

Helix Technologies Pty Ltd

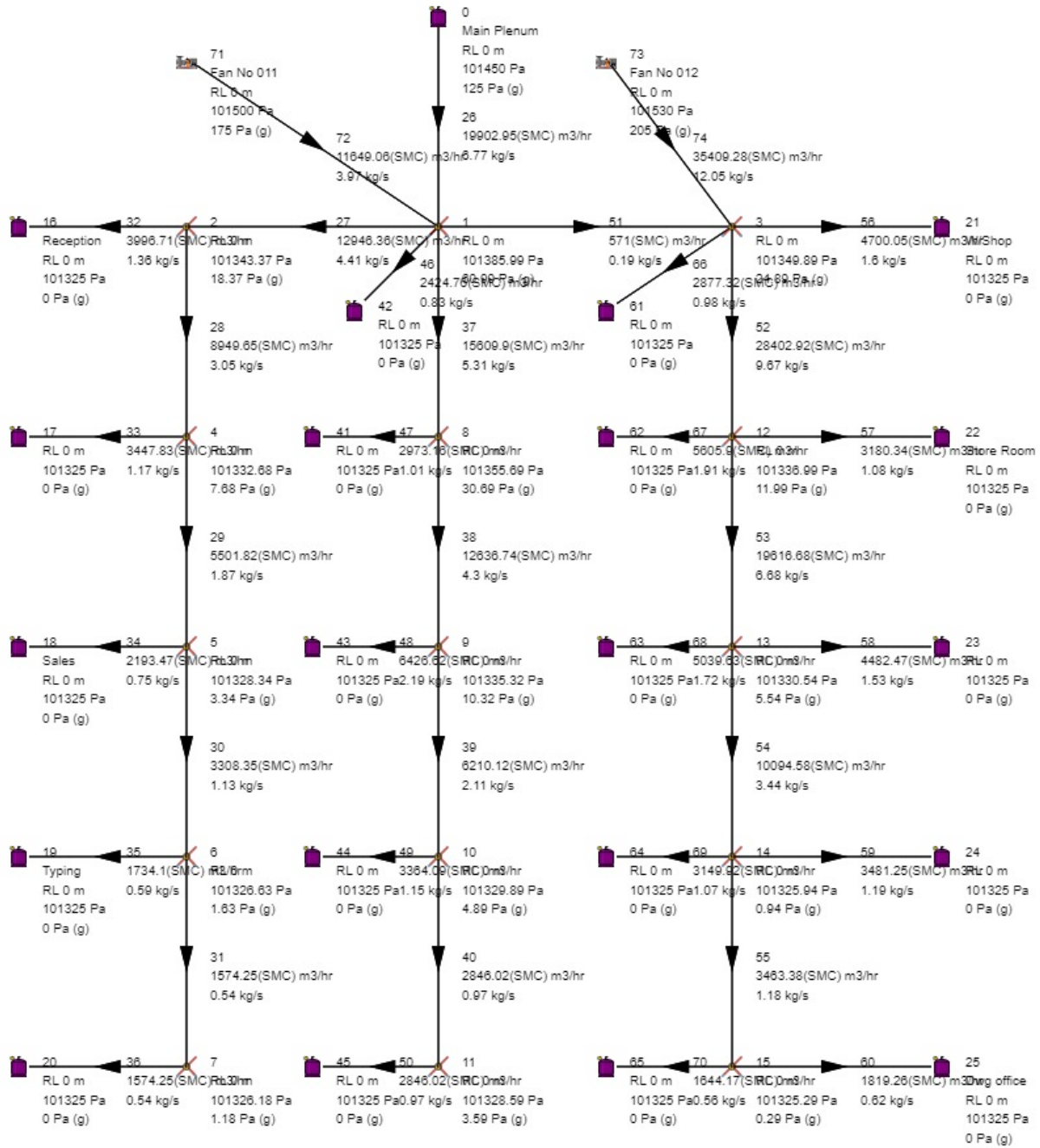
Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Network Type	Gas	Calc. Method	Modified Darcy
Description	Air Duct Plenum and Diffusers		

An office complex airconditioning system design.

The outlets nodes are modelled as tanks at atmospheric pressure. There are two fans and one main plenum feed points into the system. Note continuity of flow at junctions.

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		



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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	26	From node to node	0 - 1
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.21 kg/m ³
Gas SG to Air	1	Gas Specific Vol	0.83 m ³ /kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	900 mm	Inside Diameter	910 mm
Outside Diameter	918 mm	Pipe Length	15 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	1.2	Total Fittings kf	0
Flow Rate	20233.89 m ³ /hr	Flow at SMC	19902.95 m ³ /hr
Mass Flow Rate	6.77 kg/s	Velocity	8.64 m/s
Mach number	1		
Friction Loss	10 Pa	Fitting Losses	54.01 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	64.01 Pa		
Entry Total Pressure	101450 Pa	Exit Total Pressure	101385.99 Pa
Reynolds No.	634795.44	Friction Factor	0.01338 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	27	From node to node	1 - 2
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	20 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	13169.94 m3/hr	Flow at SMC	12946.36 m3/hr
Mass Flow Rate	4.41 kg/s	Velocity	12.52 m/s
Mach number	1		
Friction Loss	42.62 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	42.62 Pa		
Entry Total Pressure	101385.99 Pa	Exit Total Pressure	101343.37 Pa
Reynolds No.	615604.06	Friction Factor	0.01376 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	28	From node to node	2 - 4
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	9108.04 m3/hr	Flow at SMC	8949.65 m3/hr
Mass Flow Rate	3.05 kg/s	Velocity	8.66 m/s
Mach number	1		
Friction Loss	10.69 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	10.69 Pa		
Entry Total Pressure	101343.37 Pa	Exit Total Pressure	101332.68 Pa
Reynolds No.	425380.27	Friction Factor	0.01444 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	29	From node to node	4 - 5
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	5599.78 m3/hr	Flow at SMC	5501.82 m3/hr
Mass Flow Rate	1.87 kg/s	Velocity	5.32 m/s
Mach number	1		
Friction Loss	4.34 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	4.34 Pa		
Entry Total Pressure	101332.68 Pa	Exit Total Pressure	101328.34 Pa
Reynolds No.	261475.93	Friction Factor	0.01552 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	30	From node to node	5 - 6
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3367.4 m3/hr	Flow at SMC	3308.35 m3/hr
Mass Flow Rate	1.13 kg/s	Velocity	3.2 m/s
Mach number	1		
Friction Loss	1.71 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	1.71 Pa		
Entry Total Pressure	101328.34 Pa	Exit Total Pressure	101326.63 Pa
Reynolds No.	157223.63	Friction Factor	0.01691 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	31	From node to node	6 - 7
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	1602.38 m3/hr	Flow at SMC	1574.25 m3/hr
Mass Flow Rate	0.54 kg/s	Velocity	1.52 m/s
Mach number	1		
Friction Loss	0.45 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	0.45 Pa		
Entry Total Pressure	101326.63 Pa	Exit Total Pressure	101326.18 Pa
Reynolds No.	74812.4	Friction Factor	0.01946 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	32	From node to node	2 - 16
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	350 mm	Inside Diameter	350 mm
Outside Diameter	359 mm	Pipe Length	5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	4067.44 m3/hr	Flow at SMC	3996.71 m3/hr
Mass Flow Rate	1.36 kg/s	Velocity	11.74 m/s
Mach number	1		
Friction Loss	18.37 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	18.37 Pa		
Entry Total Pressure	101343.37 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	331081.82	Friction Factor	0.01548 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	33	From node to node	4 - 17
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	400 mm	Inside Diameter	410 mm
Outside Diameter	418 mm	Pipe Length	6 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3509.22 m3/hr	Flow at SMC	3447.83 m3/hr
Mass Flow Rate	1.17 kg/s	Velocity	7.38 m/s
Mach number	1		
Friction Loss	7.68 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	7.68 Pa		
Entry Total Pressure	101332.68 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	243790.94	Friction Factor	0.01599 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	34	From node to node	5 - 18
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	400 mm	Inside Diameter	410 mm
Outside Diameter	418 mm	Pipe Length	6 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	2232.62 m3/hr	Flow at SMC	2193.47 m3/hr
Mass Flow Rate	0.75 kg/s	Velocity	4.7 m/s
Mach number	1		
Friction Loss	3.34 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	3.34 Pa		
Entry Total Pressure	101328.34 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	155090.42	Friction Factor	0.01718 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	35	From node to node	6 - 19
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	400 mm	Inside Diameter	410 mm
Outside Diameter	418 mm	Pipe Length	4.5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	1765.08 m3/hr	Flow at SMC	1734.1 m3/hr
Mass Flow Rate	0.59 kg/s	Velocity	3.71 m/s
Mach number	1		
Friction Loss	1.63 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	1.63 Pa		
Entry Total Pressure	101326.63 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	122607.89	Friction Factor	0.01789 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	36	From node to node	7 - 20
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	400 mm	Inside Diameter	410 mm
Outside Diameter	418 mm	Pipe Length	3.9 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	1602.38 m3/hr	Flow at SMC	1574.25 m3/hr
Mass Flow Rate	0.54 kg/s	Velocity	3.37 m/s
Mach number	1		
Friction Loss	1.18 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	1.18 Pa		
Entry Total Pressure	101326.18 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	111305.76	Friction Factor	0.0182 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	37	From node to node	1 - 8
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	15879.47 m3/hr	Flow at SMC	15609.9 m3/hr
Mass Flow Rate	5.31 kg/s	Velocity	15.09 m/s
Mach number	1		
Friction Loss	30.31 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	30.31 Pa		
Entry Total Pressure	101385.99 Pa	Exit Total Pressure	101355.69 Pa
Reynolds No.	742256.16	Friction Factor	0.01346 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	38	From node to node	8 - 9
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	12858.81 m3/hr	Flow at SMC	12636.74 m3/hr
Mass Flow Rate	4.3 kg/s	Velocity	12.22 m/s
Mach number	1		
Friction Loss	20.37 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	20.37 Pa		
Entry Total Pressure	101355.69 Pa	Exit Total Pressure	101335.32 Pa
Reynolds No.	600701.85	Friction Factor	0.0138 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	39	From node to node	9 - 10
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	6320.52 m3/hr	Flow at SMC	6210.12 m3/hr
Mass Flow Rate	2.11 kg/s	Velocity	6.01 m/s
Mach number	1		
Friction Loss	5.43 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	5.43 Pa		
Entry Total Pressure	101335.32 Pa	Exit Total Pressure	101329.89 Pa
Reynolds No.	295145.63	Friction Factor	0.01523 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	40	From node to node	10 - 11
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	2896.77 m3/hr	Flow at SMC	2846.02 m3/hr
Mass Flow Rate	0.97 kg/s	Velocity	2.75 m/s
Mach number	1		
Friction Loss	1.3 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	1.3 Pa		
Entry Total Pressure	101329.89 Pa	Exit Total Pressure	101328.59 Pa
Reynolds No.	135254.43	Friction Factor	0.01737 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	46	From node to node	1 - 42
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	250 mm	Inside Diameter	250 mm
Outside Diameter	258 mm	Pipe Length	8 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	2466.63 m3/hr	Flow at SMC	2424.76 m3/hr
Mass Flow Rate	0.83 kg/s	Velocity	13.96 m/s
Mach number	1		
Friction Loss	60.99 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	60.99 Pa		
Entry Total Pressure	101385.99 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	281327.26	Friction Factor	0.01622 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	47	From node to node	8 - 41
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	350 mm	Inside Diameter	350 mm
Outside Diameter	358 mm	Pipe Length	14.5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3025.41 m3/hr	Flow at SMC	2973.16 m3/hr
Mass Flow Rate	1.01 kg/s	Velocity	8.73 m/s
Mach number	1		
Friction Loss	30.69 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	30.69 Pa		
Entry Total Pressure	101355.69 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	246322.25	Friction Factor	0.01611 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	48	From node to node	9 - 43
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	450 mm	Inside Diameter	450 mm
Outside Diameter	458 mm	Pipe Length	4 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	6540.88 m3/hr	Flow at SMC	6426.62 m3/hr
Mass Flow Rate	2.19 kg/s	Velocity	11.42 m/s
Mach number	1		
Friction Loss	10.32 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	10.32 Pa		
Entry Total Pressure	101335.32 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	414034.81	Friction Factor	0.01477 (Darcy f)

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	49	From node to node	10 - 44
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	400 mm	Inside Diameter	410 mm
Outside Diameter	418 mm	Pipe Length	4 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3424.09 m3/hr	Flow at SMC	3364.09 m3/hr
Mass Flow Rate	1.15 kg/s	Velocity	7.2 m/s
Mach number	1		
Friction Loss	4.89 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	4.89 Pa		
Entry Total Pressure	101329.89 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	237863.4	Friction Factor	0.01605 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	50	From node to node	11 - 45
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	400 mm	Inside Diameter	410 mm
Outside Diameter	418 mm	Pipe Length	4 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	2896.81 m3/hr	Flow at SMC	2846.02 m3/hr
Mass Flow Rate	0.97 kg/s	Velocity	6.09 m/s
Mach number	1		
Friction Loss	3.59 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	3.59 Pa		
Entry Total Pressure	101328.59 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	201229.61	Friction Factor	0.01646 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	51	From node to node	1 - 3
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	200 mm
Outside Diameter	618 mm	Pipe Length	23 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	580.86 m3/hr	Flow at SMC	571 m3/hr
Mass Flow Rate	0.19 kg/s	Velocity	5.14 m/s
Mach number	1		
Friction Loss	36.1 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	36.1 Pa		
Entry Total Pressure	101385.99 Pa	Exit Total Pressure	101349.89 Pa
Reynolds No.	82811.43	Friction Factor	0.01974 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	52	From node to node	3 - 12
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	900 mm	Inside Diameter	910 mm
Outside Diameter	918 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	28903.71 m3/hr	Flow at SMC	28402.92 m3/hr
Mass Flow Rate	9.67 kg/s	Velocity	12.34 m/s
Mach number	1		
Friction Loss	12.9 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	12.9 Pa		
Entry Total Pressure	101349.89 Pa	Exit Total Pressure	101336.99 Pa
Reynolds No.	905003.97	Friction Factor	0.01279 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	53	From node to node	12 - 13
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	900 mm	Inside Diameter	910 mm
Outside Diameter	918 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	19965.1 m3/hr	Flow at SMC	19616.68 m3/hr
Mass Flow Rate	6.68 kg/s	Velocity	8.53 m/s
Mach number	1		
Friction Loss	6.45 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	6.45 Pa		
Entry Total Pressure	101336.99 Pa	Exit Total Pressure	101330.54 Pa
Reynolds No.	624967.95	Friction Factor	0.01341 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	54	From node to node	13 - 14
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	750 mm	Inside Diameter	758 mm
Outside Diameter	765 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	10274.53 m3/hr	Flow at SMC	10094.58 m3/hr
Mass Flow Rate	3.44 kg/s	Velocity	6.32 m/s
Mach number	1		
Friction Loss	4.6 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	4.6 Pa		
Entry Total Pressure	101330.54 Pa	Exit Total Pressure	101325.94 Pa
Reynolds No.	386069.08	Friction Factor	0.01448 (Darcy f)

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	55	From node to node	14 - 15
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	750 mm	Inside Diameter	758 mm
Outside Diameter	765 mm	Pipe Length	10 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3525.28 m3/hr	Flow at SMC	3463.38 m3/hr
Mass Flow Rate	1.18 kg/s	Velocity	2.17 m/s
Mach number	1		
Friction Loss	0.65 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	0.65 Pa		
Entry Total Pressure	101325.94 Pa	Exit Total Pressure	101325.29 Pa
Reynolds No.	132451.62	Friction Factor	0.01735 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	56	From node to node	3 - 21
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	350 mm	Inside Diameter	350 mm
Outside Diameter	359 mm	Pipe Length	5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	4782.92 m3/hr	Flow at SMC	4700.05 m3/hr
Mass Flow Rate	1.6 kg/s	Velocity	13.81 m/s
Mach number	1		
Friction Loss	24.89 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	24.89 Pa		
Entry Total Pressure	101349.89 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	389370.55	Friction Factor	0.01517 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	57	From node to node	12 - 22
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	350 mm	Inside Diameter	350 mm
Outside Diameter	359 mm	Pipe Length	5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3236.82 m3/hr	Flow at SMC	3180.34 m3/hr
Mass Flow Rate	1.08 kg/s	Velocity	9.35 m/s
Mach number	1		
Friction Loss	11.99 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	11.99 Pa		
Entry Total Pressure	101336.99 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	263438.19	Friction Factor	0.01596 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	58	From node to node	13 - 23
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	18.6 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	4562.37 m3/hr	Flow at SMC	4482.47 m3/hr
Mass Flow Rate	1.53 kg/s	Velocity	4.34 m/s
Mach number	1		
Friction Loss	5.54 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	5.54 Pa		
Entry Total Pressure	101330.54 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	213026.35	Friction Factor	0.01605 (Darcy f)

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	59	From node to node	14 - 24
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3543.47 m3/hr	Flow at SMC	3481.25 m3/hr
Mass Flow Rate	1.19 kg/s	Velocity	3.37 m/s
Mach number	1		
Friction Loss	0.94 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	0.94 Pa		
Entry Total Pressure	101325.94 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	165436.84	Friction Factor	0.01675 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	60	From node to node	15 - 25
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	1851.79 m3/hr	Flow at SMC	1819.26 m3/hr
Mass Flow Rate	0.62 kg/s	Velocity	1.76 m/s
Mach number	1		
Friction Loss	0.29 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	0.29 Pa		
Entry Total Pressure	101325.29 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	86454.83	Friction Factor	0.01891 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	66	From node to node	3 - 61
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	350 mm	Inside Diameter	350 mm
Outside Diameter	359 mm	Pipe Length	12.5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	2928.05 m3/hr	Flow at SMC	2877.32 m3/hr
Mass Flow Rate	0.98 kg/s	Velocity	8.45 m/s
Mach number	1		
Friction Loss	24.89 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	24.89 Pa		
Entry Total Pressure	101349.89 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	238368.75	Friction Factor	0.01619 (Darcy f)

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	67	From node to node	12 - 62
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	450 mm	Inside Diameter	450 mm
Outside Diameter	458 mm	Pipe Length	6 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	5705.47 m3/hr	Flow at SMC	5605.9 m3/hr
Mass Flow Rate	1.91 kg/s	Velocity	9.96 m/s
Mach number	1		
Friction Loss	11.99 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	11.99 Pa		
Entry Total Pressure	101336.99 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	361165.77	Friction Factor	0.01504 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	68	From node to node	13 - 63
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	15 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	5129.47 m3/hr	Flow at SMC	5039.63 m3/hr
Mass Flow Rate	1.72 kg/s	Velocity	4.88 m/s
Mach number	1		
Friction Loss	5.54 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	5.54 Pa		
Entry Total Pressure	101330.54 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	239505.24	Friction Factor	0.01574 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	69	From node to node	14 - 64
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	6 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	3206.22 m3/hr	Flow at SMC	3149.92 m3/hr
Mass Flow Rate	1.07 kg/s	Velocity	3.05 m/s
Mach number	1		
Friction Loss	0.94 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	0.94 Pa		
Entry Total Pressure	101325.94 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	149691.14	Friction Factor	0.01705 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	70	From node to node	15 - 65
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.2 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	600 mm	Inside Diameter	610 mm
Outside Diameter	618 mm	Pipe Length	6 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	1673.56 m3/hr	Flow at SMC	1644.17 m3/hr
Mass Flow Rate	0.56 kg/s	Velocity	1.59 m/s
Mach number	1		
Friction Loss	0.29 Pa	Fitting Losses	0 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	0.29 Pa		
Entry Total Pressure	101325.29 Pa	Exit Total Pressure	101325 Pa
Reynolds No.	78133.97	Friction Factor	0.01929 (Darcy f)

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Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	72	From node to node	71 - 1
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.21 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	750 mm	Inside Diameter	765 mm
Outside Diameter	758 mm	Pipe Length	12.9 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0.2	Total Fittings kf	229
Flow Rate	11836.93 m3/hr	Flow at SMC	11649.06 m3/hr
Mass Flow Rate	3.97 kg/s	Velocity	7.15 m/s
Mach number	1		
Friction Loss	7.54 Pa	Fitting Losses	106.47 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	114.01 Pa		
Entry Total Pressure	101500 Pa	Exit Total Pressure	101385.99 Pa
Reynolds No.	442182.24	Friction Factor	0.01419 (Darcy f)

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Pipe No	74	From node to node	73 - 3
Description		Equipment No	
Gas	Air	Molecular Mass	28.96 kg/kmol
Ratio Cp/Cv	1.4	Viscosity	0.018 cP
Temperature	20 C	Density	1.21 kg/m3
Gas SG to Air	1	Gas Specific Vol	0.83 m3/kg
Gas Constant R	287.1	Abs. Gas Temp.	0.83 deg K
Flow Condition	Free Flow	Net Exp.Factor Y	1
Pipe Description	Steel	Pipe Class	Spiral
Nominal Diameter	900 mm	Inside Diameter	910 mm
Outside Diameter	918 mm	Pipe Length	4.5 m
Pipe Roughness	0.045 mm	Allowable Press.	200 Pa
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	1.2	Total Fittings kf	0
Flow Rate	35969.7 m3/hr	Flow at SMC	35409.28 m3/hr
Mass Flow Rate	12.05 kg/s	Velocity	15.36 m/s
Mach number	1		
Friction Loss	9.29 Pa	Fitting Losses	170.82 Pa
Orifice Losses	0 Pa	Fixed Pressure Drop	0 Pa
Total Pressure Drop	180.11 Pa		
Entry Total Pressure	101530 Pa	Exit Total Pressure	101349.89 Pa
Reynolds No.	1130253.34	Friction Factor	0.01247 (Darcy f)

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	0	Node Type	Tank
Description	Main Plenum	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101450 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101450 Pa
Int.(Gauge) Head	101450 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	1	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101385.99 Pa
Int.(Gauge) Head	101385.99 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	2	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101343.37 Pa
Int.(Gauge) Head	101343.37 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	3	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101349.89 Pa
Int.(Gauge) Head	101349.89 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	4	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101332.68 Pa
Int.(Gauge) Head	101332.68 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	5	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101328.34 Pa
Int.(Gauge) Head	101328.34 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	6	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101326.63 Pa
Int.(Gauge) Head	101326.63 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	7	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101326.18 Pa
Int.(Gauge) Head	101326.18 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	8	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101355.69 Pa
Int.(Gauge) Head	101355.69 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	9	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101335.32 Pa
Int.(Gauge) Head	101335.32 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	10	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101329.89 Pa
Int.(Gauge) Head	101329.89 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	11	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101328.59 Pa
Int.(Gauge) Head	101328.59 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	12	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101336.99 Pa
Int.(Gauge) Head	101336.99 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	13	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101330.54 Pa
Int.(Gauge) Head	101330.54 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	14	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101325.94 Pa
Int.(Gauge) Head	101325.94 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	15	Node Type	Junction
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	0 Pa
Ext Flow (+In/-Out)	0 m3/hr	Abs. Node Pressure	101325.29 Pa
Int.(Gauge) Head	101325.29 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	16	Node Type	Tank
Description	Reception	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	17	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	18	Node Type	Tank
Description	Sales	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	19	Node Type	Tank
Description	Typing	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	20	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	21	Node Type	Tank
Description	W/Shop	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	22	Node Type	Tank
Description	Store Room	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	23	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	24	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	25	Node Type	Tank
Description	Dwg office	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	41	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	42	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	43	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	44	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	45	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	61	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	62	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		

Node No	63	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	64	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	65	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101325 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101325 Pa
Int.(Gauge) Head	101325 Pa		

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	71	Node Type	Pump
Description	Fan No 011	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101500 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101500 Pa
Int.(Gauge) Head	101500 Pa		
Pump / Fan Efficiency	70 %	Pump Absorbed Power	0 kW
Casing Pressure	175 Pa		
Pump NPSH required	0 m	Pump NPSH available	0 m

Helix Technologies Pty Ltd

Project	Office Airconditioning	Client	ABC Mining
Project No.	P234	Design Date	23/01/2016
Category	Demo Gas	Atmos. Press	101325 Pa
Description	Air Duct Plenum and Diffusers		
Node No	73	Node Type	Pump
Description	Fan No 012	Equipment No	
Rel. Level (RL)	0 m	Pressure Input	101530 Pa
Ext Flow (+In/-Out)	-	Abs. Node Pressure	101530 Pa
Int.(Gauge) Head	101530 Pa		
Pump / Fan Efficiency	70 %	Pump Absorbed Power	0 kW
Casing Pressure	205 Pa		
Pump NPSH required	0 m	Pump NPSH available	0 m