

PIPING Analysis

729.838 hours

Project: Dummy Project

11-Dec-15

Total Hours for PFA+MTG of: PIPING, Fittings, Flanges, Valves, NDT, Supports

from MTO									Quantities				Weights				Joints	Dia-Inch	MTG VALVES		TOTAL Hours			0,9	
Location Type	Bore	Material Type	Piping Class	DIA.pipe avg	DIA.c/Fitt. avg	Spess. avg	FABRIC Weight	ERECT Weight	PIPES	Fittings	Flanges	Valves	PIPES	Fittings	Flanges	Valves			unit weight	ERECT	FABRIC	ERECT	FAB+ERE	FABRIC	ERECT
							3.690.901	6.015.944	79.772	34.476	8.067	5.453	4.426.916	908.448	208.943	416.755	89.023	353.014	1,3	14.435	299.906	253.541	567.882	188.941	378.941
PIPE RACK - Small Bore				INCH	INCH	mm	Kg	Kg	ml	num	num	num	Kg	Kg	Kg	Kg	num.	Dia - Inch	Kg	hours	hours	hours	hours	hours	hours
Pipe rack	Small	A.S.	BCB	0,9	0,9	5,8	-	2.973	768	197	-	-	2.813	160	-	-	670	626	-	-	-	549	549	-	549
Pipe rack	Small	A.S.	DCC	0,8	0,8	5,6	-	514	109	114	-	49	320	64	-	130	276	229	3	25	-	103	129	-	129
Pipe rack	Small	A.S.	ECB	-	-	-	-	17	-	4	-	3	-	1	-	15	8	-	5	2	-	0	2	-	2
Pipe rack	Small	A.S.	GDE	-	-	-	-	2.275	-	6	-	-	-	2.275	-	-	13	-	-	-	-	414	414	-	414
Pipe rack	Small	A.S.	HDE	0,8	0,8	7,8	-	406	22	27	-	21	80	23	-	302	64	50	14	30	-	19	49	-	49
PIPE RACK - Large Bore				-																					-
Pipe rack	LARGE	A.S.	BCB	9,5	9,6	8,0	-	32.726	569	40	11	2	29.107	1.493	600	1.526	166	1.591	763	18	-	1.541	1.559	-	1.559
Pipe rack	LARGE	A.S.	DCC	20,3	19,6	26,6	-	136.238	323	57	9	5	113.044	15.873	2.378	4.944	169	3.316	989	94	-	4.267	4.361	-	4.361
Pipe rack	LARGE	A.S.	ECB	21,0	20,3	27,4	-	89.800	211	30	8	5	73.588	9.995	3.094	3.123	97	1.975	625	72	-	2.817	2.888	-	2.888
Pipe rack	LARGE	A.S.	GDE	20,0	19,9	38,1	-	77.152	156	18	-	-	68.873	8.279	-	-	57	1.142	-	-	-	2.307	2.307	-	2.307
Pipe rack	LARGE	C.S.	ABA	2,7	2,6	7,4	-	14.962	1.101	130	58	-	13.253	1.528	181	-	469	1.230	-	-	-	739	739	-	739
Pipe rack	LARGE	C.S.	BBA	3,4	3,4	6,8	-	40.854	2.586	167	16	4	39.776	841	101	136	690	2.363	34	11	-	4.182	4.193	-	4.193
PLANT - Small Bore				-																					-
Plant	Small	A.S.	BCB	0,9	0,9	5,8	6.155	6.193	1.613	652	2	14	5.661	491	3	38	1.694	1.513	3	7	3.303	1.656	4.966	2.081	2.886
Plant	Small	A.S.	CCB	0,7	0,7	5,3	99	106	27	28	5	2	73	19	7	7	69	49	4	10	135	27	172	85	87
Plant	Small	A.S.	DCB	-	-	-	43	85	-	10	10	17	-	9	34	43	31	-	3	-	84	6	90	53	37
Plant	Small	A.S.	DCC	1,0	1,0	6,1	590	959	80	377	11	119	343	217	31	369	819	843	3	62	1.842	109	2.013	1.161	852
Plant	Small	A.S.	ECA	1,5	1,4	7,1	271	441	2	40	38	26	14	79	178	170	122	166	7	20	367	34	422	231	190
Plant	Small	A.S.	ECB	1,1	1,2	6,4	256	505	16	105	16	43	74	81	101	249	240	277	6	34	647	39	719	408	312
Plant	Small	A.S.	GDE	1,5	1,8	10,2	8.395	8.571	2	58	3	10	19	8.338	38	176	125	219	18	18	620	731	1.369	390	979
PLANT - Large Bore																									
Plant	LARGE	A.S.	BCB	22,5	22,7	9,5	4.210	4.210	26	5	1	-	3.439	681	90	-	13	285	-	-	229	170	399	145	255
Plant	LARGE	A.S.	DCB	24,0	24,0	17,5	19.872	19.872	44	24	-	-	11.230	8.642	-	-	52	1.252	-	-	1.400	698	2.098	882	1.216
Plant	LARGE	A.S.	DCC	26,1	26,0	28,7	9.126	9.126	15	5	2	-	6.646	1.898	582	-	13	341	-	-	884	214	1.098	557	541
Plant	LARGE	A.S.	ECA	31,4	31,4	31,5	212.186	212.186	232	63	6	-	138.997	67.891	5.298	-	148	4.637	-	-	11.954	4.413	16.367	7.531	8.836
Plant	LARGE	A.S.	ECB	22,6	22,7	28,2	88.449	88.449	174	38	2	-	66.550	19.986	1.914	-	89	2.011	-	-	5.192	2.300	7.492	3.271	4.221
Plant	LARGE	A.S.	GDE	20,0	20,0	38,1	77.273	108.673	148	19	2	4	65.341	10.072	1.860	31.400	48	956	7.850	86	3.156	2.009	5.251	1.988	3.263
Plant	Medium	A.S.	BCB	5,9	5,8	6,9	24.855	25.588	808	134	30	7	22.828	1.582	446	733	344	1.989	105	55	2.114	1.648	3.816	1.332	2.485
Plant	Medium	A.S.	CCB	7,3	7,2	7,7	767	767	9	11	3	-	365	224	178	-	26	191	-	-	179	45	223	113	111
Plant	Medium	A.S.	DCB	9,6	9,8	12,2	15.141	15.141	155	66	-	-	11.851	3.290	-	-	145	1.424	-	-	1.824	709	2.533	1.149	1.384
Plant	Medium	A.S.	DCC	7,6	7,4	12,7	45.990	49.794	491	145	37	12	37.029	7.481	1.480	3.804	361	2.668	317	94	4.496	2.152	6.742	2.833	3.910
Plant	Medium	A.S.	ECA	11,9	7,6	17,9	9.633	10.981	61	24	8	16	9.506	33	95	1.348	61	460	84	125	1.159	401	1.685	730	954
Plant	Medium	A.S.	ECB	9,2	8,5	14,6	7.914	8.864	62	16	8	4	6.210	1.072	633	950	44	375	238	31	496	350	877	312	564
Plant	Medium	A.S.	GDE	7,6	7,5	18,8	12.594	27.239	87	42	8	10	9.074	2.273	1.247	14.645	100	748	1.465	78	1.705	557	2.339	1.074	1.265
UNDERGROUND - Small																									
Underground	Small	C.S.	BBD	-	-	-	-	9	-	2	-	2	-	0	-	9	4	-	5	2	-	-	2	-	2
Underground	Small	C.S.	BBL	1,3	1,4	6,8	-	364	54	14	20	3	316	10	22	17	67	91	6	3	-	119	122	-	122
Underground	Small	C.S.	BBM	-	-	-	-	17	-	-	8	2	-	-	8	9	8	-	5	2	-	-	2	-	2
UNDERGROUND - Large Bore																									
Underground	LARGE	C.S.	BBD	14,0	13,6	9,1	-	267.138	3.193	174	119	-	258.059	4.995	4.084	-	884	12.055	-	-	-	12.155	12.155	-	12.155
Underground	LARGE	C.S.	BBL	32,6	30,7	11,0	-	287.960	996	94	35	4	253.993	32.075	1.674	219	357	10.954	55	11	-	10.474	10.485	-	10.485
Underground	LARGE	C.S.	BBM	8,3	8,0	8,6	-	24.165	494	39	10	2	23.536	434	90	104	154	1.225	52	6	-	1.408	1.413	-	1.413
Underground	LARGE	Iron	BBD	-	-	-	-	8.030	-	-	-	22	-	-	-	8.030	-	-	365	272	-	-	272	-	272

PIPING Analysis

Project: Dummy Project

PIPING Analysis																						0,9			
from MTO									Quantities				Weights				Joints	Dia-Inch	MTG VALVES		TOTAL Hours			70%	30%
Location Type	Bore	Material		DIA.pipe avg	DIA.c/Fitt. avg	Spess. avg	PFA Weight	MTG Weight	PIPES	Fittings	Flanges	Valves	PIPES	Fittings	Flanges	Valves			h/cad	MTG	PFA	MTG	PFA + MTG	PFA	MTG
			INCH	INCH	mm		Kg	Kg	ml	num	num	num	Kg	Kg	Kg	Kg	num.	Dia-Inch		hours	hours	hours	hours	hours	
Plant	Large	A.S.		25,2	9,4	11,1	425.591	488.591	665	160	13	6	303.781	112.066	9.744	63.000	376	9.778		216	23.717	10.179	34.112	14.942	19.170
Plant	Large	C.S.		28,7	4,9	2,4	1.089.166	1.133.373	3.114	630	210	39	771.568	279.234	38.364	44.207	1.658	47.616		399	38.605	34.514	73.517	24.321	49.196
Plant	Large	S.S.		27,3	11,7	9,2	544.029	561.952	999	238	43	6	380.850	138.021	25.158	17.923	583	15.666		70	20.503	14.640	35.214	12.917	22.297
Plant		Large		27,9	5,9	3,8	2.058.787	2.183.916	4.778	1.028	266	51	1.456.199	529.322	73.266	125.130	2.616	73.061	13,42	685	82.825	59.333	142.843	52.180	90.663
Plant	Medium	A.S.		7,2	7,0	11,1	127.735	171.164	1.730	471	96	61	104.605	17.616	5.538	43.404	1.154	8.387		476	13.168	6.261	19.905	8.296	11.609
Plant	Medium	C.S.		5,6	5,6	8,7	1.138.790	1.302.586	27.334	6.923	4.292	997	926.950	128.591	83.277	163.767	19.924	114.530		7.777	96.468	68.977	173.221	60.775	112.447
Plant	Medium	S.S.		7,3	6,9	7,3	230.507	254.580	3.998	1.236	537	185	178.486	34.152	17.868	24.073	3.293	21.965		1.443	20.028	12.588	34.059	12.618	21.441
Plant		Medium		5,9	5,9	8,7	1.497.032	1.728.329	33.062	8.630	4.925	1.243	1.210.042	180.360	106.683	231.244	24.370	144.882	7,80	9.695	129.664	87.826	227.185	81.688	145.497
Plant	Small	A.S.		0,9	0,7	4,6	19.903	23.166	1.876	1.488	96	377	6.705	12.701	497	3.263	3.596	3.451		406	8.405	3.220	12.031	5.295	6.736
Plant	Small	C.S.		1,1	1,0	6,3	100.088	108.913	15.697	18.251	1.706	2.702	80.761	16.811	2.516	8.824	43.173	45.904		1.403	72.303	17.107	90.813	45.551	45.263
Plant	Small	S.S.		1,2	1,2	4,5	5.565	7.057	815	1.816	314	425	3.606	1.206	753	1.491	4.291	5.017		217	6.522	1.114	7.853	4.109	3.744
Plant		Small		1,1	1,0	6,0	125.557	139.135	18.388	21.555	2.116	3.504	91.072	30.719	3.766	13.579	51.059	54.372	0,58	2.026	87.230	21.441	110.697	54.955	55.743
Pipe rack	Large	A.S.		15,5	9,7	12,7	-	335.916	1.259	145	28	12	284.611	35.640	6.072	9.593	490	8.025		183	-	10.932	11.116	-	11.116
Pipe rack	Large	C.S.		7,8	4,8	5,5	-	786.932	12.767	1.204	380	73	685.404	66.940	12.362	22.226	4.504	37.825		479	-	39.224	39.703	-	39.703
Pipe rack	Large	S.S.		11,9	6,8	4,7	-	170.151	1.531	124	30	12	143.138	24.654	625	1.734	482	6.321		80	-	7.278	7.358	-	7.358
Pipe rack		Large		8,9	5,4	6,0	-	1.292.999	15.557	1.473	438	97	1.113.153	127.234	19.059	33.552	5.476	52.171	7,65	742	-	57.434	58.176	-	58.176
Pipe rack	Small	A.S.		0,9	0,2	1,5	-	6.338	910	361	-	81	3.254	2.536	-	548	1.061	928		69	-	1.095	1.164	-	1.164
Pipe rack	Small	C.S.		1,1	0,1	0,4	-	7.302	1.102	1.060	101	230	5.513	751	198	841	2.694	3.027		129	-	1.176	1.305	-	1.305
Pipe rack	Small	S.S.		-	-	-	-	237	-	46	29	27	-	13	93	131	126	-		17	-	19	36	-	36
Pipe rack		Small		1,0	0,1	0,5	-	13.877	2.012	1.467	130	338	8.766	3.300	291	1.520	3.881	3.955	0,64	215	-	2.290	2.505	-	2.505
Underground	Large	A.S.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Underground	Large	C.S.		17,4	3,7	2,1	-	579.263	4.683	307	164	6	535.588	37.503	5.848	323	1.394	24.233		17	-	24.036	24.053	-	24.053
Underground	Large	S.S.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Underground		Large		17,4	3,0	1,7	-	579.263	4.683	307	164	6	535.588	37.503	5.848	323	1.394	24.233	2,86	17	-	24.036	24.053	-	24.053
Underground	Small	A.S.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Underground	Small	C.S.		1,3	0,0	0,0	-	390	54	16	28	7	316	10	29	35	80	91		6	-	119	125	-	125
Underground	Small	S.S.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Underground		Small		1,3	0,0	0,0	-	390	54	16	28	7	316	10	29	35	80	91	0,91	6	-	119	125	-	125
Various Items																									
Iron							-	9.843	-	-	-	74	-	-	-	9.843	-	-		662	-	-	662	-	662
Cu Alloy							-	339	-	-	-	89	-	-	-	339	-	-		317	-	-	317	-	317
Ni Alloy							9.526	12.970	1.238	-	-	44	11.780	-	-	1.190	146	249		69	187	1.061	1.318	118	1.200
VARIOUS (Bolts, Gaskets, Spectacles... calcolato da PIVOT) -----									54.883																
Total				4,0			3.690.901	6.015.944	79.772	34.476	8.067	5.453	4.426.916	908.448	208.943	416.755	89.023	353.014		4.740	299.906	253.541	567.882	188.941	378.941

PIPING Analisis

Project: Dummy Project

NDT												SUPPORTS								PAINTING			
% da Uff. Tecnico			Num. Lastre Unit			Num. Lastre Total			Hours TT			Normal8,4%				a Molla12%				Sviluppo	Total		
RT Sup.	MT Infer.	LP Inf.	RT Sup.	MT Infer.	LP Inf.	RT Sup.	MT Infer.	LP Infer.	Unit	in opera	Total	Unit	Tot. Pipe+Fitt	PFA unit	MTG unit	PFA Total	MTG Total	Unit	Tot. Pipe+Fitt	MTG unit		MTG Total	m2/ml
						64.448	17.064	59			43.353	448.171				51.091	40.784	-				-	51.600
%	%	%	nr.	nr.	nr.	nr.	nr.	nr.	h	k	hours	Kg	Kg	h/t	h/t	hours	hours	Kg	Kg	h/t	hours	m2/ml	m2
	100%		1			-	670	-	2,5	1,2	2.009	4	250	114	91	28	23			120	-	0,1	66
	100%		1			-	276	-	2,5	1,2	827	5	32	114	91	4	3			120	-	0,1	8
	100%		1			-	8	-	2,5	1,2	25	17	0	114	91	0	0			120	-	-	-
	100%		1			-	13	-	2,5	1,2	38	2.275	191	114	91	22	17			120	-	-	-
	100%		1			-	64	-	2,8	1,2	215	18	9	114	91	1	1			120	-	0,1	2
100%			3			498	-	-	4,8	1,2	957	58	2.570	114	91	293	234			120	-	0,8	500
100%			3			507	-	-	9,5	1,2	1.927	422	10.829	114	91	1.235	985			120	-	1,6	581
100%			4			390	-	-	9,5	1,2	1.110	426	7.021	114	91	800	639			120	-	1,6	393
100%			4			229	-	-	12,7	1,2	873	495	6.481	114	91	739	590			120	-	1,6	285
10%			3			141	-	-			-	14	1.242	114	91	142	113			120	-	0,2	265
10%			3			207	-	-			-	16	3.412	114	91	389	310			120	-	0,3	812
	100%		1			-	1.694	-	2,8	1,2	5.691	4	517	114	91	59	47			120	-	0,1	132
	100%		1			-	69	-	2,5	1,2	208	4	8	114	91	1	1			120	-	0,1	2
	100%		1			-	31	-	2,7	1,2	100	85	1	114	91	0	0			120	-	-	-
	100%		1			-	819	-	2,8	1,2	2.751	12	47	114	91	5	4			120	-	0,1	8
	100%		1			-	122	-	3,4	1,2	499	221	8	114	91	1	1			120	-	0,1	0
	100%		1			-	240	-	2,8	1,2	805	32	13	114	91	1	1			120	-	0,1	2
	100%		1			-	125	-	4,1	1,2	616	4.285	702	114	91	80	64			120	-	0,1	0
100%			3			38	-	-	9,1	1,2	137	162	346	114	91	39	31			120	-	1,8	54
100%			3			156	-	-	9,1	1,2	570	452	1.669	114	91	190	152			120	-	1,9	97
100%			3			39	-	-	10,4	1,2	163	608	718	114	91	82	65			120	-	2,1	36
100%			4			590	-	-	10,4	1,2	1.842	915	17.379	114	91	1.981	1.581			120	-	2,5	669
100%			4			355	-	-	10,4	1,2	1.108	508	7.269	114	91	829	661			120	-	1,8	362
100%			4			191	-	-	11,6	1,2	666	734	6.335	114	91	722	576			120	-	1,6	271
10%			3			103	-	-	4,3	1,2	1.774	32	2.050	114	91	234	187			120	-	0,5	429
10%			3			8	-	-	4,8	1,2	152	85	49	114	91	6	5			120	-	0,6	6
100%			3			434	-	-	6,0	1,2	1.043	98	1.272	114	91	145	116			120	-	0,8	140
100%			4			1.445	-	-	5,4	1,2	2.340	101	3.739	114	91	426	340			120	-	0,6	333
100%			4			243	-	-	6,9	1,2	504	180	801	114	91	91	73			120	-	0,6	42
100%			4			176	-	-	6,2	1,2	328	143	612	114	91	70	56			120	-	0,7	48
100%			4			399	-	-	6,2	1,2	742	313	953	114	91	109	87			120	-	0,6	60
10%			3			1	-	-			-	9	0	114	91	0	0			120	-	-	-
100%			4			270	-	-			-	7	27	114	91	3	2			120	-	0,1	7
100%			3			24	-	-			-	17	-	114	91	-	-			120	-	-	-
10%			3			265	-	-			-	84	22.097	114	91	2.519	2.011			120	-	1,1	3.996
100%			4			1.428	-	-			-	289	24.030	114	91	2.739	2.187			120	-	2,4	2.804
100%			4			615	-	-			-	49	2.013	114	91	230	183			120	-	0,6	361
10%			3			-	-	-			-	8.030	-	114	91	-	-			120	-	-	-

NDT											
						Num. Lastre Total			Hours TT		
						RT Sup.	MT Infer.	LP Infer.			TT
						nr.	nr.	nr.			hours
						1.411	-	-			4.675
						2.089	-	-			5.365
						1.534	-	-			2.648
						5.034	-	-			12.688
						3.053	-	-			7.490
						34.967	-	-			2.440
						7.013	-	-			-
						45.033	-	-			9.930
						-	3.596	-			12.334
						-	10.542	-			-
						-	-	-			-
						-	14.138	-			12.334
						1.624	-	-			4.868
						8.482	-	-			315
						1.511	-	-			-
						11.617	-	-			5.183
						-	1.061	-			3.219
						-	1.789	-			-
						-	-	59			-
						-	2.850	59			3.219
						-	-	-			-
						2.307	-	-			-
						-	-	-			-
						2.307	-	-			-
						-	-	-			-
						295	-	-			-
						-	-	-			-
						295	-	-			-
						-	-	-			-
						-	-	-			-
						162	77	-			-
Totale						64.448	17.064	59			43.353

SUPPORTS									
Normali						8,4%			
						a Molla			
	Weight Pipe+Fitt			PFA Total	MTG Total				
Kg				hours	hours				
34.931				3.982	3.179				
88.267				10.062	8.032				
43.585				4.969	3.966				
166.784				19.013	15.177				
10.267				1.170	934				
88.665				10.108	8.069				
17.862				2.036	1.625				
116.794				13.314	10.628				
1.630				186	148				
8.196				934	746				
404				46	37				
10.230				1.166	931				
26.901				3.067	2.448				
63.197				7.204	5.751				
14.095				1.607	1.283				
104.193				11.878	9.482				
486				55	44				
526				60	48				
1				0	0				
1.014				116	92				
-				-	-				
48.140				5.488	4.381				
-				-	-				
48.140				5.488	4.381				
-				-	-				
27				3	2				
-				-	-				
27				3	2				
-				-	-				
-				-	-				
990				113	90				
448.171				51.091	40.784	205 h/t			

PAINTING	
	Totale
	m2
	1.540
	8.194
	2.508
	12.242
	1.104
	13.785
	2.584
	17.473
	154
	1.530
	92
	1.775
	1.759
	9.043
	1.672
	12.474
	76
	121
	-
	198
	-
	7.161
	-
	7.161
	-
	7
	-
	7
	-
	-
	271
	51.600