

Helix Technologies Pty Ltd

Project	New Project	Client	ABC Metals ..
Project No.	4567	Design Date	13/12/2016
Category	Demo Settling Slurry	Atmos. Press	100.19 psi
Network Type	Liquid	Calc. Method	Darcy
Description	GIW Slurry Manual ex pg 12		

GIW Slurry Manual - example on pg 12

To transport 225tph of foundry sand of 240 micronD50 size along a horizontal pipeline of 8" ID.

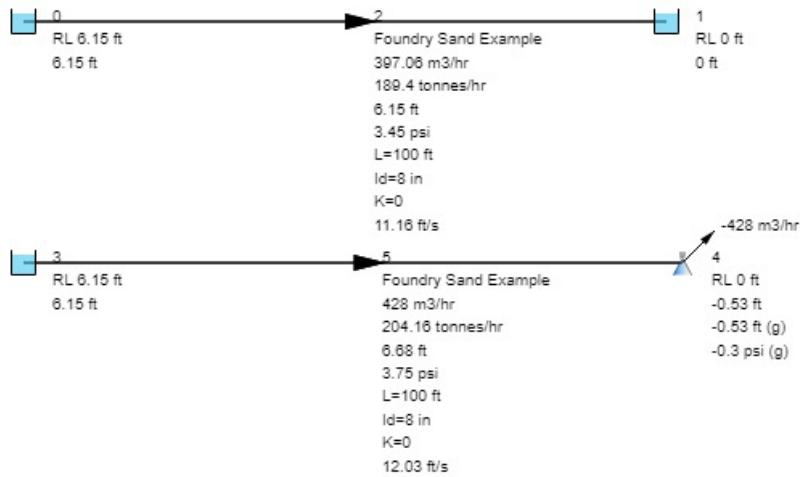
Settling slurry, sg of slurry is 1.30 and concentration by volume is 18%.

Convert 225 short tons per hour to metric tonnes per hour = 204.12 metric tph

Results	Publication	Helix delta-Q
Friction Loss	6.15 ft	6.68 ft

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GIW Slurry Manual ex pg 12

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Category	Demo Settling Slurry	Atmos. Press	100.19 psi
Description	GIW Slurry Manual ex pg 12		
Pipe No	2	From node to node	0 - 1
Description	Equipment No		
Slurry Type	Settling Slurry		
Slurry Description	Foundry Sand Example		
Slurry Reference	S1034		
SG Carrier Liquid Sl	1	Liquid Viscosity	1 cP
SG of Dry Solids	2.65	SG of Mixture	1.3
Conc. by Mass Cw	36.83 % w/w	Concentration by Vol	18 % v/v
Solids Flow Rate	189.4 tonnes/hr	Particle Size d50	0.24 in
Durand co-eff. FI	1.33	Settling Velocity VI	11.24 ft/s
Grading	Closely Graded	Settling Flow Rate	400.01 m3/hr
Pump Wear Factor Pw	1	Pump Head Ratio HR	0.9
Pipe Description	Steel Pipes AS1836 (ANSI B36.1)	Pipe Class	
Nominal Diameter	8 in	Inside Diameter	8 in
Outside Diameter	8.5 in	Pipe Length	100 ft
Pipe Roughness	0.0053 in	Allowable Press.	4140 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	397.06 m3/hr	Velocity	11.16 ft/s
Friction Loss	6.15 ft	Fitting Losses	0 ft
Slurry Losses	0.85 ft	Orifice Losses	0 ft
Fixed Head Loss	0 ft	Booster Pump Head	0 ft
Total Head Loss	6.15 ft	Total Pressure Drop	3.45 psi
Entry Total Head	6.15 ft	Exit Total Head	0 ft
Entry Gauge Head	0 ft	Exit Gauge Head	0 ft
Reynolds No.	895258.35	Friction Factor	0.01827 (Darcy f)

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Description	GIW Slurry Manual ex pg 12		
Pipe No	5	From node to node	3 - 4
Description	Equipment No		
Slurry Type	Settling Slurry		
Slurry Description	Foundry Sand Example		
Slurry Reference	S1034		
SG Carrier Liquid Sl	1	Liquid Viscosity	1 cP
SG of Dry Solids	2.65	SG of Mixture	1.3
Conc. by Mass Cw	36.83 % w/w	Concentration by Vol	18 % v/v
Solids Flow Rate	204.16 tonnes/hr	Particle Size d50	0.24 in
Durand co-eff. FI	1.33	Settling Velocity VI	11.24 ft/s
Grading	Closely Graded	Settling Flow Rate	400.01 m3/hr
Pump Wear Factor Pw	1	Pump Head Ratio HR	0.9
Pipe Description	Steel Pipes AS1836 (ANSI B36.1)	Pipe Class	
Nominal Diameter	8 in	Inside Diameter	8 in
Outside Diameter	8.5 in	Pipe Length	100 ft
Pipe Roughness	0.0053 in	Allowable Press.	4140 psi
Orifice Plate Dia	-	Non Return Valve	No
Total Fittings k	0	Total Fittings kf	0
Flow Rate	428 m3/hr	Velocity	12.03 ft/s
Friction Loss	6.68 ft	Fitting Losses	0 ft
Slurry Losses	0.53 ft	Orifice Losses	0 ft
Fixed Head Loss	0 ft	Booster Pump Head	0 ft
Total Head Loss	6.68 ft	Total Pressure Drop	3.75 psi
Entry Total Head	6.15 ft	Exit Total Head	-0.53 ft
Entry Gauge Head	0 ft	Exit Gauge Head	-0.53 ft
Reynolds No.	965028.55	Friction Factor	0.01824 (Darcy f)

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Node No	0	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	6.15 ft	Pressure Input	0 psi
Nozzle K value	-	Ext Flow (+In/-Out)	-
Int.(Gauge) Head	-	Int.(Gauge) Pressure	-
Total Node Head	6.15 ft		

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

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Node No	3	Node Type	Tank
Description		Equipment No	
Rel. Level (RL)	6.15 ft	Pressure Input	0 psi
Nozzle K value	-	Ext Flow (+In/-Out)	-
Int.(Gauge) Head	-	Int.(Gauge) Pressure	-
Total Node Head	6.15 ft		

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Node No	4	Node Type	Nozzle
Description		Equipment No	
Rel. Level (RL)	0 ft	Pressure Input	0 psi
Nozzle K value	0	Ext Flow (+In/-Out)	-428 m3/hr
Int.(Gauge) Head	-0.53 ft	Int.(Gauge) Pressure	-0.3 psi
Total Node Head	-0.53 ft		