Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Network Type	Gas	Calc. Method	Modified Darcy
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

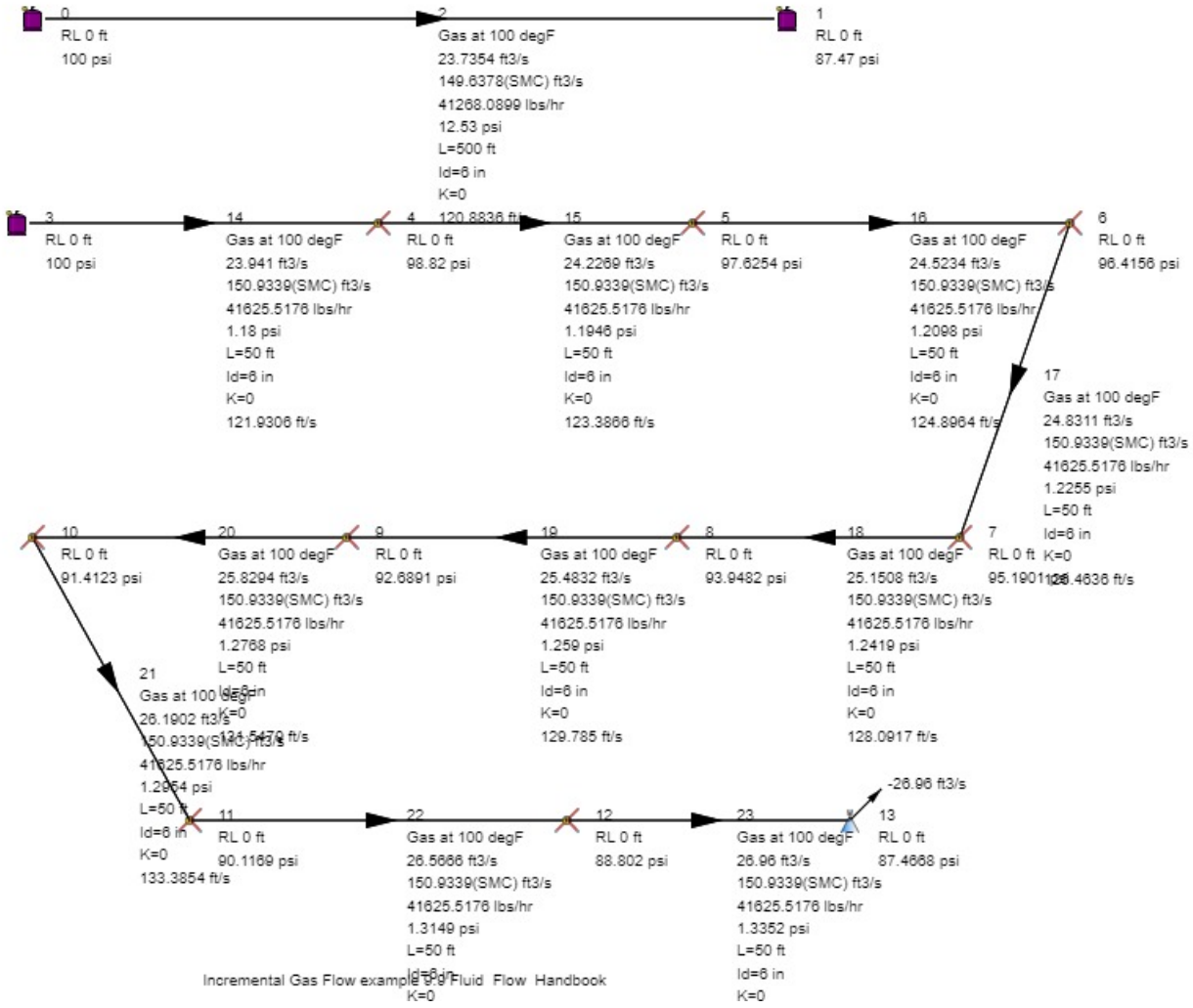
Fluid Flow Handbook, 2002, McGraw-Hill, Jamal Saleh, Pg 9.25, Example 9.9
Gas flows through a 500ft pipe, calculate pressure drop using 10 pipe segments.

Calculation results N=10		Publication		Helix delta-Q	
Segment		Inlet Pressure psi	Dp psi	Inlet Pressure psi	Dp psi
1		100	1.1808	100	
1.18	Modified Darcy				
2		98.82	1.2069	98.82	
1.1946					
3		97.61	1.2194	97.6254	
1.2098					
4		96.39	1.2320	96.4156	
1.2255					
5		95.16	1.2451	95.1901	
1.2419					
6		93.92	1.2586	93.9482	
1.2590					
7		92.66	1.2727	92.6891	
1.2768					
8		91.38	1.2872	91.4123	
1.2954					
9		90.10	1.3023	90.1169	
1.3149					
10		88.79	1.3180	88.8020	
1.3352					
Exit Pressure		87.47		87.4668	

Very close correlation between published result and Helix calculation.

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		



Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	2	From node to node	0 - 1
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.7363 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1293 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1293 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9543
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	500 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	23.7354 ft3/s	Flow at SMC	149.6378 ft3/s
Mass Flow Rate	41268.0899 lbs/hr	Velocity	120.8836 ft/s
Mach number	0.487		
Friction Loss	12.53 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	12.53 psi		
Entry Total Pressure	100 psi	Exit Total Pressure	87.47 psi
Reynolds No.	18670947.8141	Friction Factor	0.0149798 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	14	From node to node	3 - 4
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.7363 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1293 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1293 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9919
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	23.941 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	121.9306 ft/s
Mach number	0.141		
Friction Loss	1.18 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.18 psi		
Entry Total Pressure	100 psi	Exit Total Pressure	98.82 psi
Reynolds No.	18832659.0183	Friction Factor	0.0149794 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	15	From node to node	4 - 5
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.6451 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1308 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1308 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9917
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	24.2269 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	123.3866 ft/s
Mach number	0.143		
Friction Loss	1.1946 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.1946 psi		
Entry Total Pressure	98.82 psi	Exit Total Pressure	97.6254 psi
Reynolds No.	18610433.8777	Friction Factor	0.0149799 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	16	From node to node	5 - 6
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.5526 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1324 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1324 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9915
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	24.5234 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	124.8964 ft/s
Mach number	0.145		
Friction Loss	1.2098 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.2098 psi		
Entry Total Pressure	97.6254 psi	Exit Total Pressure	96.4156 psi
Reynolds No.	18385458.0452	Friction Factor	0.0149804 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	17	From node to node	6 - 7
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.459 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1341 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1341 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9913
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	24.8311 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	126.4636 ft/s
Mach number	0.148		
Friction Loss	1.2255 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.2255 psi		
Entry Total Pressure	96.4156 psi	Exit Total Pressure	95.1901 psi
Reynolds No.	18157626.0349	Friction Factor	0.014981 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	18	From node to node	7 - 8
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.3642 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1358 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1358 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9911
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	25.1508 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	128.0917 ft/s
Mach number	0.15		
Friction Loss	1.2419 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.2419 psi		
Entry Total Pressure	95.1901 psi	Exit Total Pressure	93.9482 psi
Reynolds No.	17926825.4121	Friction Factor	0.0149815 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	19	From node to node	8 - 9
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.2682 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1376 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1376 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9908
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	25.4832 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	129.785 ft/s
Mach number	0.153		
Friction Loss	1.259 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.259 psi		
Entry Total Pressure	93.9482 psi	Exit Total Pressure	92.6891 psi
Reynolds No.	17692936.1329	Friction Factor	0.0149821 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	20	From node to node	9 - 10
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.1707 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1395 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1395 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9906
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	25.8294 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	131.5479 ft/s
Mach number	0.155		
Friction Loss	1.2768 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.2768 psi		
Entry Total Pressure	92.6891 psi	Exit Total Pressure	91.4123 psi
Reynolds No.	17455829.8006	Friction Factor	0.0149827 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	21	From node to node	10 - 11
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	7.072 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1414 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1414 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9903
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	26.1902 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	133.3854 ft/s
Mach number	0.158		
Friction Loss	1.2954 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.2954 psi		
Entry Total Pressure	91.4123 psi	Exit Total Pressure	90.1169 psi
Reynolds No.	17215368.8259	Friction Factor	0.0149834 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	22	From node to node	11 - 12
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	6.9718 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1434 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1434 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.99
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	26.5666 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	135.3028 ft/s
Mach number	0.161		
Friction Loss	1.3149 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.3149 psi		
Entry Total Pressure	90.1169 psi	Exit Total Pressure	88.802 psi
Reynolds No.	16971405.4756	Friction Factor	0.014984 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Pipe No	23	From node to node	12 - 13
Description		Equipment No	
Gas	Gas at 100 degF	Molecular Mass	29 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	37.7 C	Density	6.87 kg/m3
Gas SG to Air	1.0014	Gas Specific Vol	0.1456 m3/kg
Gas Constant R	286.7031	Abs. Gas Temp.	0.1456 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	0.9897
Pipe Description	Steel Pipes AS1836 (ANSI B36.10)	Pipe Class	
Nominal Diameter	6 in	Inside Diameter	6 in
Outside Diameter	6.8 in	Pipe Length	50 ft
Pipe Roughness	0.0018 in	Allowable Press.	300 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	26.96 ft3/s	Flow at SMC	150.9339 ft3/s
Mass Flow Rate	41625.5176 lbs/hr	Velocity	137.3062 ft/s
Mach number	0.164		
Friction Loss	1.3352 psi	Fitting Losses	0 psi
Orifice Losses	0 psi	Fixed Pressure Drop	0 psi
Total Pressure Drop	1.3352 psi		
Entry Total Pressure	88.802 psi	Exit Total Pressure	87.4668 psi
Reynolds No.	16723780.7895	Friction Factor	0.0149847 (Darcy f)

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	0	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	100 psi
Ext Flow (+In/-Out)	-	Abs. Node Pressure	100 psi
Int.(Gauge) Head	0 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	1	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	87.47 psi
Ext Flow (+In/-Out)	-	Abs. Node Pressure	87.47 psi
Int.(Gauge) Head	851378335.4518 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	3	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	100 psi
Ext Flow (+In/-Out)	-	Abs. Node Pressure	100 psi
Int.(Gauge) Head	0 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	4	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	98.82 psi
Int.(Gauge) Head	2235367.1108 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	5	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	97.6254 psi
Int.(Gauge) Head	2208344.4428 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	6	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	96.4156 psi
Int.(Gauge) Head	2180978.7089 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	7	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	95.1901 psi
Int.(Gauge) Head	2153256.404 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	8	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	93.9482 psi
Int.(Gauge) Head	2125163.1094 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	9	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	92.6891 psi
Int.(Gauge) Head	2096683.4028 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	10	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	91.4123 psi
Int.(Gauge) Head	2067800.7579 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	11	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	90.1169 psi
Int.(Gauge) Head	2038497.4298 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	12	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Ext Flow (+In/-Out)	0 ft3/s	Abs. Node Pressure	88.802 psi
Int.(Gauge) Head	2008754.3254 psi		

Helix Technologies Pty Ltd

Project	Demo QA	Client	Helix QA
Project No.	4567	Design Date	25/06/2017
Category	Demo Gas QA	Atmos. Press	14.6959 psi
Description	Incremental Gas Flow example 9.9 Fluid Flow Handbook		

Node No	13	Node Type	Nozzle
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	87.47 psi
Ext Flow (+In/-Out)	-26.96 ft3/s	Abs. Node Pressure	87.4668 psi
Int.(Gauge) Head	1978550.8542 psi		