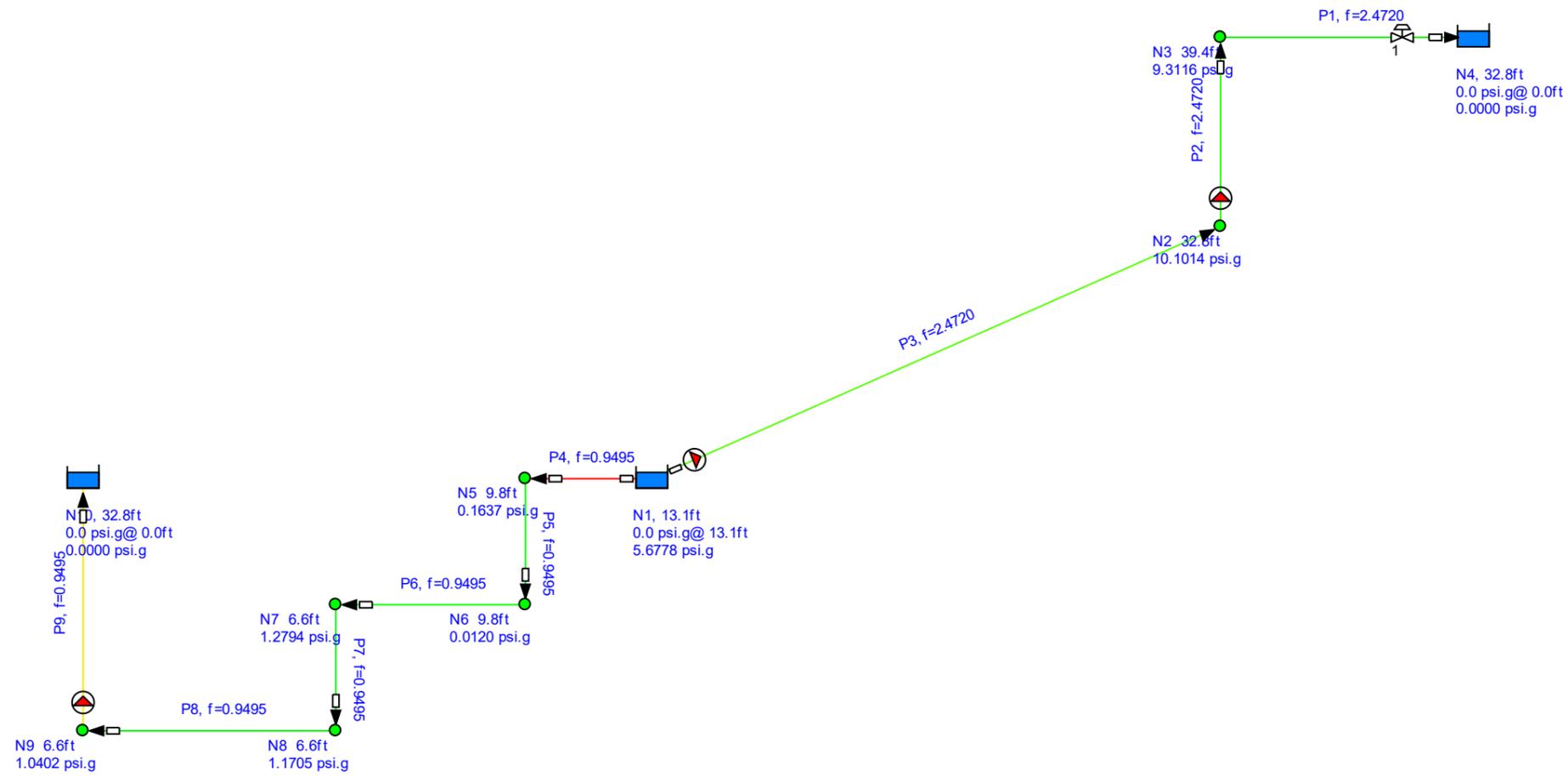




Pipe Flow Design 1

Results Data

Pipe Flow Expert Results Key	
f = flow in ft/sec	Color of Pipe: Friction Loss in ft of Fluid
	0.15 2.64 5.13 7.63 10.12 12.61



Fluid Data

Zone	Fluid Name	Chemical Formula	Temperature °F	Pressure psi.g	Density lb/ft ³	Centistokes	Centipoise	Vapour Pressure psi.a	State
1	Water	H ₂ O	68.000	0.0000	62.303105	1.000000	1.002000	0.348091	Liquid

Pump Data

Pipe Id	Pipe Name	Pump Name	Speed rpm	Pref. Op From ft ³ /sec	Pref. Op To ft ³ /sec	Flow In/Out ft ³ /sec	Velocity ft/sec	Suction Pressure psi.g	Discharge Pressure psi.g	Pump Head (+) ft.hd Fluid	Pump NPSHr ft.hd (absolute)	Pump NPSHa ft.hd (absolute)	Pump Efficiency Percentage	Pump Power Horsepower
3	P3	Pump	Fixed Head Rise			2.4720	7.310	5.3975	19.5924	32.808	Not known	45.64	Not known	Not Known
4	P2	Pump	Fixed Head Rise			2.4720	7.310	10.1014	12.9396	6.560	Not known	56.51	Not known	Not Known
10	P9	Pump	Fixed Head Rise			0.9495	11.232	1.0402	15.2358	32.810	Not known	35.57	Not known	Not Known

Pipe Data

Pipe Id	Pipe Name and Notes	Inner Diameter inch	Length ft	Mass Flow lb/sec	Vol Flow ft ³ /sec	Velocity ft/sec	dP Total Loss psi	Entry Pressure psi.g	Exit Pressure psi.g
1	P4	3.937	147.638	59.1586	0.9495	11.232	5.5141	5.6778	0.1637
2	P5	7.874	82.021	59.1586	0.9495	2.808	0.1517	0.1637	0.0120
3	P3	7.874	131.234	154.0149	2.4720	7.310	-4.4236	5.6778	10.1014
4	P2	7.874	65.617	154.0149	2.4720	7.310	0.7898	10.1014	9.3116
5	P1	7.874	26.247	154.0149	2.4720	7.310	9.3116	9.3116	0.0000
6	P7	7.874	49.213	59.1586	0.9495	2.808	0.1090	1.2794	1.1705
7	P8	7.874	65.617	59.1586	0.9495	2.808	0.1303	1.1705	1.0402
8	P6	7.874	82.021	59.1586	0.9495	2.808	-1.2674	0.0120	1.2794
10	P9	3.937	82.021	59.1586	0.9495	11.232	1.0402	1.0402	0.0000

Pipe Fittings

Pipe Id	Pipe	Fitting Position	Description	Imperial Size	Metric Size	Database Ref	K Value	Quantity	K Total	Entry K Total	Exit K Total
1	P4	Start of Pipe	Pipe Entry Projecting	5"	125 mm	EntProj	0.7800	1	0.7800		
1	P4	End of Pipe	Mitre Bend 90 deg.	5"	125 mm	MB90	0.9600	1	0.9600		
										0.7800	0.9600
2	P5	End of Pipe	Mitre Bend 90 deg.	10"	250 mm	MB90	0.8400	1	0.8400		
										0.0000	0.8400
3	P3	Start of Pipe	Pipe Entry Projecting	10"	250 mm	EntProj	0.7800	1	0.7800		
										0.7800	0.0000
4	P2	End of Pipe	Mitre Bend 90 deg.	10"	250 mm	MB90	0.8400	1	0.8400		
										0.0000	0.8400
5	P1	End of Pipe	Pipe Exit to Container	10"	250 mm	ExitCon	1.0000	1	1.0000		
										0.0000	1.0000
6	P7	End of Pipe	Mitre Bend 90 deg.	10"	250 mm	MB90	0.8400	1	0.8400		
										0.0000	0.8400
7	P8	End of Pipe	Mitre Bend 90 deg.	10"	250 mm	MB90	0.8400	1	0.8400		
										0.0000	0.8400
8	P6	End of Pipe	Mitre Bend 90 deg.	10"	250 mm	MB90	0.8400	1	0.8400		
										0.0000	0.8400
10	P9	End of Pipe	Pipe Exit to Container	5"	125 mm	ExitCon	1.0000	1	1.0000		
										0.0000	1.0000

Components

Pipe Id	Pipe Name	Inner Diameter inch	Comp. Name	Comp. Type	Comp. Value	Flow ft ³ /sec	Mass Flow lb/sec	Comp. Loss ft.hd
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Flow Control Valves (FCVs)

Pipe Id	Pipe Name	Inner Diameter inch	FCV Name	FCV Mass Flow lb/sec	FCV Vol Flow ft ³ /sec	FCV Loss ft.hd
5	P1	7.874	1	154.0149	2.4720	26.80

Pressure Reducing Valves (PRVs)

Pipe Id	Pipe Name	Inner Diameter inch	PRV Name	PRV Pressure psi.g	PRV Loss ft.hd
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Back Pressure Valves (BPVs)

Pipe Id	Pipe Name	Inner Diameter inch	BPV Name	BPV Pressure psi.g	BPV Loss ft.hd
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Node Data

Node Id	Node Type	Node	Elevation ft	Liquid Level ft	Surface Press. psi.g	Press. at Node psi.g	HGL at Node ft.hd Fluid	Demand In (Mass) lb/sec	Demand Out (Mass) lb/sec	Demand In (Vol) @ Fluid Zone Density Downstream ft ³ /sec	Demand Out (Vol) @ Fluid Zone Density Downstream ft ³ /sec
1	Tank	N1	13.123	13.123	0.0000	5.6778	26.25	N/A	N/A	N/A	N/A
2	Join Point	N8	6.562	N/A	N/A	1.1705	9.27	0.0000	0.0000	0.0000	0.0000
3	Join Point	N5	9.843	N/A	N/A	0.1637	10.22	0.0000	0.0000	0.0000	0.0000
4	Join Point	N2	32.808	N/A	N/A	10.1014	56.16	0.0000	0.0000	0.0000	0.0000
5	Tank	N10	32.808	0.000	0.0000	0.0000	32.81	N/A	N/A	N/A	N/A
6	Join Point	N3	39.370	N/A	N/A	9.3116	60.89	0.0000	0.0000	0.0000	0.0000
7	Tank	N4	32.808	0.000	0.0000	0.0000	32.81	N/A	N/A	N/A	N/A
9	Join Point	N9	6.562	N/A	N/A	1.0402	8.97	0.0000	0.0000	0.0000	0.0000
10	Join Point	N7	6.562	N/A	N/A	1.2794	9.52	0.0000	0.0000	0.0000	0.0000
11	Join Point	N6	9.843	N/A	N/A	0.0120	9.87	0.0000	0.0000	0.0000	0.0000

Energy Data

Pipe Id	Pipe Name	Energy Loss To Pipe Friction	Energy Loss To Pipe Fittings	Energy Loss To Pipe Components	Energy Loss To Pipe Control Valves	Energy Loss To Pump Inefficiency	SUBTOTAL Loss Pipe Items +Pump	Energy Loss To Discharge Pressure	Energy Loss To Change in Elevation	TOTAL USED Sum of All Items
		Horsepower	Horsepower	Horsepower	Horsepower	Horsepower	Horsepower	Horsepower	Horsepower	Horsepower
1	P4	1.356712	0.366917	0.000000	0.000000	N/A	1.723629	0.000000	-0.352800	1.370829
2	P5	0.026693	0.011071	0.000000	0.000000	N/A	0.037763	0.000000	-0.000052	0.037712
3	P3	0.630475	0.181397	0.000000	0.000000	Efficiency Not Specified	0.811872	0.000000	5.512334	6.324206
4	P2	0.315238	0.195350	0.000000	0.000000	Efficiency Not Specified	0.510588	0.000000	1.837538	2.348126
5	P1	0.126096	0.232560	0.000000	7.505567	N/A	7.864223	0.000000	-1.837538	6.026685
6	P7	0.016016	0.011071	0.000000	0.000000	N/A	0.027086	0.000000	0.000000	0.027086
7	P8	0.021354	0.011071	0.000000	0.000000	N/A	0.032425	0.000000	-0.000034	0.032391
8	P6	0.026693	0.011071	0.000000	0.000000	N/A	0.037763	0.000000	-0.352856	-0.315093
10	P9	0.753728	0.210872	0.000000	0.000000	Efficiency Not Specified	0.964600	0.000000	2.823081	3.787681