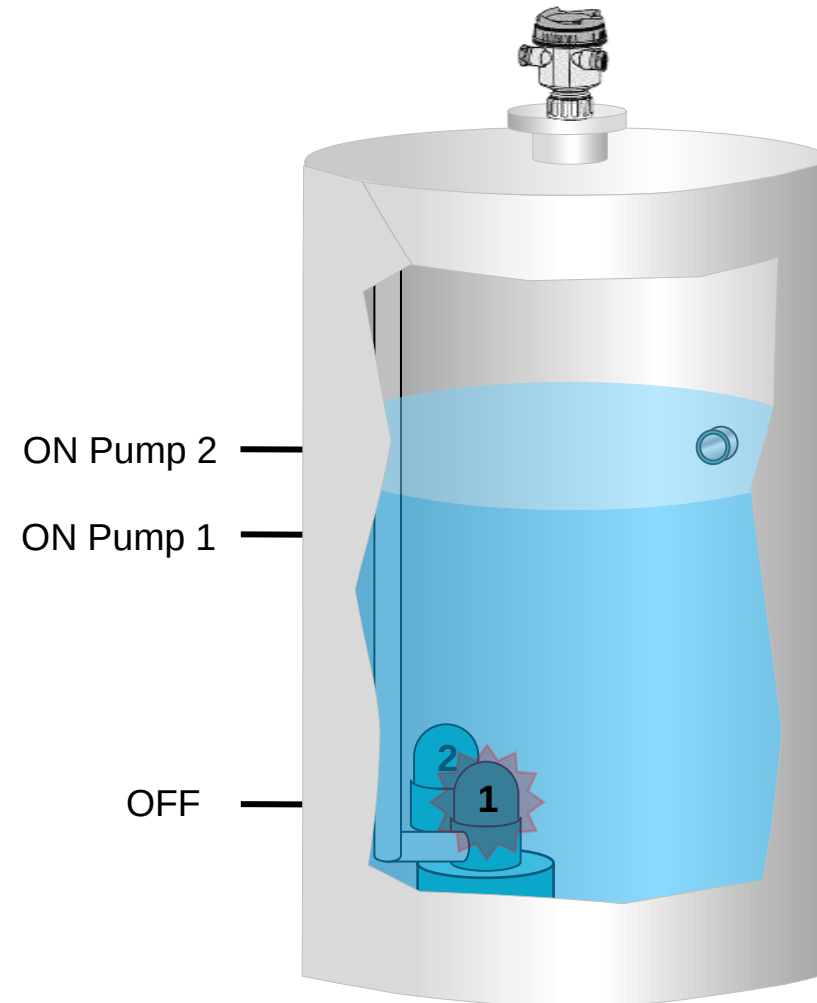
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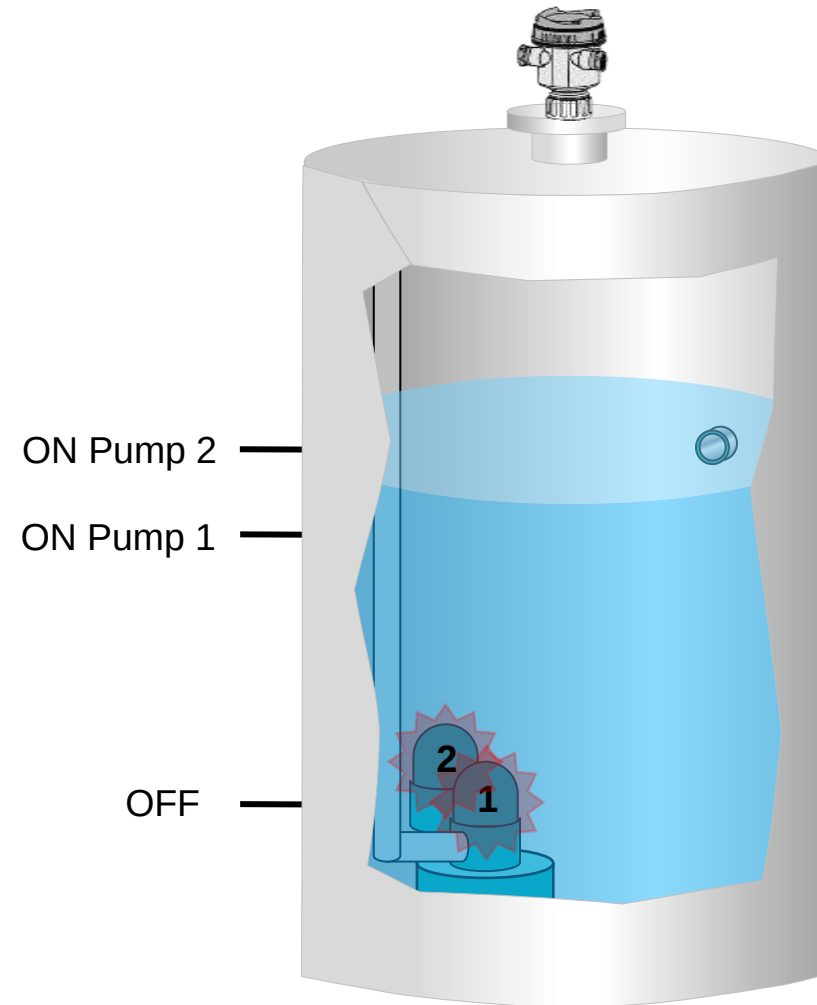
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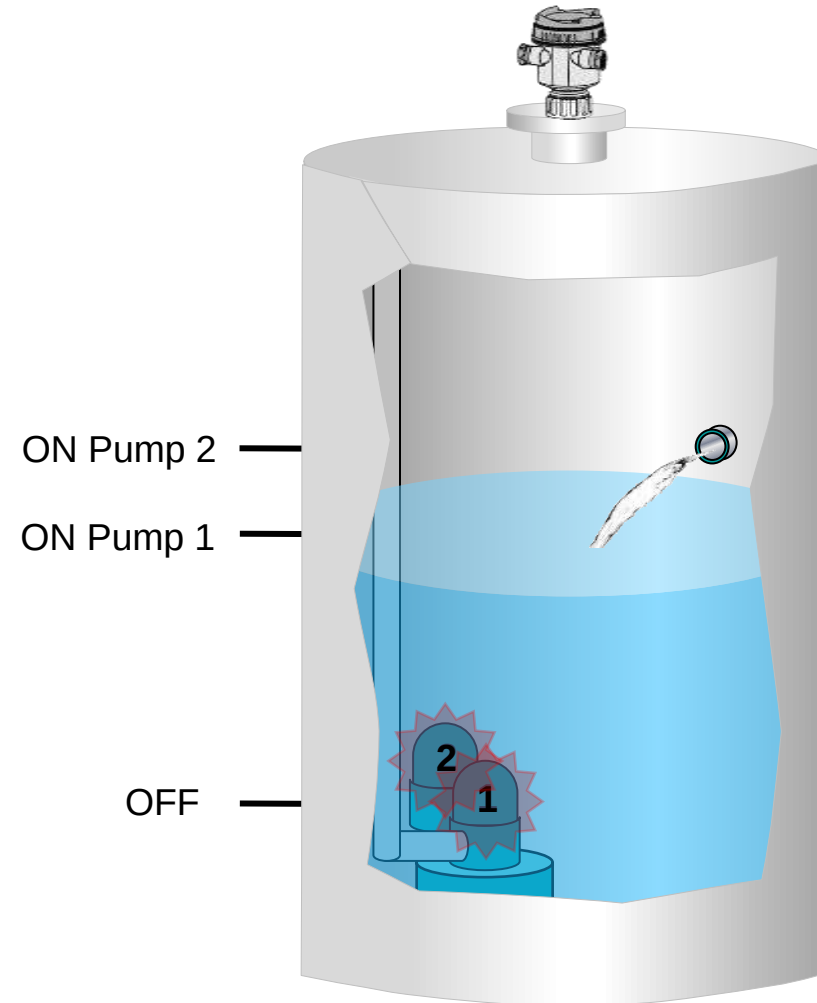
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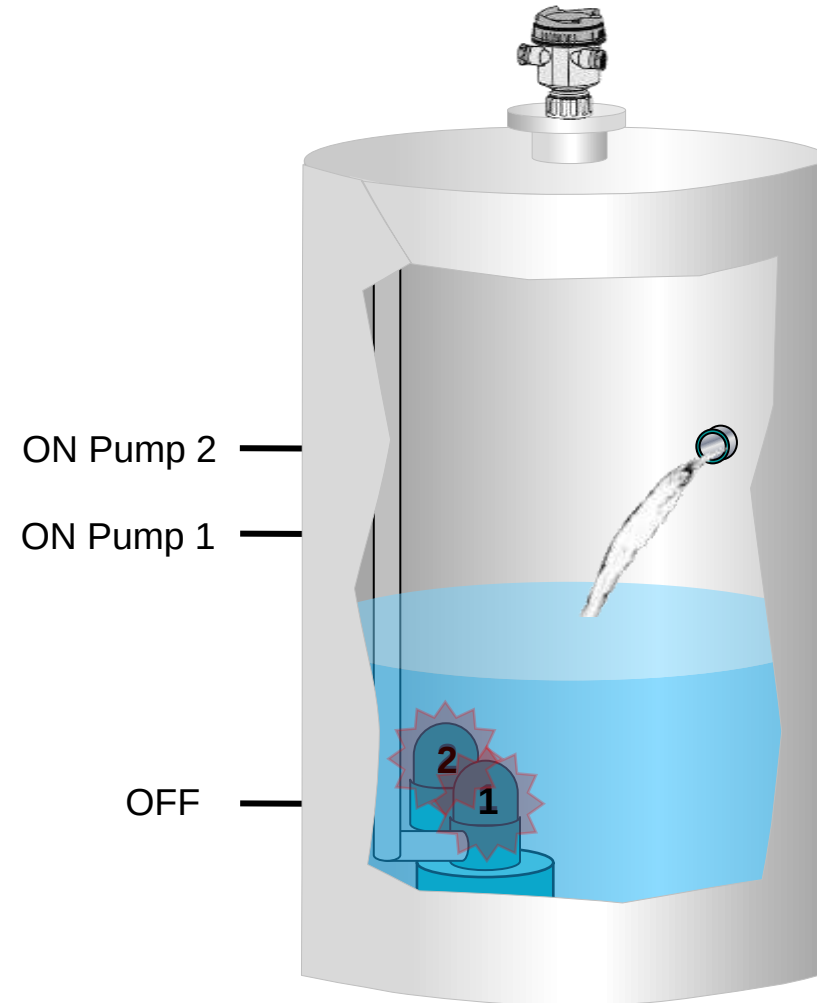
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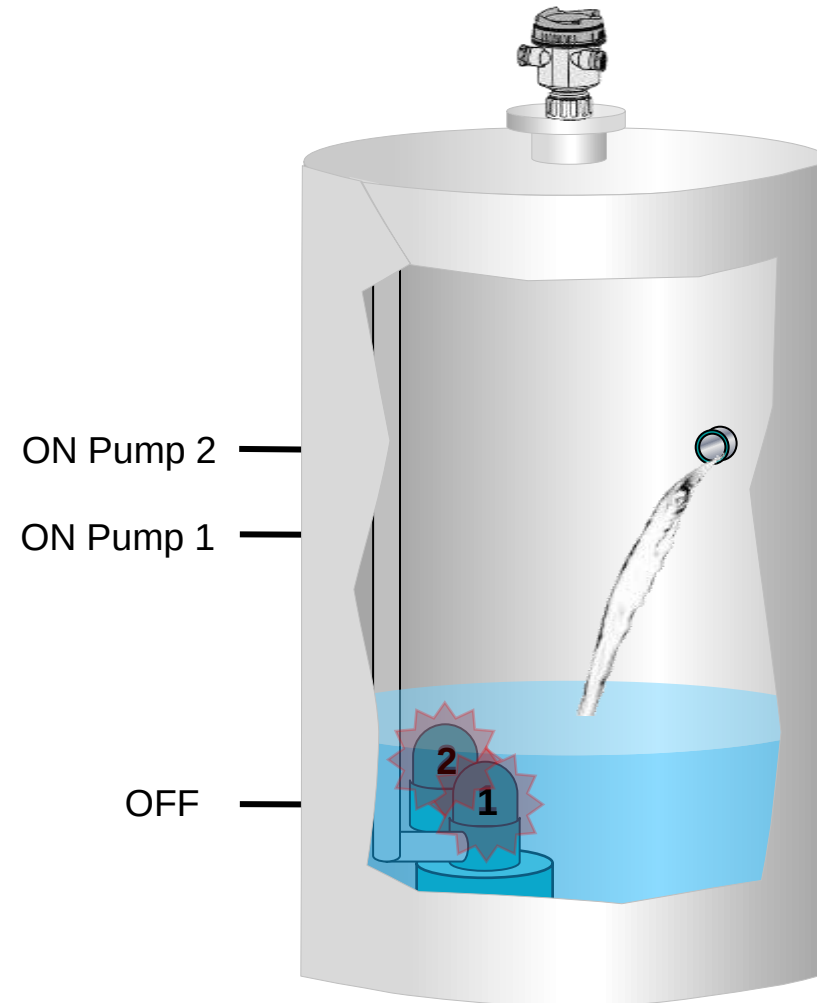
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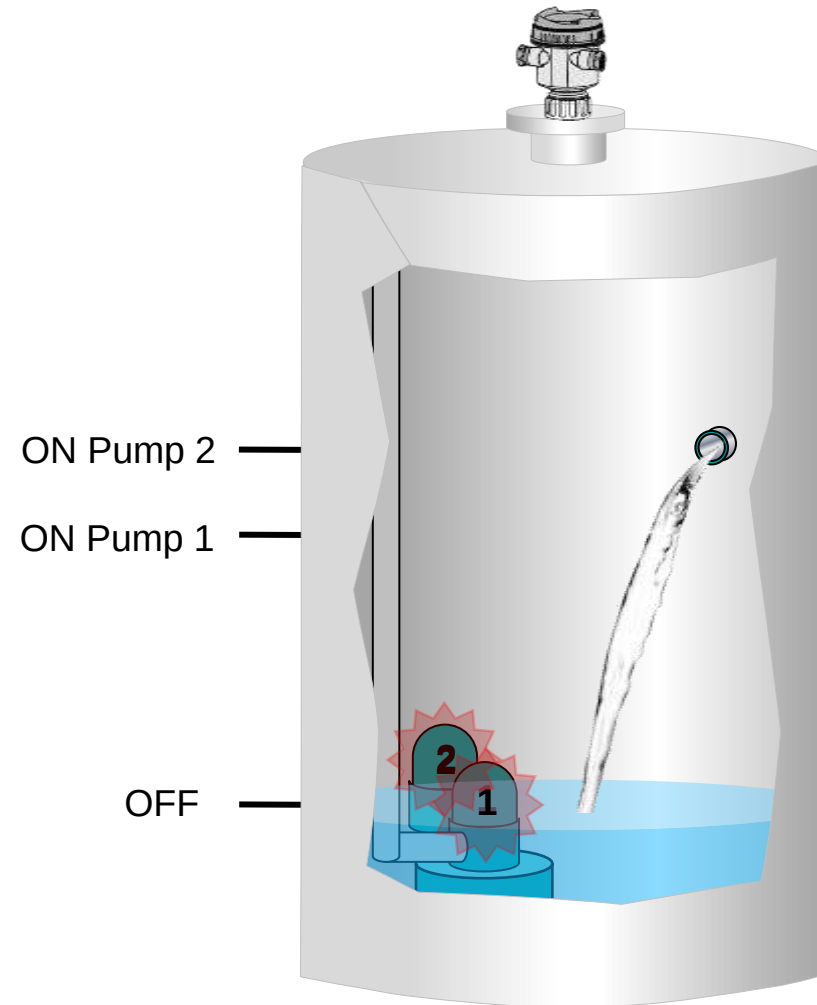
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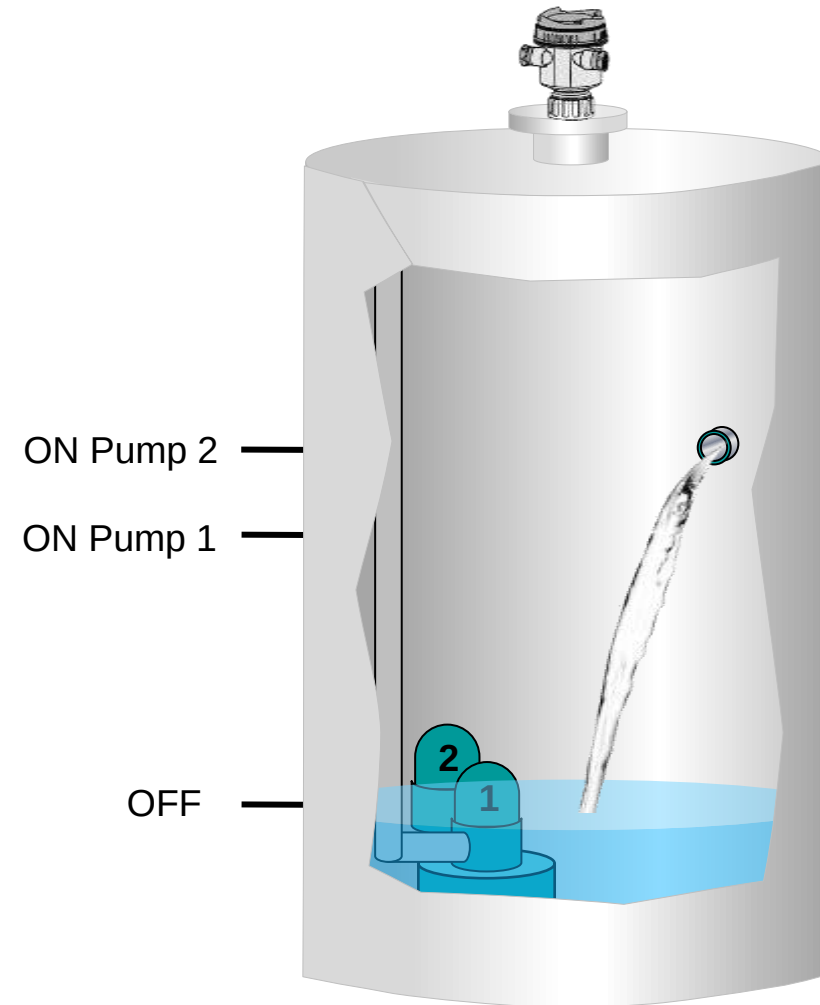
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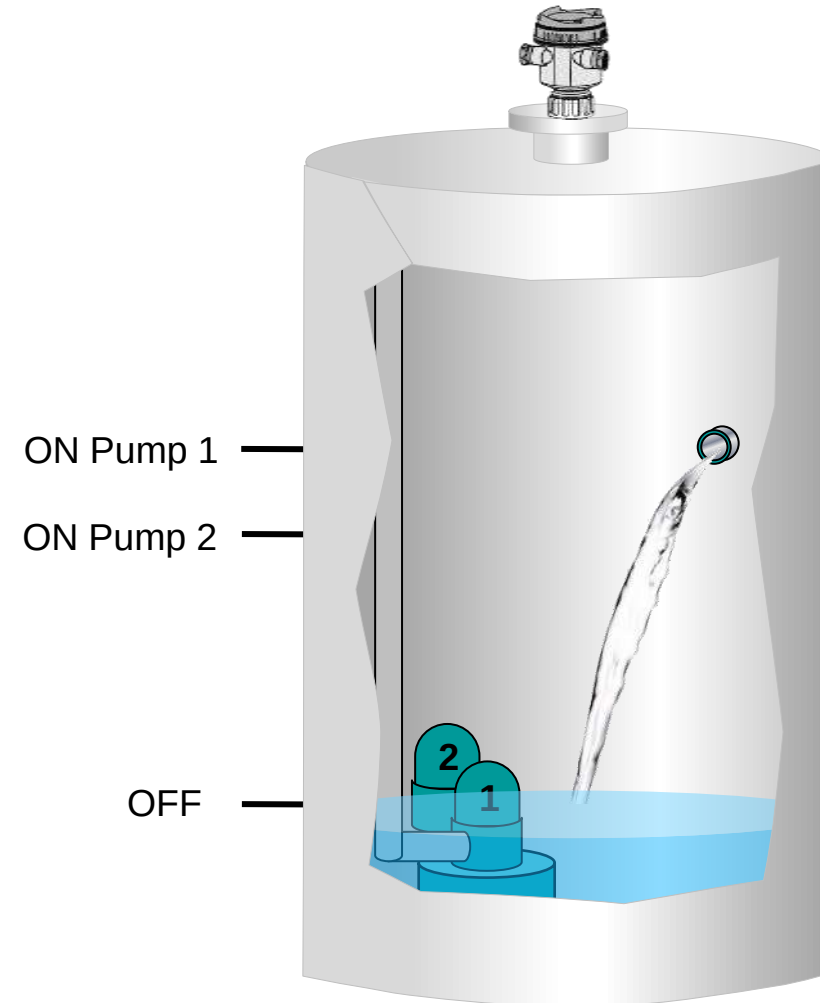
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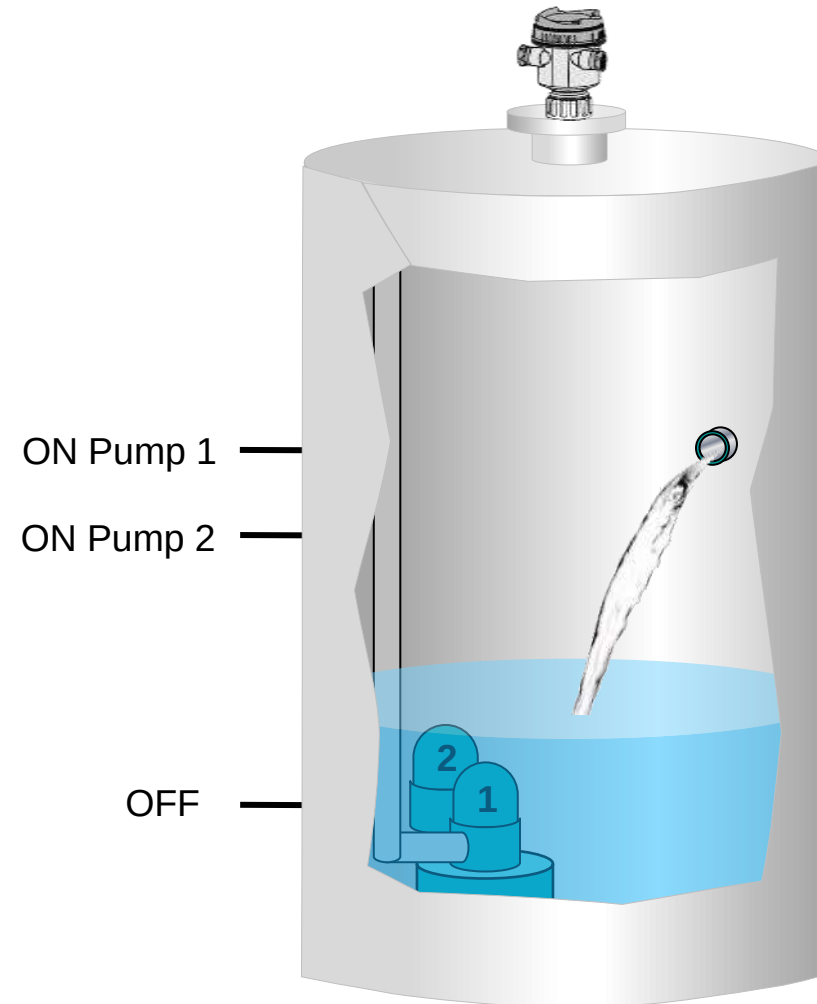
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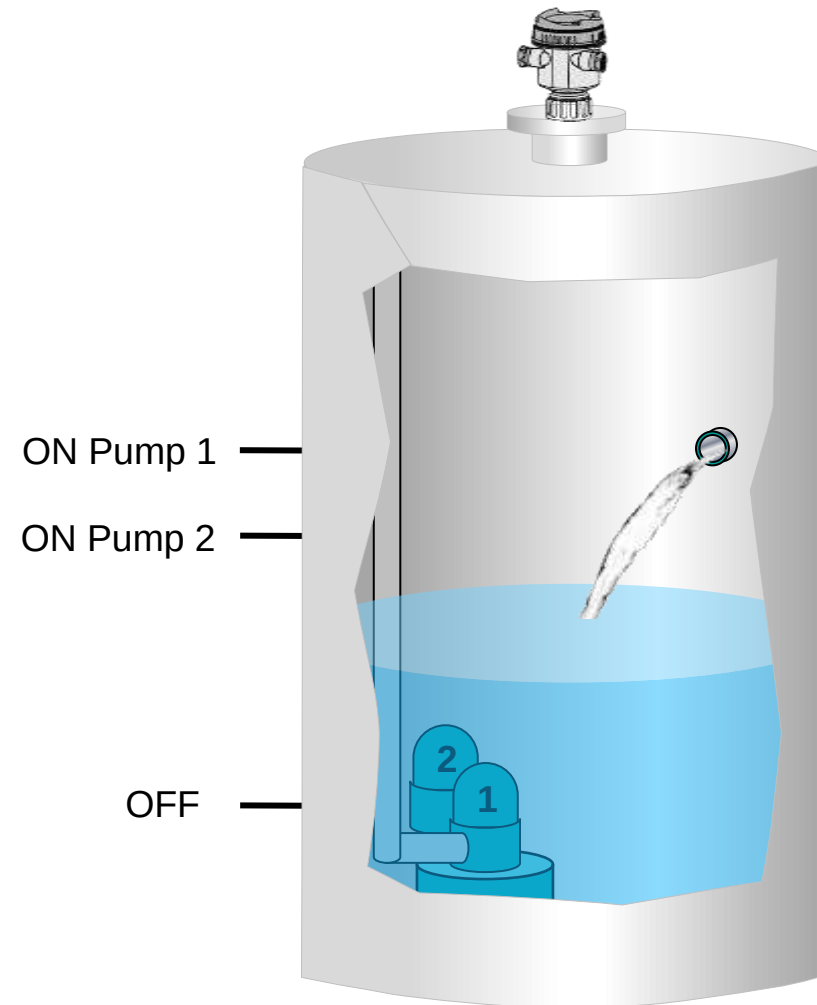
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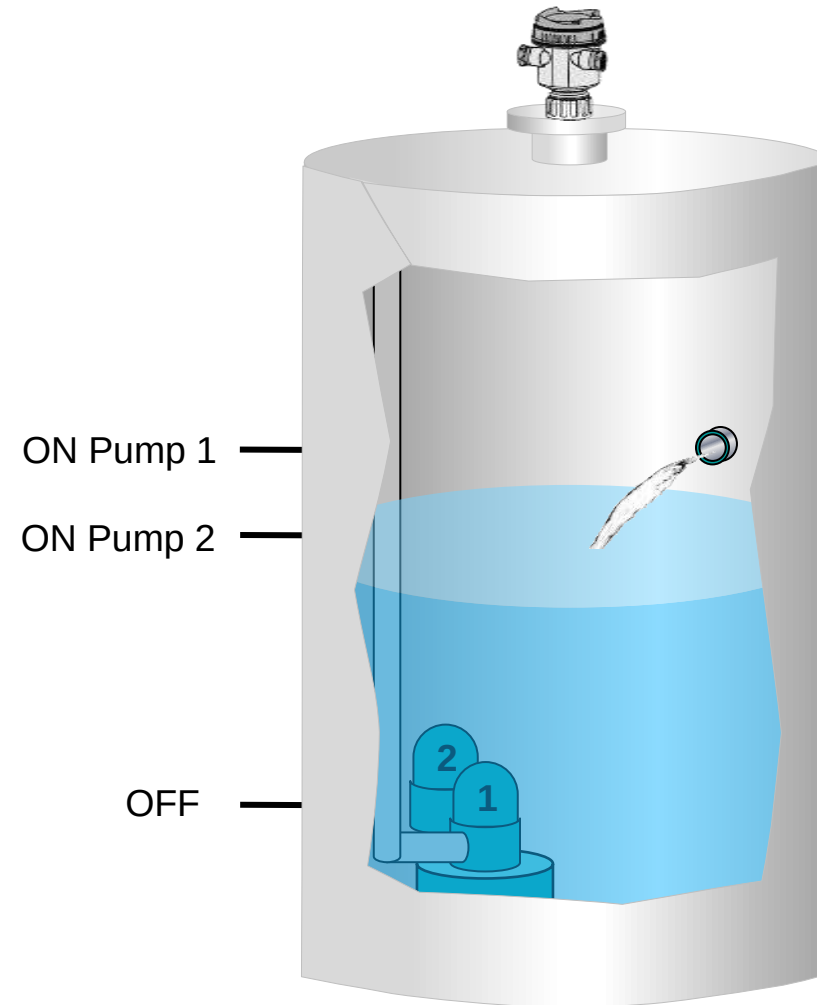
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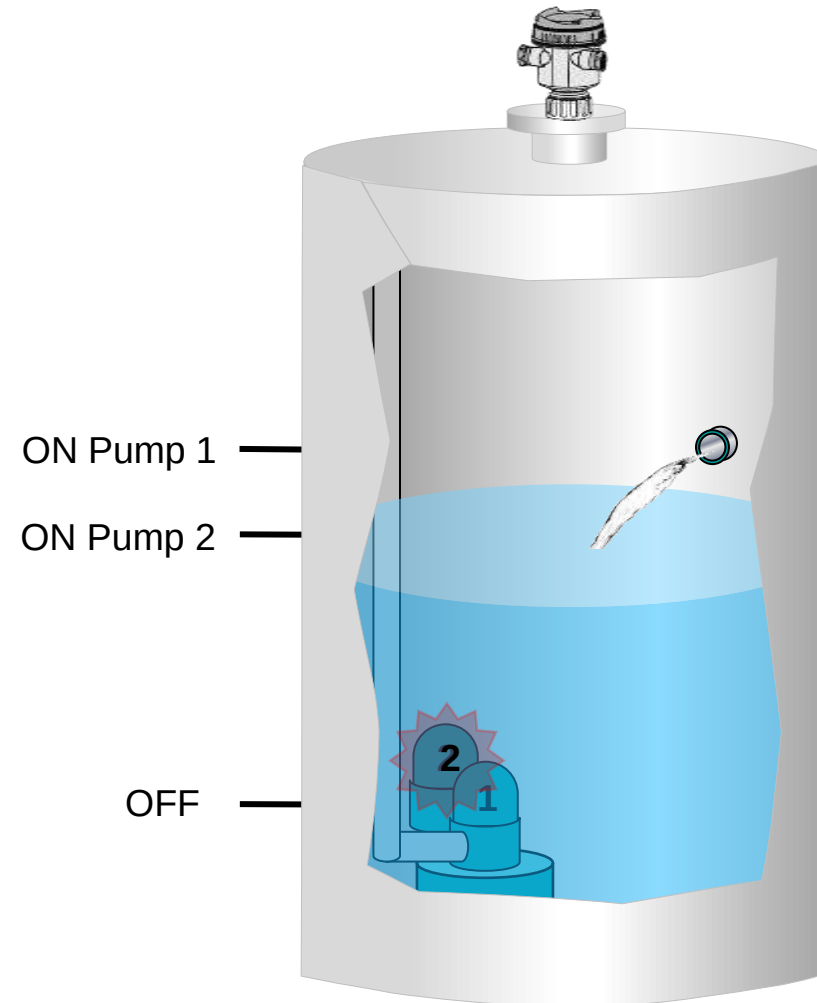
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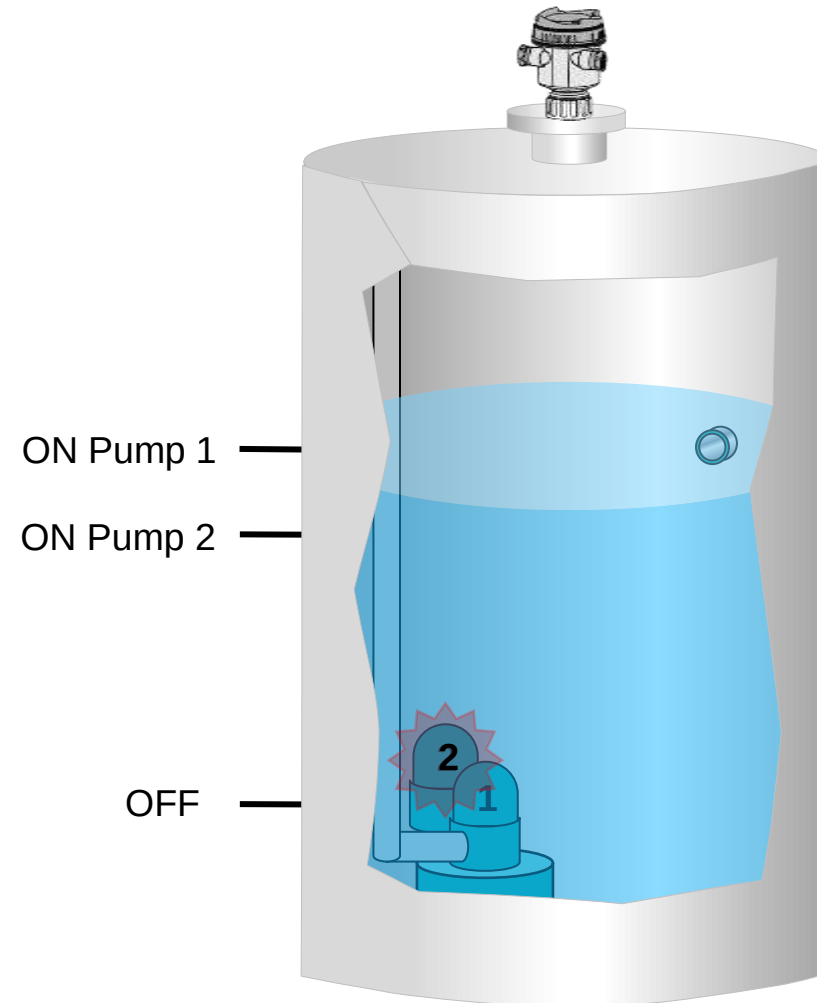
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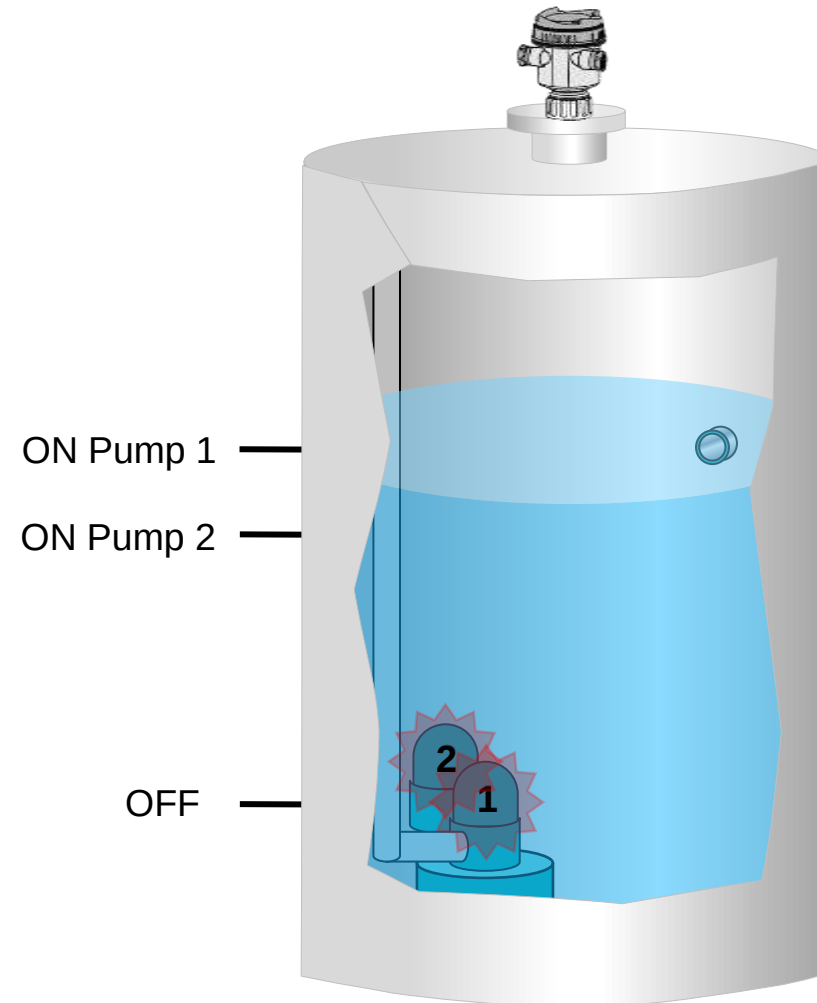
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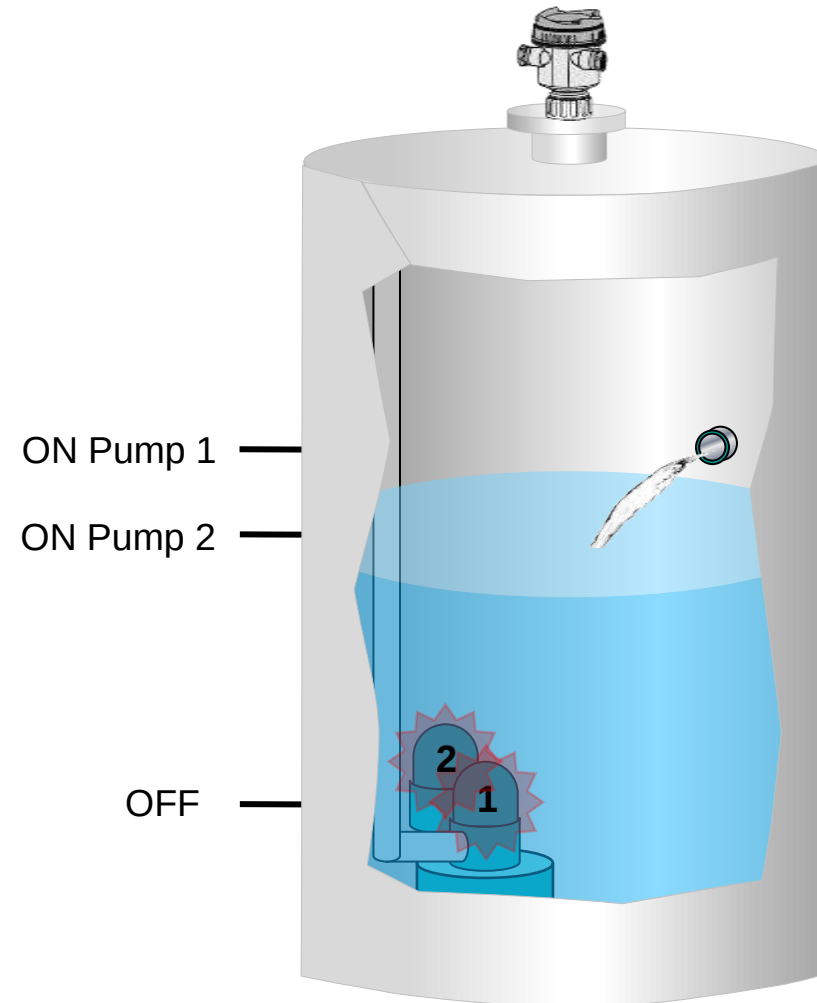
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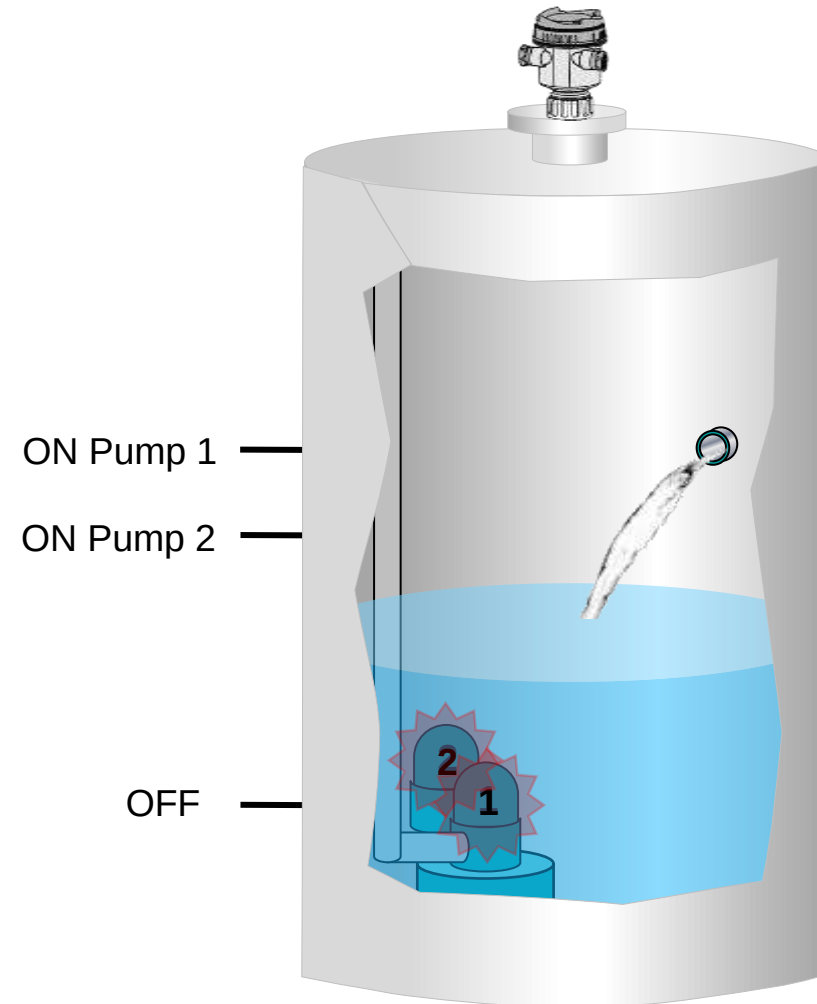
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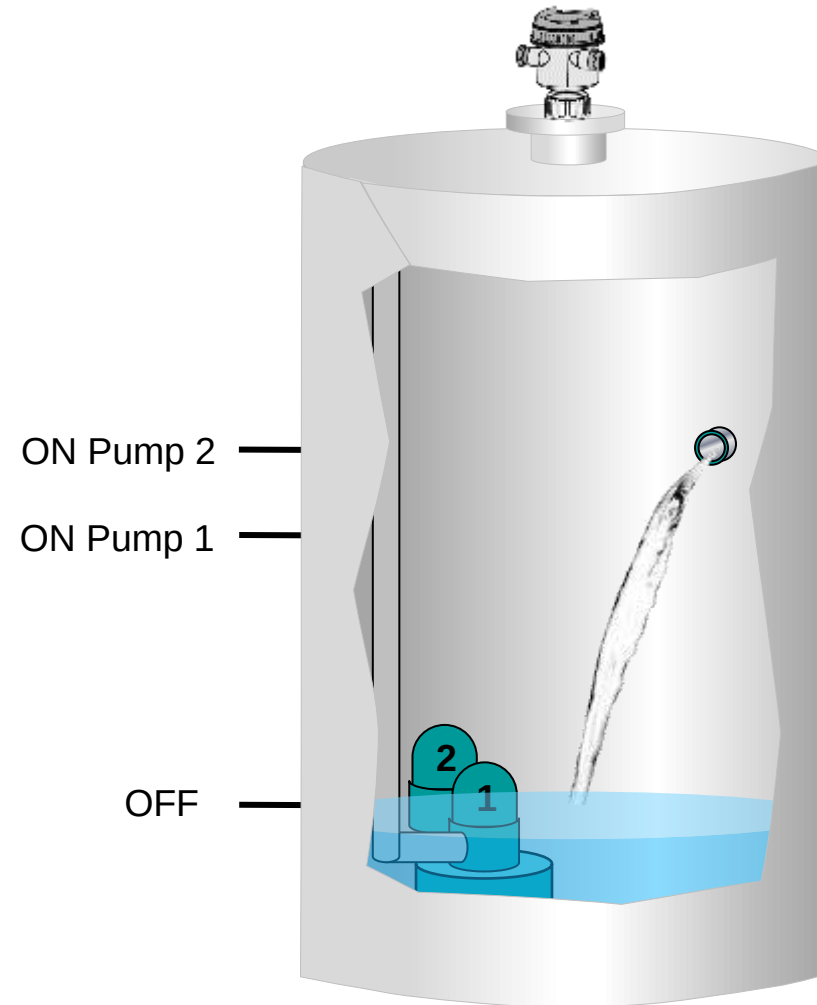
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SITRANS LT500

Fixed duty assist

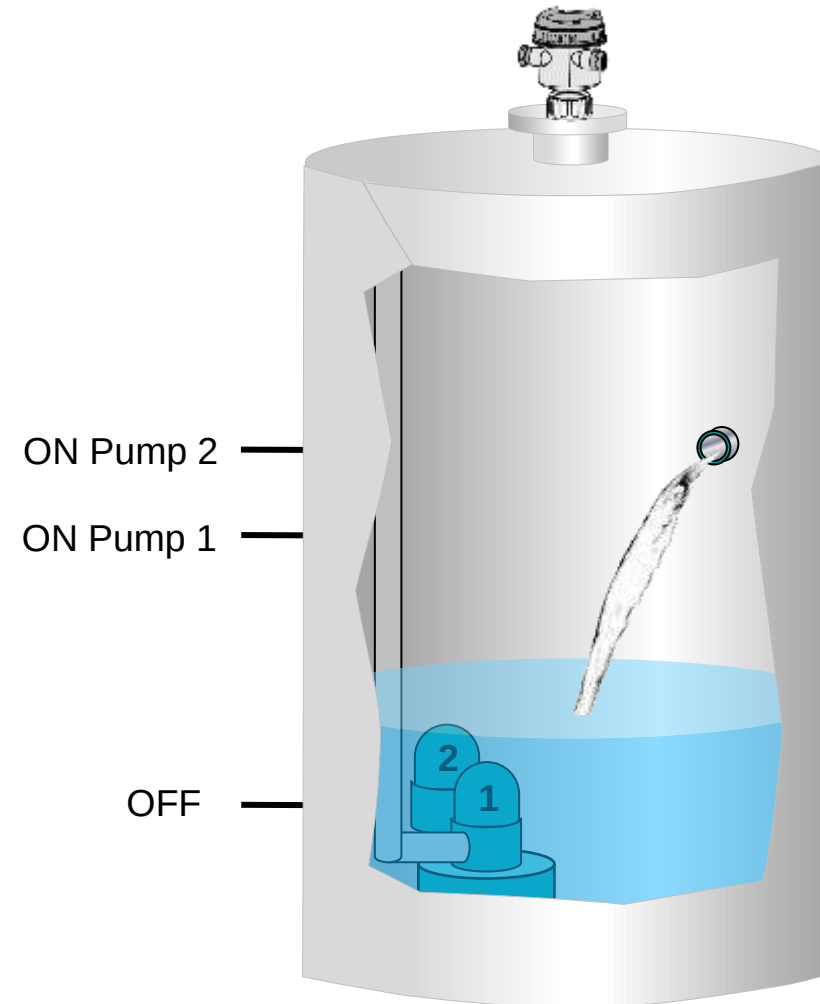
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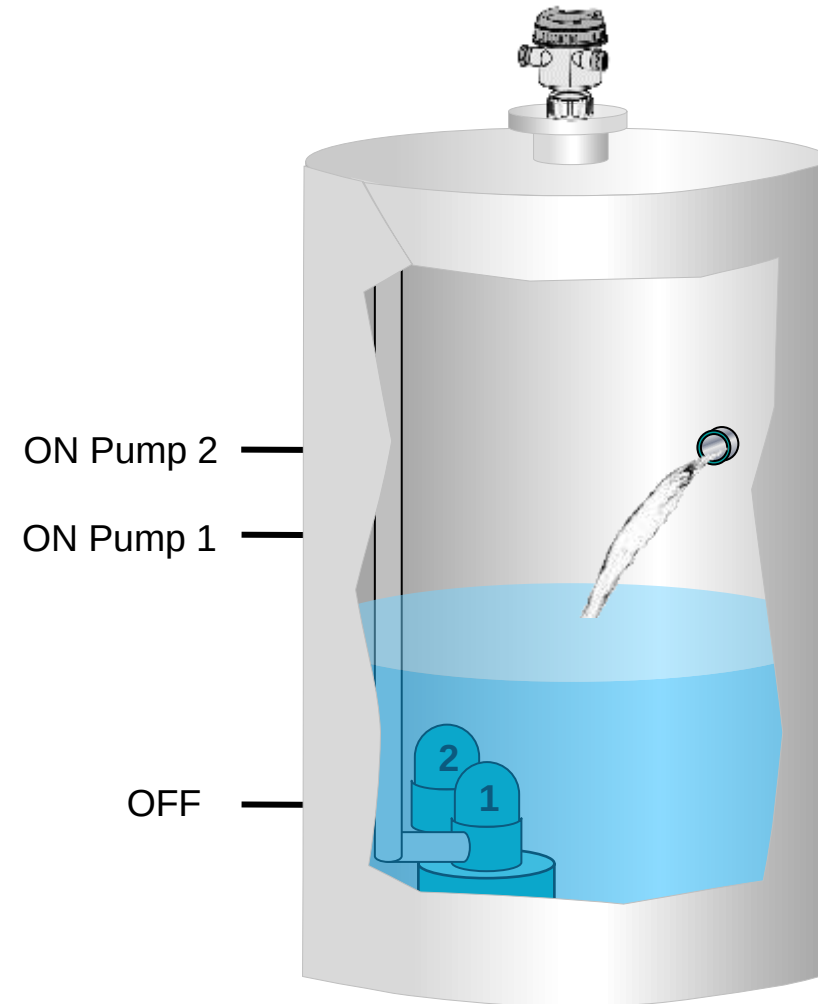
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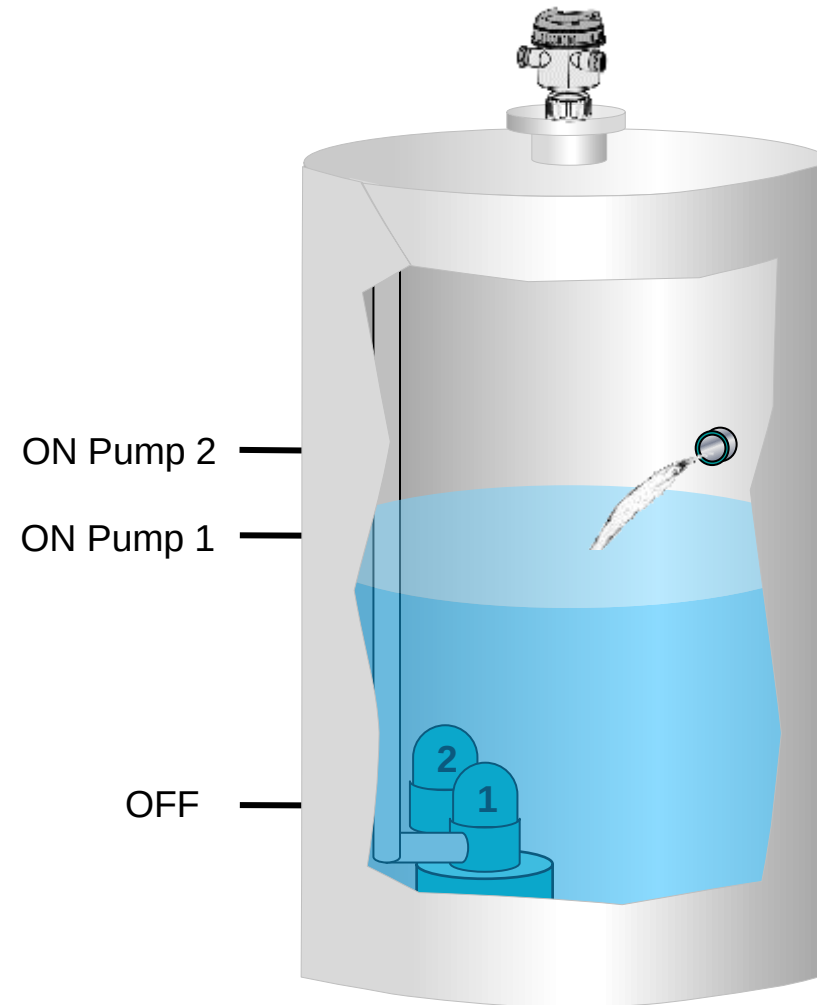
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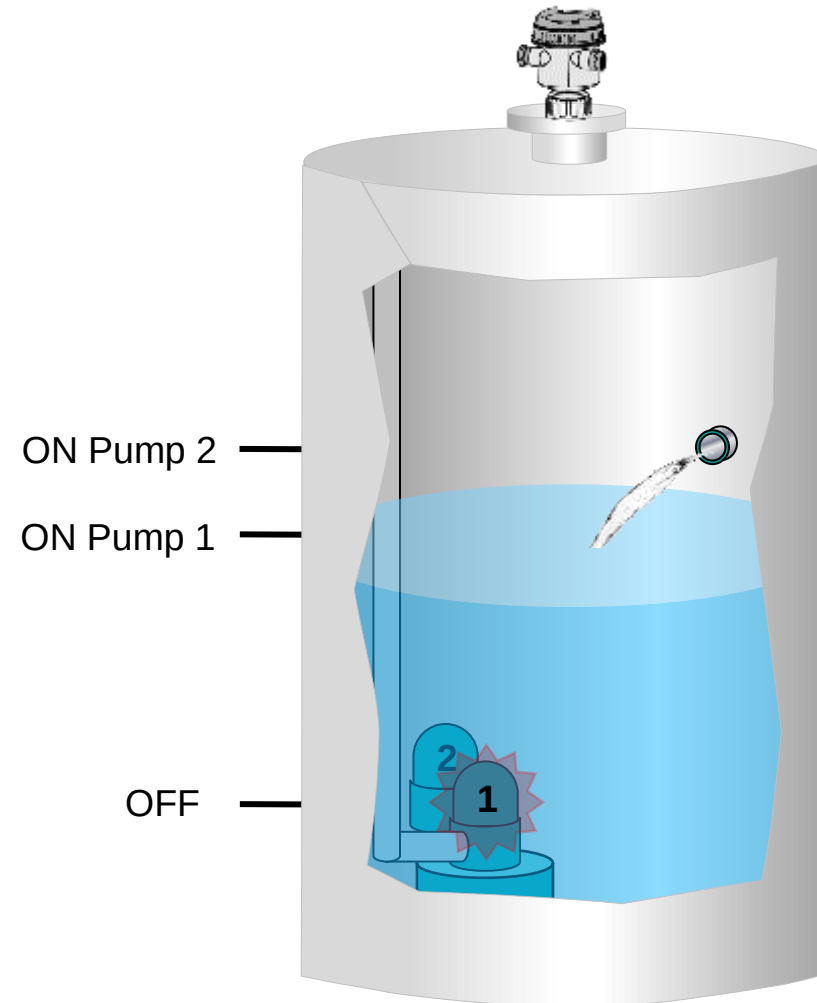
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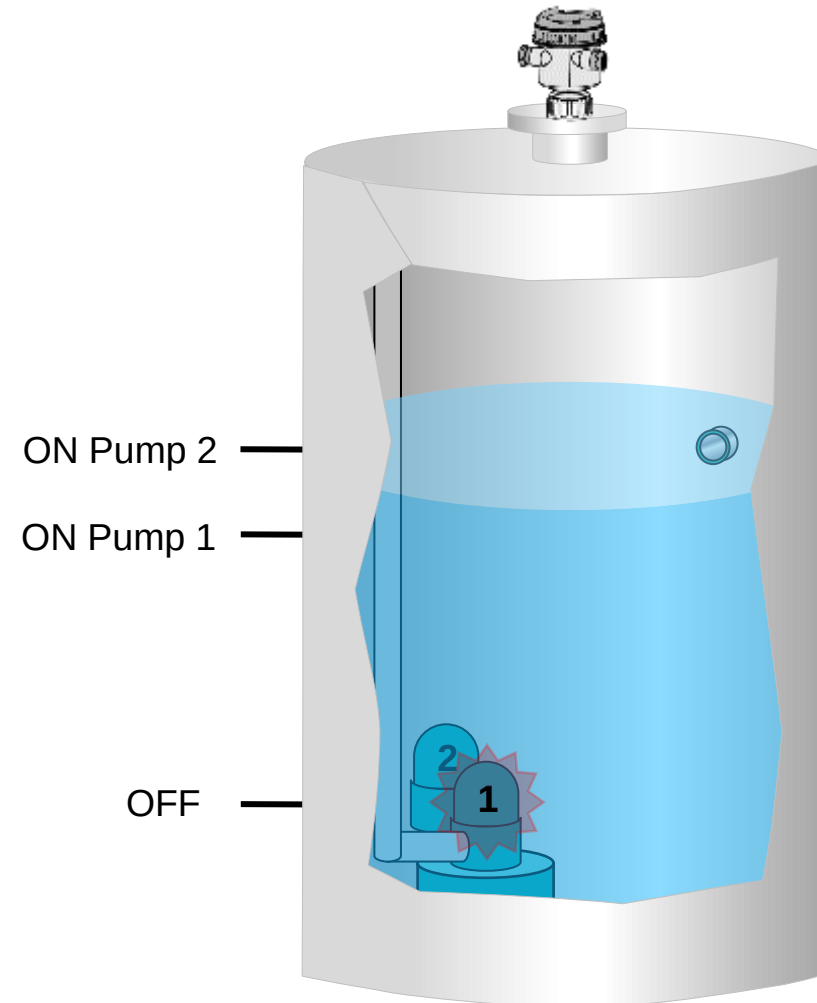
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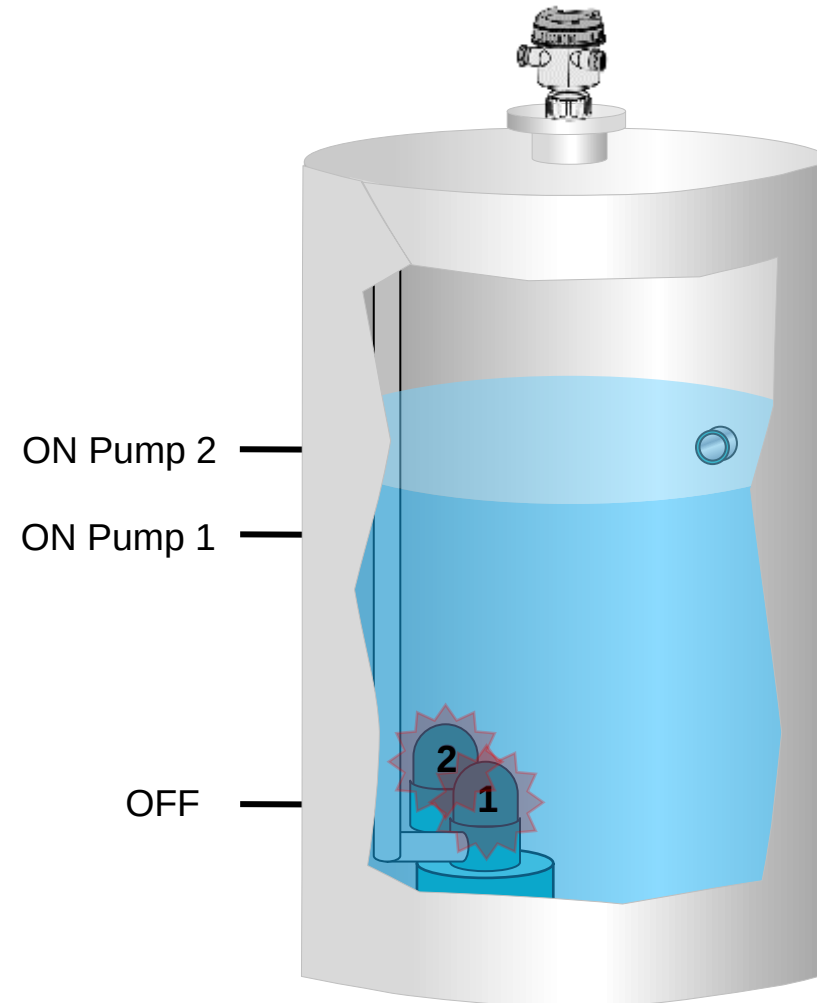
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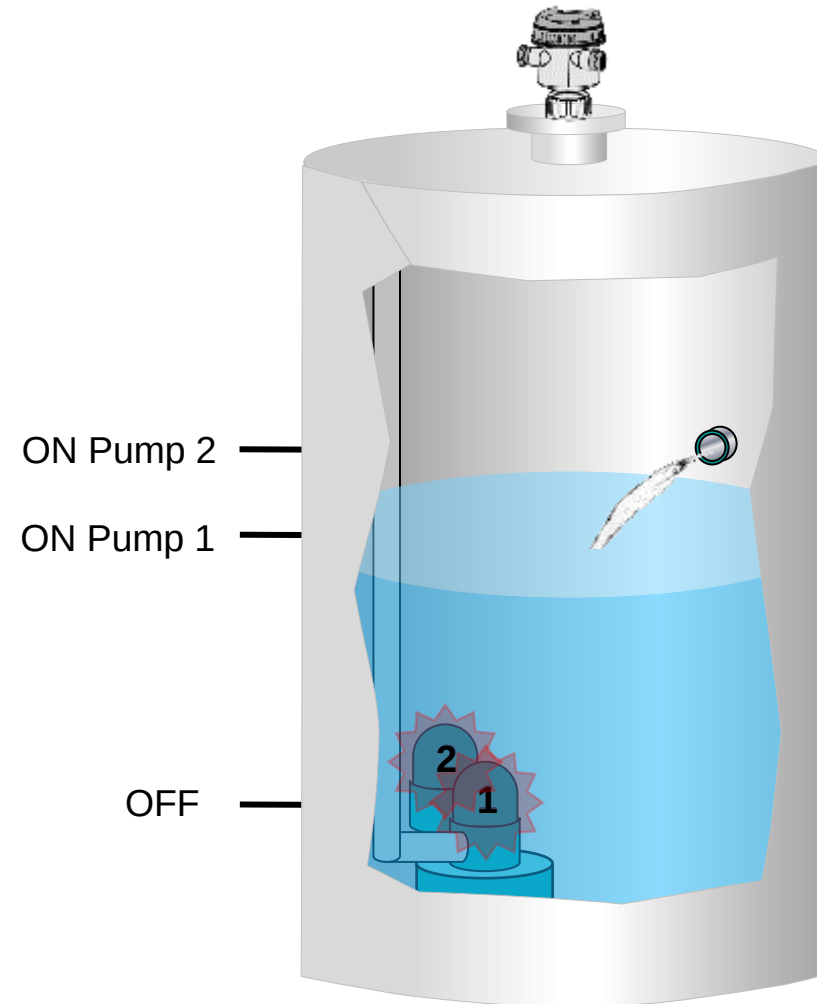
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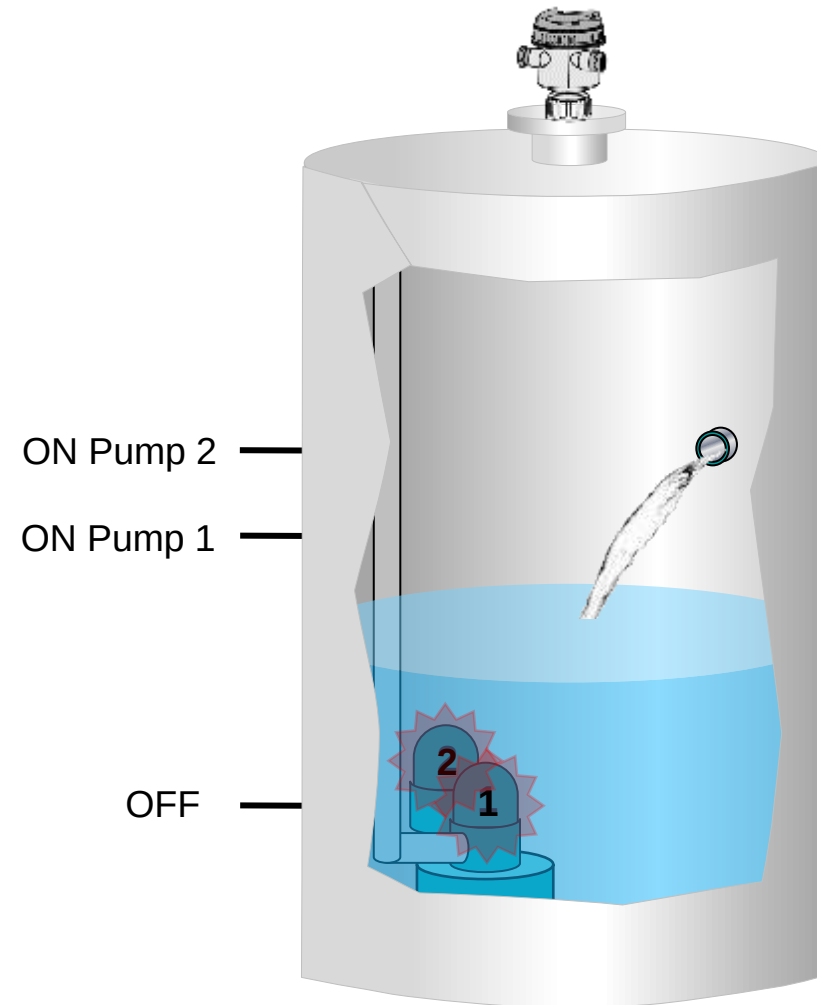
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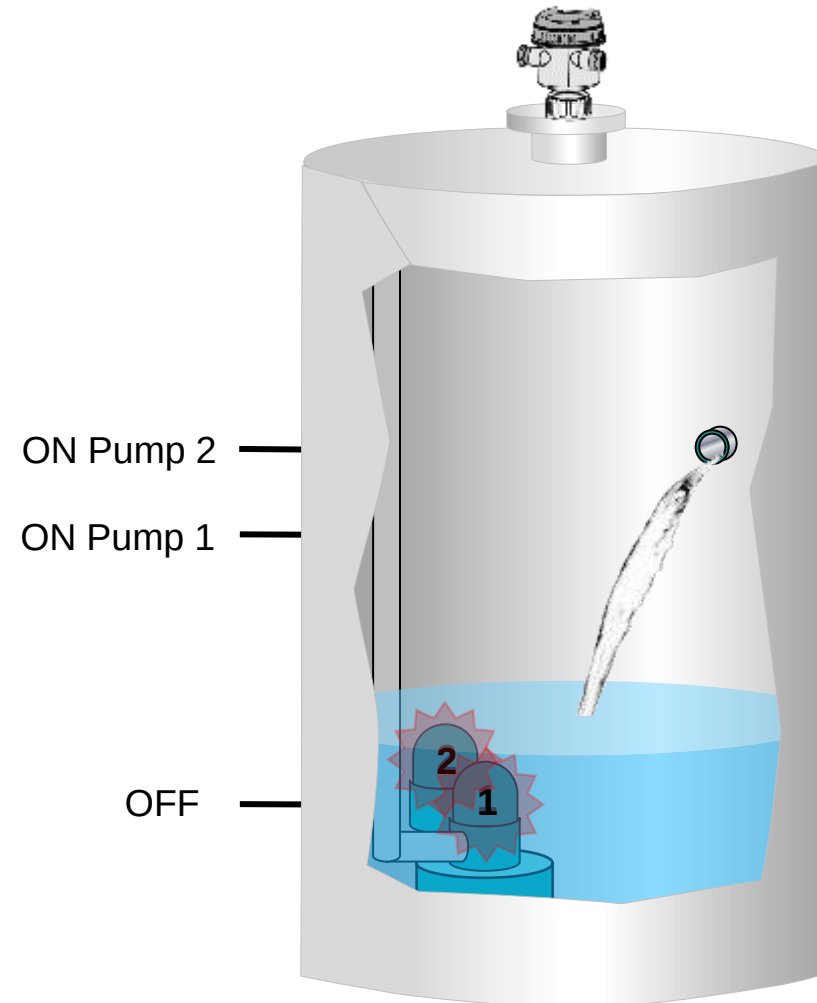
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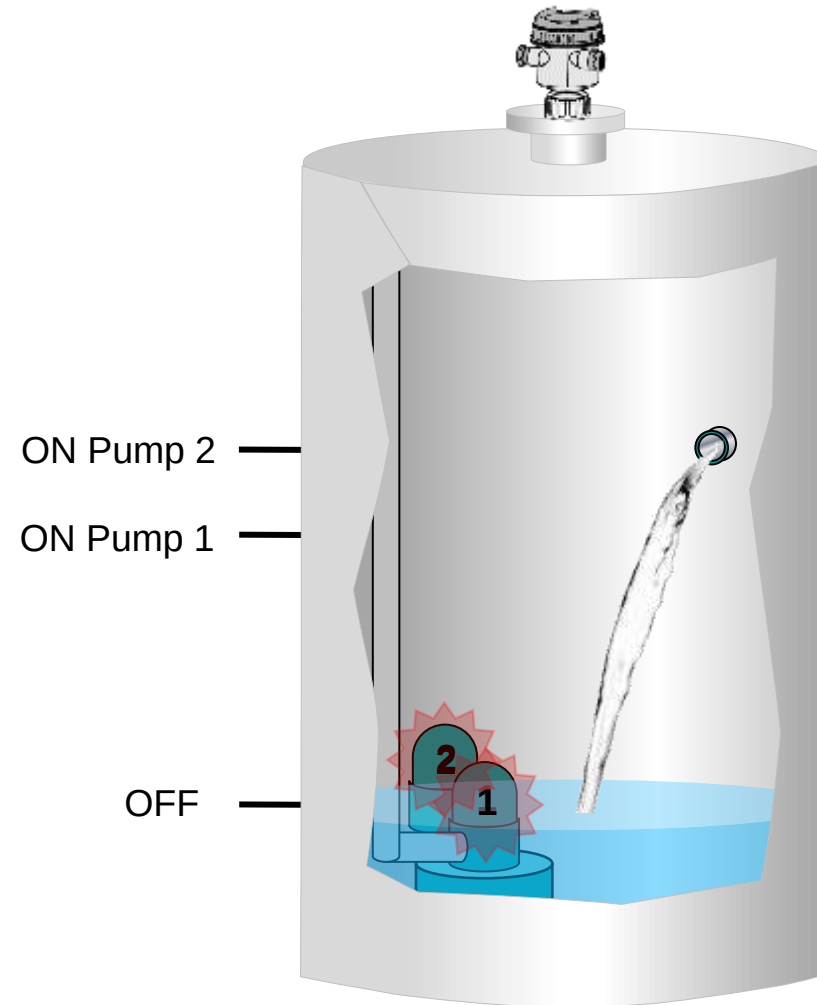
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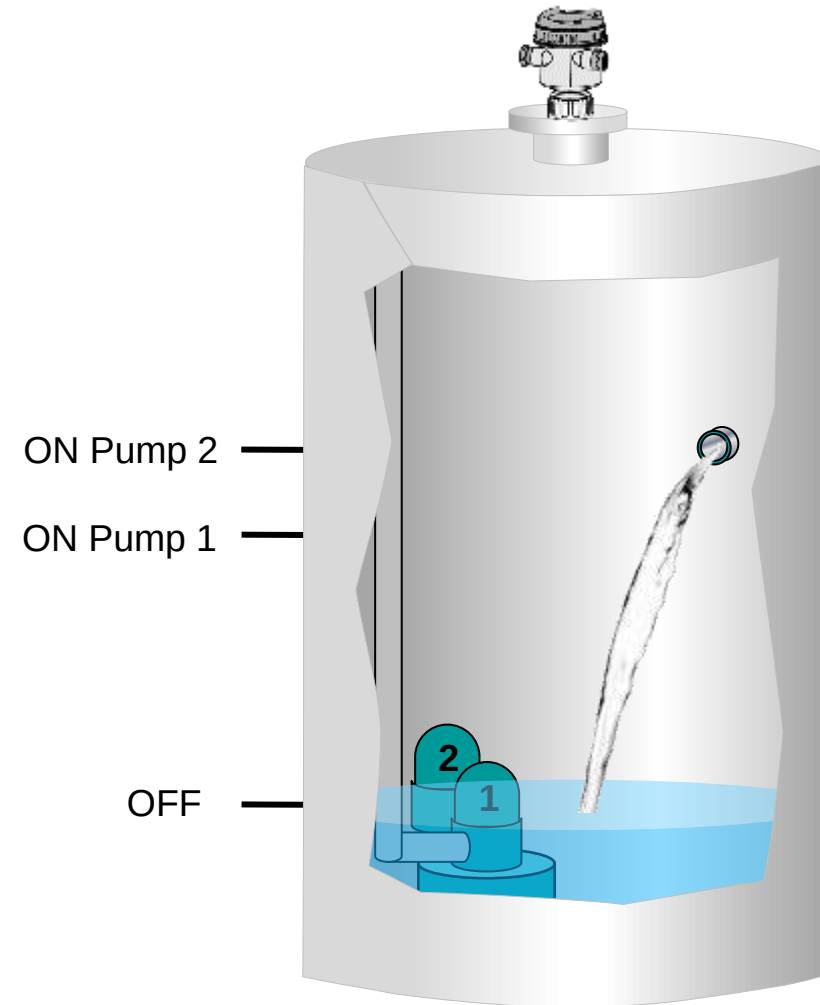
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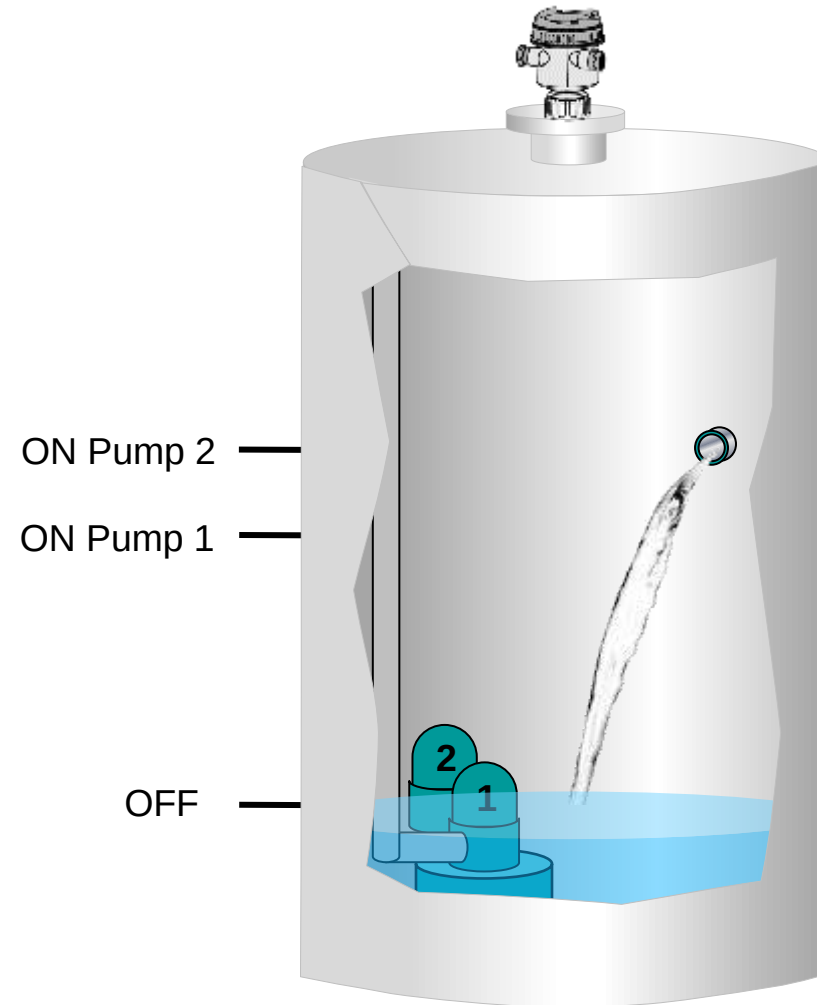
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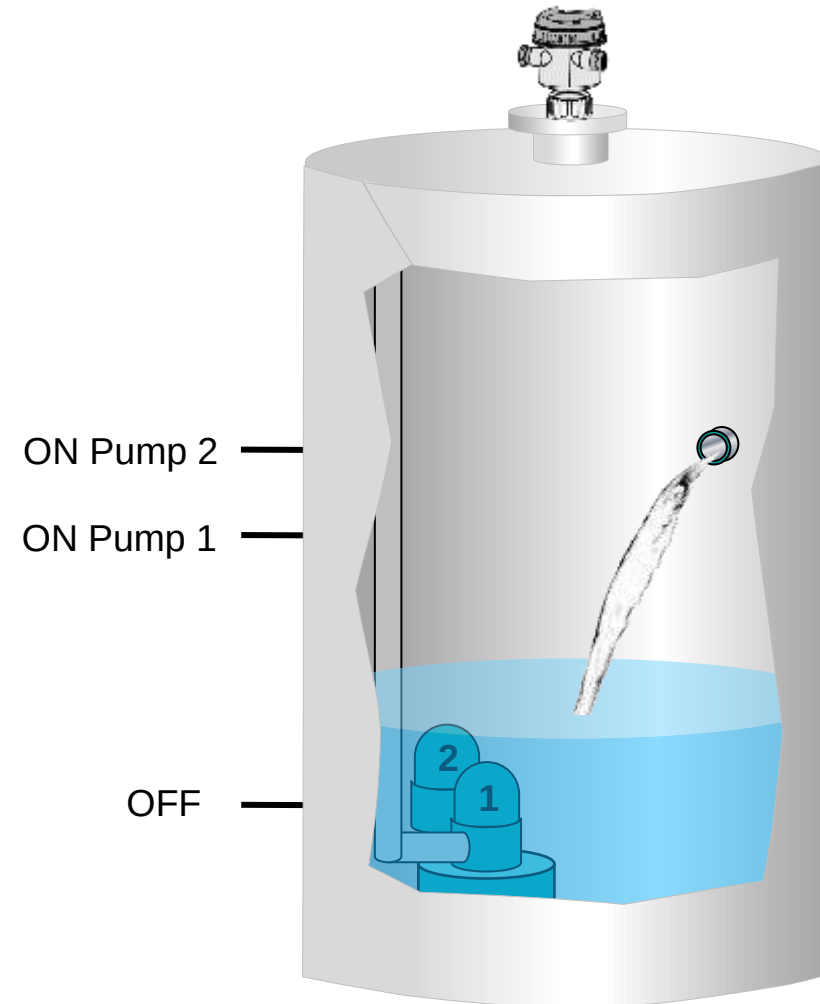
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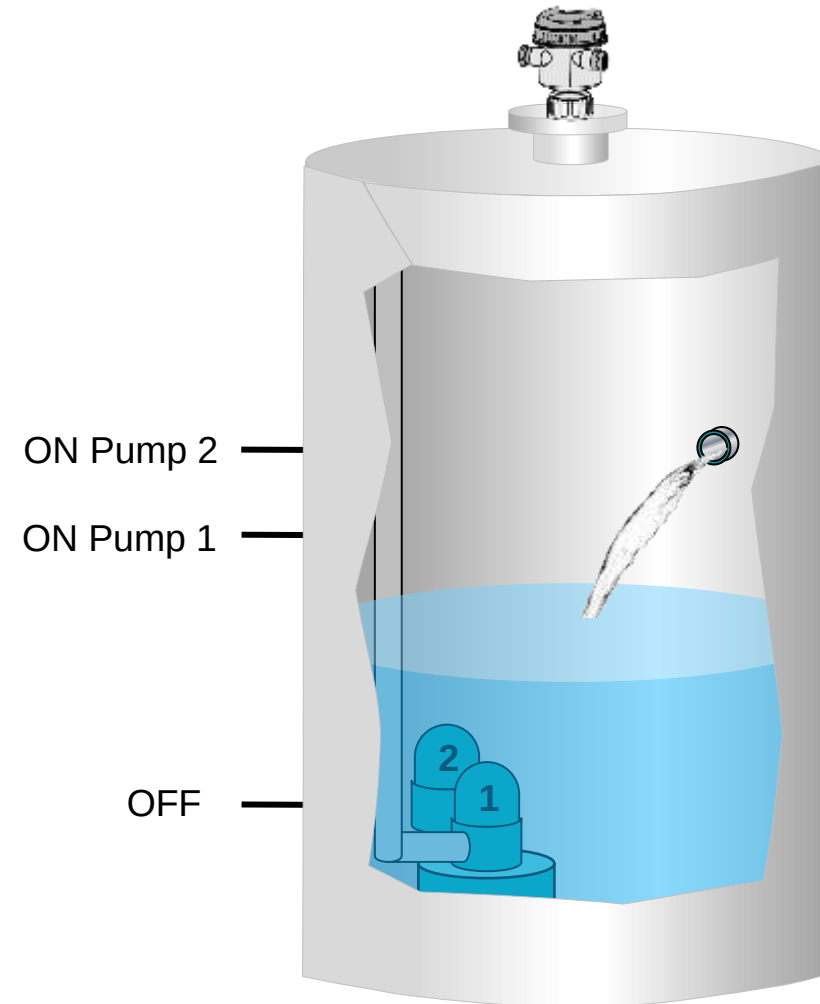
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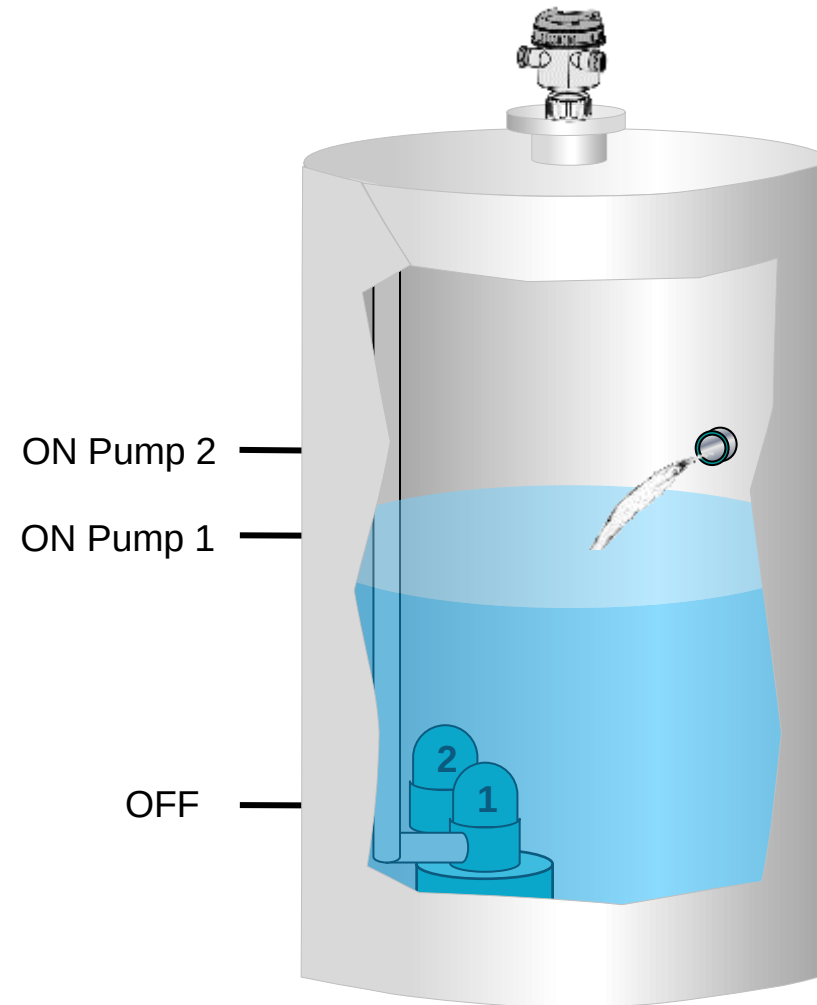
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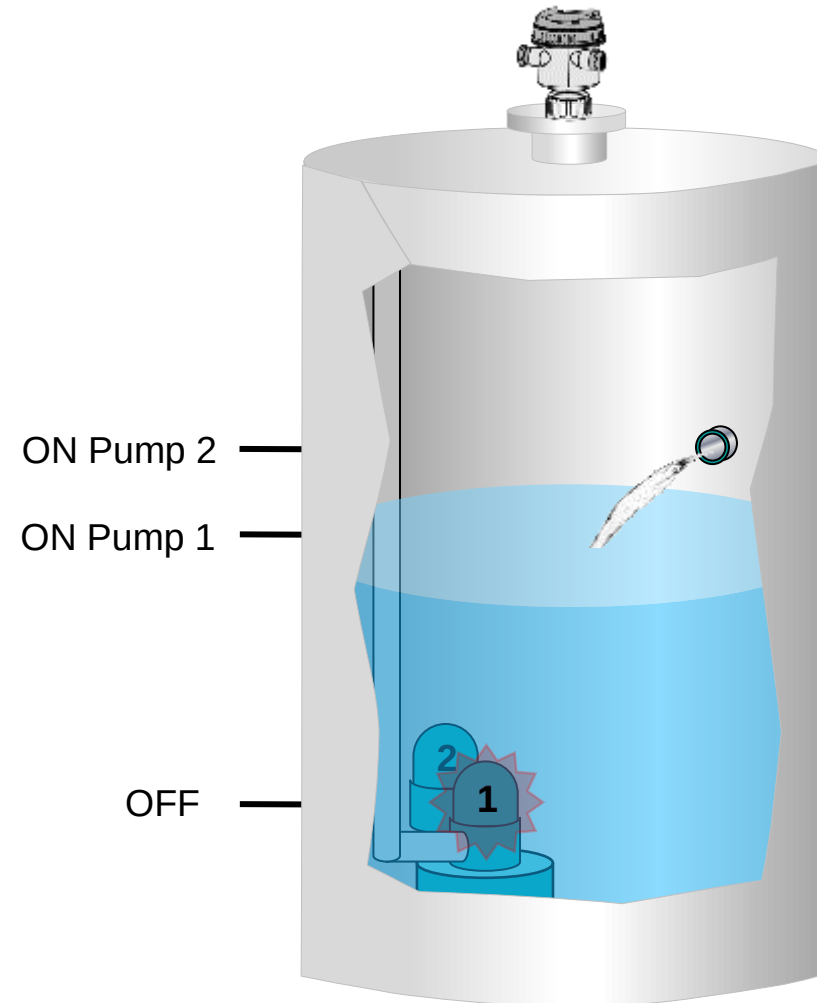
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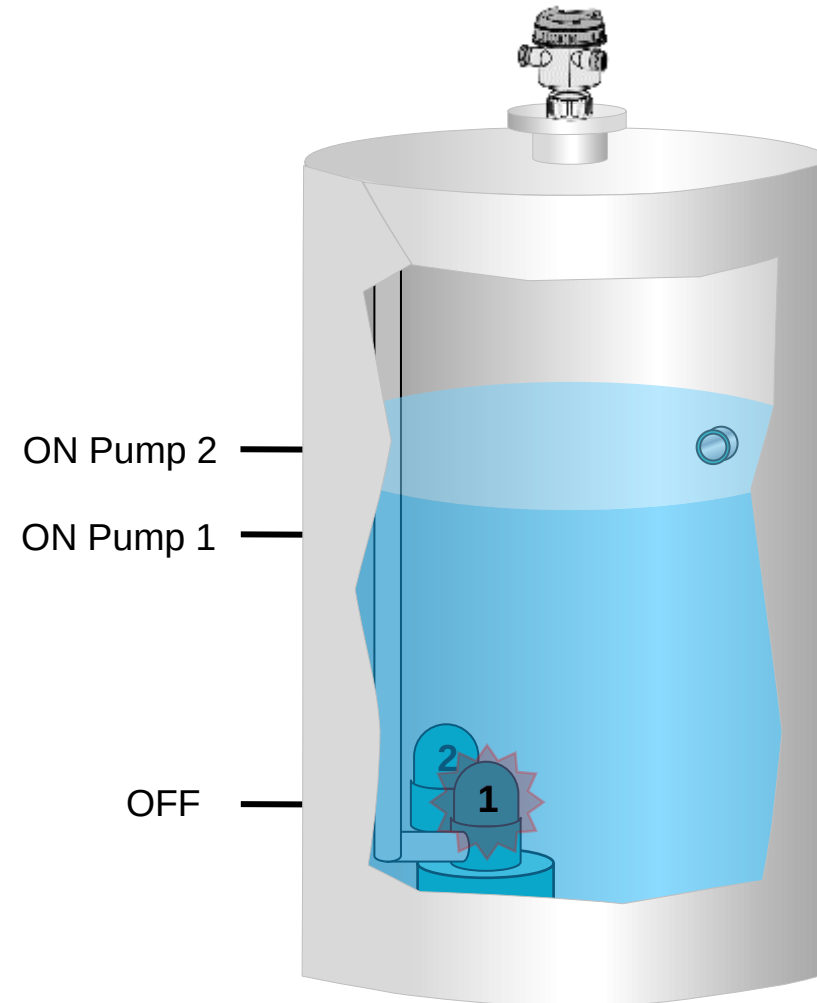
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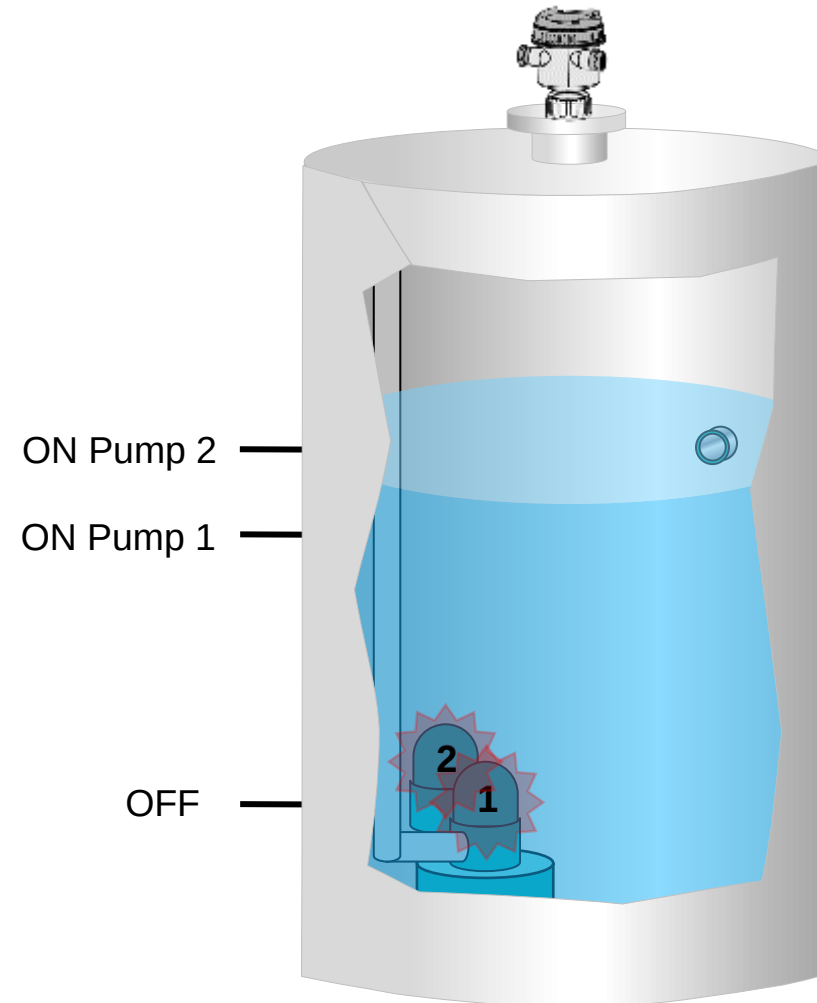
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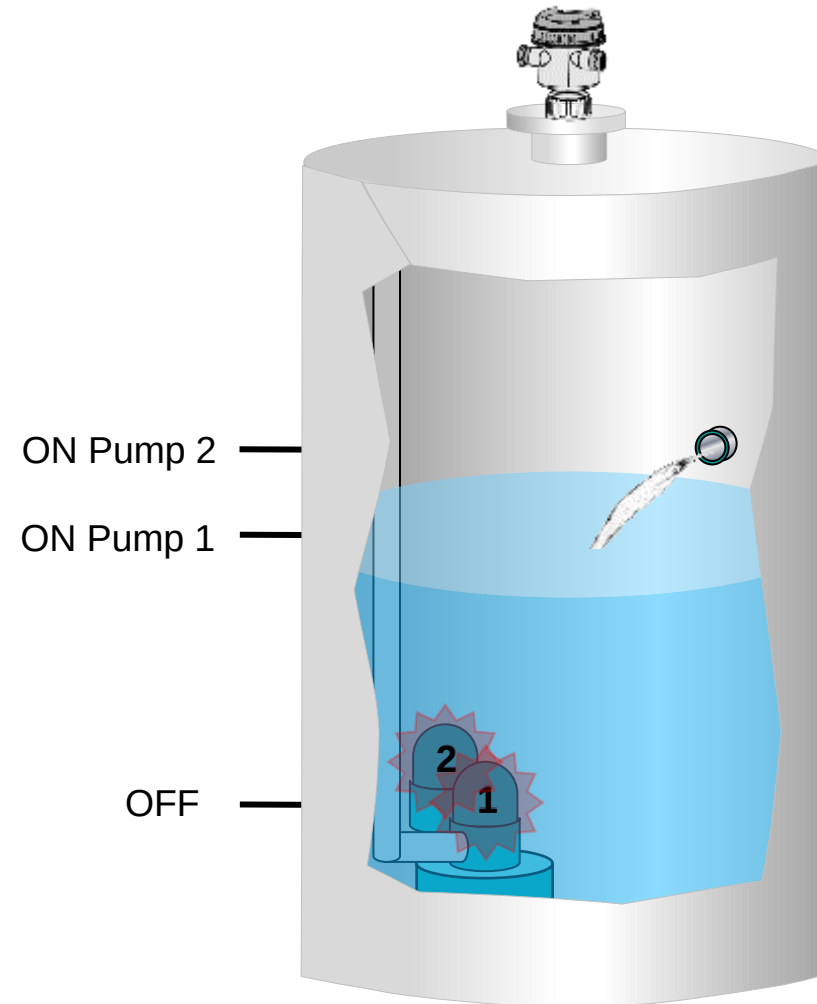
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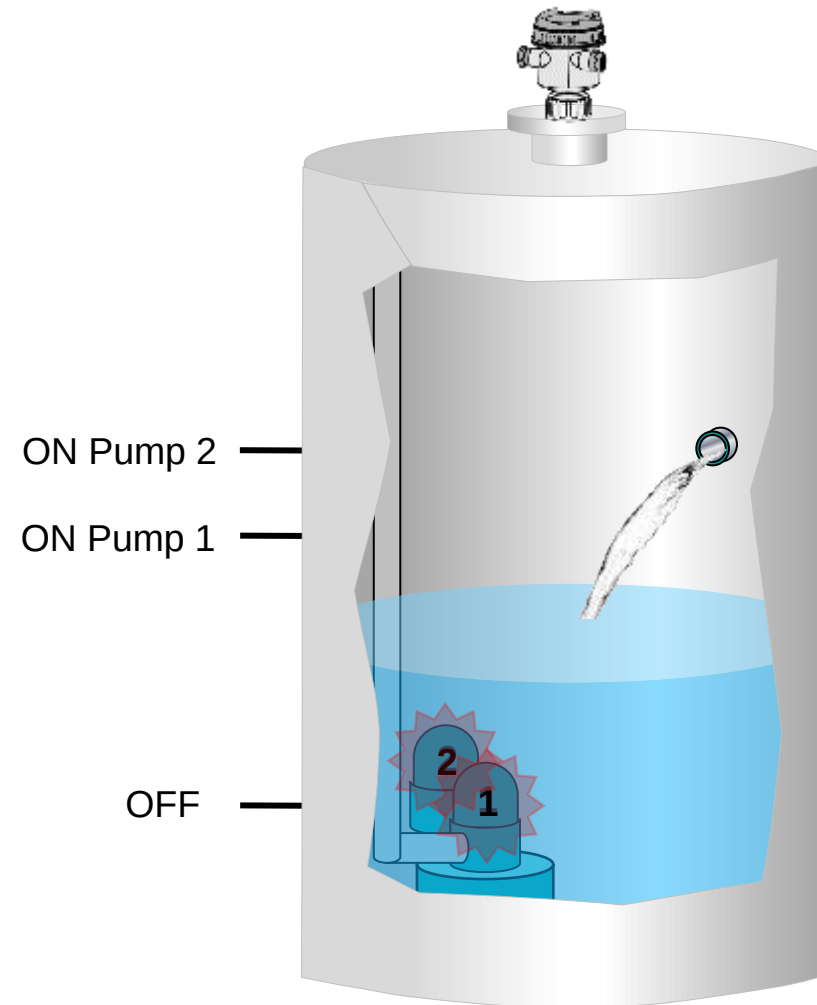
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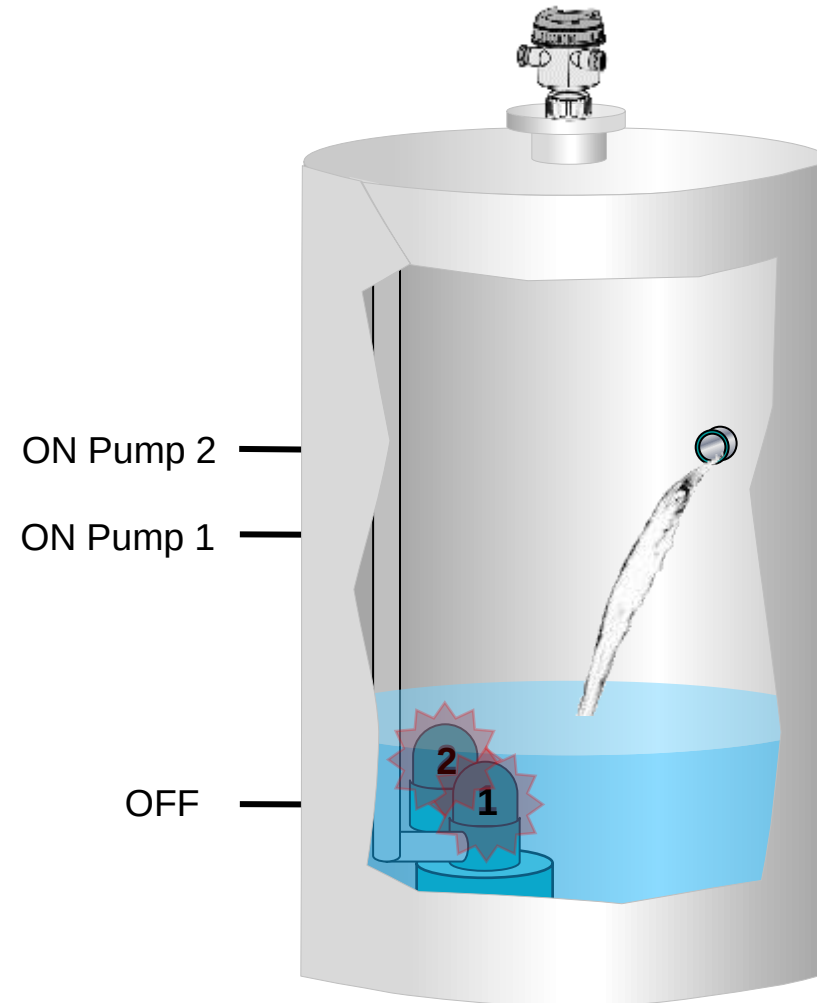
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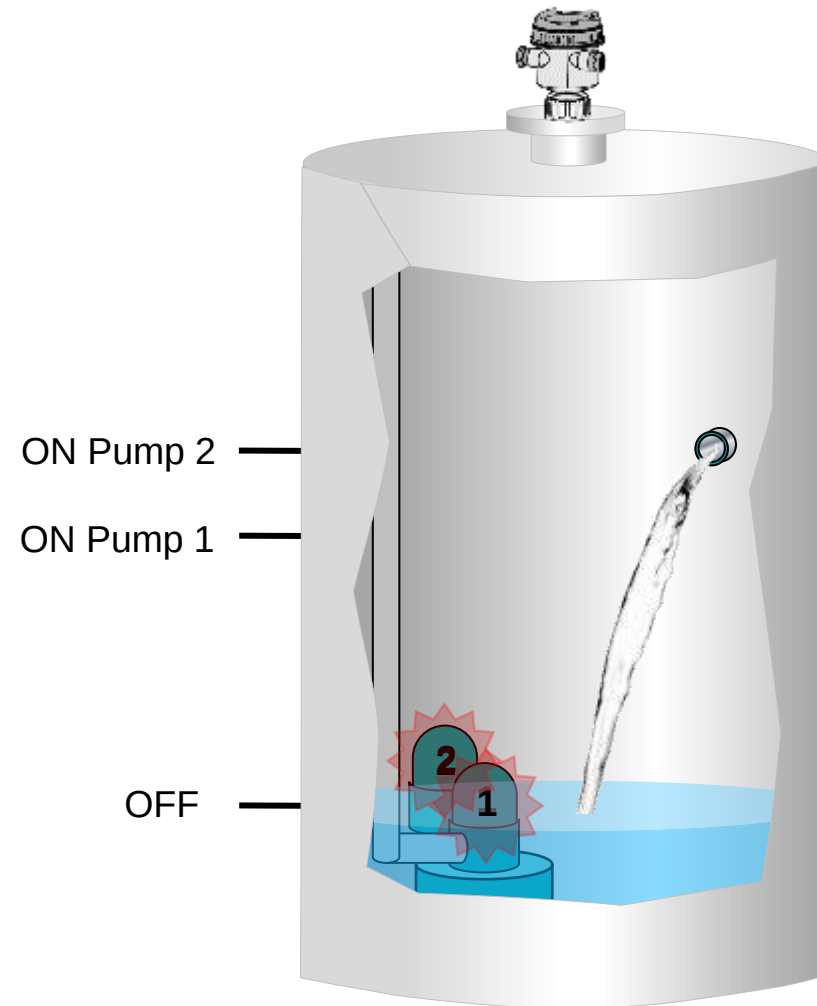
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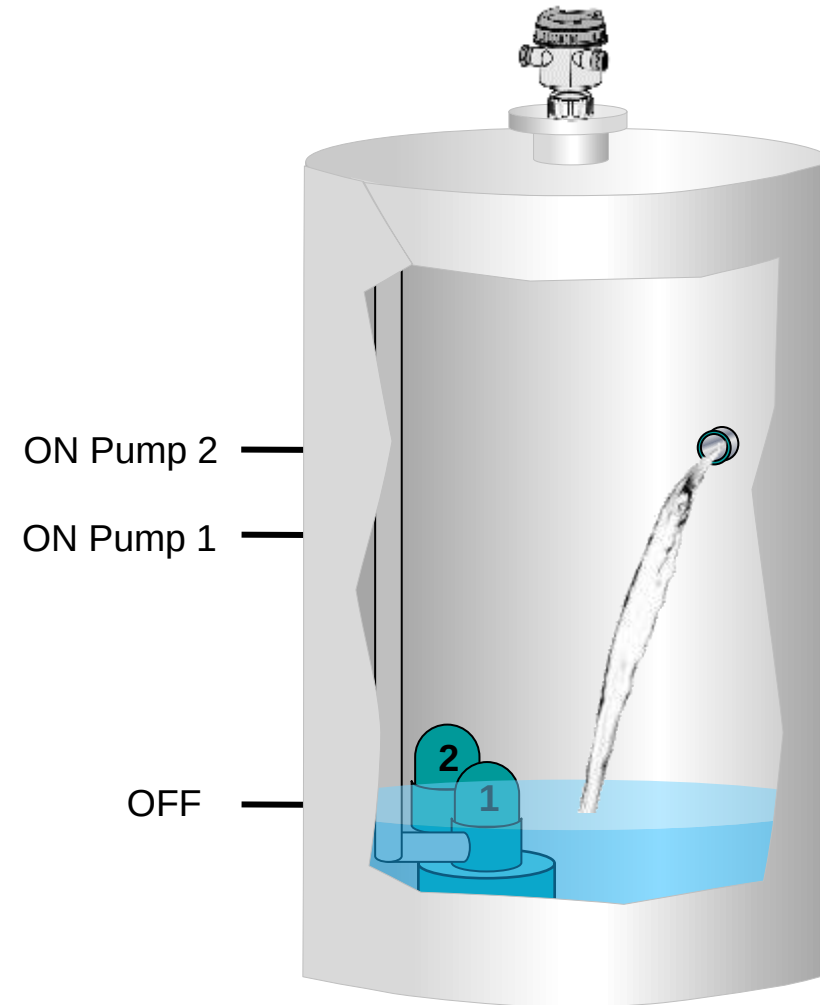
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Cost of electricity

Monthly Report

Electric Power Monthly

Table 5.6.A. Average Price of Electricity to Ultimate Customers by End-Use Sector,
by State, November 2022 and 2021 (Cents per Kilowatthour)

Census Division and State	Residential		Commercial		Industrial		Transportation		All Sectors	
	November 2022	November 2021	November 2022	November 2021	November 2022	November 2021	November 2022	November 2021	November 2022	November 2021
New England	26.29	21.87	18.13	16.50	14.75	13.41	11.48	9.24	20.83	18.17
Connecticut	23.92	21.40	18.07	16.62	14.34	9.58	20.92	14.71	20.31	17.99
Maine	22.36	18.19	14.44	13.86	9.40	10.65	--	--	16.25	14.99
Massachusetts	28.10	23.33	18.79	17.01	17.53	15.92	6.21	6.52	21.95	19.13
New Hampshire	30.66	21.16	20.08	16.31	15.00	14.25	--	--	23.55	17.95
Rhode Island	28.65	22.84	16.04	15.24	18.40	16.43	17.22	17.81	21.13	18.30
Vermont	20.95	20.13	17.82	17.30	12.05	11.49	--	--	17.53	16.87
Middle Atlantic	19.54	16.72	14.95	13.36	8.15	7.47	12.60	11.56	15.01	13.27
New Jersey	16.25	16.13	13.13	12.62	11.84	10.99	12.45	8.82	14.12	13.71
New York	23.66	20.09	17.85	15.70	7.15	6.65	13.77	12.60	18.26	15.93
Pennsylvania	17.49	14.13	11.10	9.63	8.01	7.26	6.53	6.90	12.30	10.50
East North Central	16.28	14.64	11.76	11.07	8.35	7.79	7.32	6.98	12.00	11.06
Illinois	17.27	14.33	11.17	10.36	8.43	8.04	7.43	6.74	12.16	10.82
Indiana	16.33	14.27	14.18	12.02	9.61	8.13	15.67	10.95	12.80	10.96
Michigan	17.72	17.61	12.49	12.55	7.93	7.83	12.82	12.43	12.83	12.88
Ohio	14.78	13.06	10.73	10.27	7.69	7.42	--	7.14	11.01	10.20
Wisconsin	15.59	14.70	11.55	10.87	7.86	7.45	14.72	14.99	11.52	10.90
West North Central	12.61	12.01	10.25	9.73	7.42	7.08	10.77	9.64	10.04	9.52
Iowa	12.49	12.22	9.64	9.55	6.07	5.78	--	--	8.48	8.17
Kansas	14.64	13.37	11.73	10.51	8.95	7.43	--	--	11.78	10.36
Minnesota	14.05	13.54	12.01	11.31	8.86	8.66	12.41	11.21	11.68	11.14
Missouri	11.94	10.92	9.45	8.62	7.55	7.06	9.98	7.79	10.17	9.32
Nebraska	10.74	10.83	8.62	8.47	8.95	8.45	--	--	8.56	8.31
North Dakota	10.57	10.91	8.73	9.47	6.86	7.35	--	--	8.20	8.72
South Dakota	12.05	11.94	9.95	9.78	7.88	7.57	--	--	10.24	9.99
South Atlantic	13.88	12.44	11.09	9.95	7.81	6.71	10.17	9.49	11.63	10.35

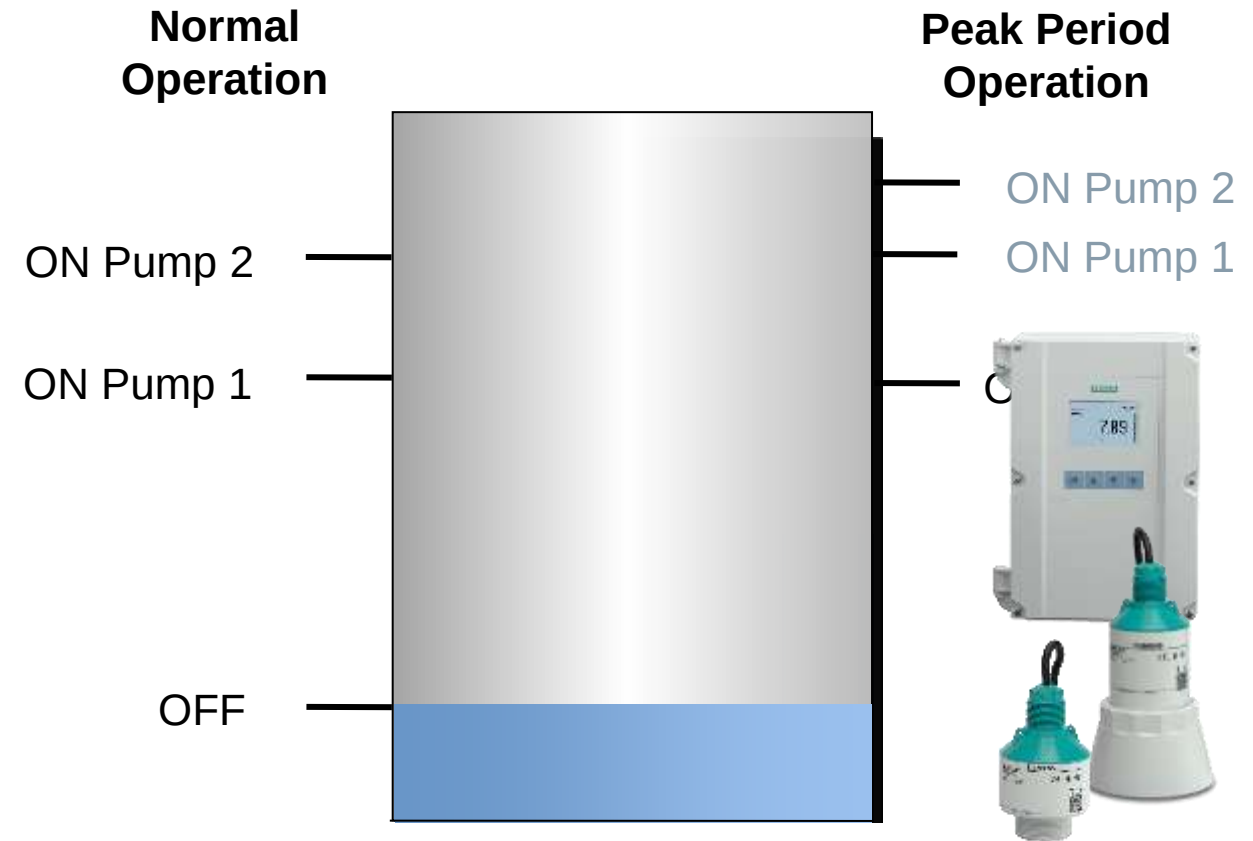
Energy Savings

Consider energy savings

- Lead-time pumping empties vessel before peak period begins
- During peak energy periods, on and off points adjusted
 - On points move higher
 - Off point moves higher and closer to on point
- 5 peak periods supported

Potential peak periods

- 6 a.m. to 9 a.m.
- 4 p.m. to 7. p.m.



Energy Savings Implementation

Fully integrated



With PLC integration



Stand alone



Setup steps Pump energy savings

Main menu2

Quick start▶

Setup▶

Maintenance and diagnostics▶

Security▶

Language

Setup2.5

Sensor▶

Process values▶

Totalizers▶

Inputs and outputs▶

Application▶

Date and time▶

Application2.5.5

Volume▶

Pump control▶

Pump energy savings▶

Volume flow▶

Time to spill▶

Time of day relay▶

Pump energy savings2.5.5.1

Enable

Enabled▶

Peak lead time

Peak 1 start time

Peak 1 end time

Peak 2 start time

Pump energy savings2.5.5.2

Enable

Peak lead time

1h▶

Peak 1 start time

Peak 1 end time

Peak 2 start time

Pump energy savings2.5.5.3

Enable

Peak lead time

Peak 1 start time

0:00▶

Peak 1 end time

Peak 2 start time

Pump energy savings2.5.5.4

Enable

Peak lead time

Peak 1 start time

Peak 1 end time

0:00▶

Peak 2 start time

Pump energy savings2.5.5.13

Peak 4 start time

Peak 4 end time

Peak 5 start time

Peak 5 end time

Peak on setpoint pump 1

0:00 m▶

Pump energy savings2.5.5.14

Peak 4 end time

Peak 5 start time

Peak 5 end time

Peak on setpoint pump 1

Peak off setpoint pump 1

0:00 m▶



PROCESS INSTRUMENTATION

The cost of water

Leak detection and economy pumping

usa.siemens.com/cost-of-water-calculator

How can you utilize process instrumentation to save money in the water & wastewater industries?

Water is by far the most widely used natural resource in the United States, with approximately 42 billion gallons consumed daily to support activities ranging from bathing to industrial manufacturing. Yet, in municipalities, approximately 6 billion gallons of water are lost to leaks every day, and inefficient energy practices result in excess energy costs of up to 30 percent.

The nation's aging infrastructure includes over 2 million miles of water distribution pipes, most of which are past their life expectancy. With up to 240,000 water main breaks occurring each year, leaks and smaller breaks add up to a water loss between 14% and 18% of total distribution. In addition to the significant amount of energy used to treat and distribute the water that is lost, inefficient energy practices have a huge impact on the bottom line. Utilities are often subject to peak pricing schedules of electricity suppliers. Unfortunately for

municipalities, peak water demands coincide with peak electricity demands of consumers. This increased demand means higher energy costs for pumps and therefore higher overall costs to water and wastewater plants. It is estimated that electricity accounts for 80% of municipal water processing and distribution costs – and also that utilities can reduce costs between 15% to 30% by incorporating energy efficient practices.

The solutions

Siemens can offer solutions for these major causes of inefficiencies, resulting in significant cost savings for municipalities. Leak detection technology offered in Siemens flow meters allows municipalities to promptly and accurately locate leaks or breaks in their distribution systems. In addition, efficient pumping algorithms built into Siemens pump controllers allow implementation of economy pumping routines to best suit electricity peak pricing. Together, these technologies result in more cost-efficient plant operation.

Economy Pumping

Enter motor and pump information

Enter horsepower of the pump motor	50	HP
Enter the motor efficiency (Ex: .95)	.95	
Enter the load factor (Ex: .95)	0.7	
Enter the number of pumps	10	Pumps

Enter Electricity Cost (\$/kwh)

Category	Cost (\$/kwh)	
Off-Peak electricity rate:	5	\$/kwh
Mid-Peak electricity rate:	5.5	\$/kwh
On-Peak electricity rate:	6.5	\$/kwh

Enter run time in Hrs per day to compare	2	Hrs
--	--------------------------------	-----

Enter your values to display graph below

Results

Annual cost operating on peak:	\$13,041
Annual savings @ mid-peak:	\$2,006
Annual savings @ off-peak:	\$3,010

THANK YOU!

| Contact

Published by Siemens Industry Inc.

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