NOVEL APPROACH FOR HDPE PIPELINES DEPLOYMENT

Proudly the Project Representative in the Australia Market

SUMMARY

- HDPE PIPING MTO SUMMARY
- METHODOLOGY OBJECTIVES
- TECHNOLOGY OVERVIEW
- HIGH LEVEL COMPARISON – Standard Vs TUBI Method
- CONCLUSIONS

HDPE PIPING MTO SUMMARY

PIPING MTO:

Size	Length (m)	TUBI
DN63 PN6.3	1,077	$ 1,714.97
DN63 PN8	2,660	$ 5,084.18
DN63 PN10	3,415	$ 7,613.07
DN63 PN12.5	6,858	$ 19,659.71
DN63 PN16	3,630	$ 12,718.95
DN75 PN6.3	197	$ 439.27
DN75 PN8	1,099	$ 2,799.04
DN75 PN10	429	$ 1,365.74
DN75 PN12.5	1,922	$ 7,344.75
DN75 PN16	1,431	$ 6,837.54
DN75 PN20	1,284	$ 7,361.14
DN90 PN6.3	1,094	$ 3,483.13
DN90 PN8	876	$ 3,349.30
DN90 PN10	2,930	$ 13,997.40
DN90 PN12.5	869	$ 4,984.68
DN90 PN16	3,050	$ 17,486.83
DN90 PN20	2,308	$ 19,109.19
DN90 PN25	444	$ 4,243.22

Size	Length (m)	TUBI
DN110 PN6.3	166	$ 861.05
DN110 PN8	1,193	$ 7,431.97
DN110 PN10	3,311	$ 25,200.79
DN110 PN12.5	713	$ 6,416.16
DN110 PN16	2,248	$ 24,886.69
DN110 PN20	760	$ 9,992.60
DN110 PN25	1,646	$ 25,622.61
DN125 PN6.3	1,293	$ 8,051.60
DN125 PN8	1,326	$ 10,550.20
DN125 PN10	1,399	$ 13,548.90
DN125 PN12.5	620	$ 7,297.60
DN125 PN16	3,316	$ 47,042.13
DN125 PN20	1,651	$ 27,990.15
DN140 PN8	2,292	$ 22,205.83
DN140 PN10	4,898	$ 59,315.84
DN140 PN12.5	1,386	$ 20,147.51
DN140 PN16	4,813	$ 84,932.29

Size	Length (m)	TUBI
DN160 PN6.3	2,264	$ 24,278.81
DN160 PN8	4,664	$ 59,707.90
DN160 PN10	5,489	$ 85,457.22
DN160 PN12.5	1,668	$ 31,744.27
DN160 PN16	6,786	$ 157,313.26
DN160 PN20	4,097	$ 113,411.33
DN160 PN25	816	$ 26,816.40
DN180 PN6.3	216	$ 2,835.02
DN180 PN8	2,399	$ 39,008.25
DN180 PN10	5,938	$ 117,109.78
DN180 PN12.5	6,930	$ 167,833.00
DN180 PN16	5,759	$ 167,375.42
DN200 PN6.3	2,052	$ 33,373.34
DN200 PN8	365	$ 7,334.27
DN200 PN10	2,072	$ 50,911.00
DN200 PN12.5	1,930	$ 57,431.26
DN200 PN16	2,718	$ 98,739.64

HDPE PIPING MTO SUMMARY

PIPING MTO:

Size	Length (m)	TUBI
DN225 PN8	1,429	$ 36,094.79
DN225 PN10	3,472	$ 108,115.29
DN225 PN12.5	2,427	$ 92,383.83
DN225 PN16	5,135	$ 236,293.71
DN225 PN20	585	$ 32,004.41
DN250 PN6.3	430	$ 10,871.56
DN250 PN8	6,225	$ 193,842.91
DN250 PN10	3,624	$ 137,943.71
DN250 PN12.5	1,125	$ 52,539.96
DN250 PN16	962	$ 54,254.00
DN250 PN20	506	$ 34,111.36
DN250 PN25	1,020	$ 81,845.27
DN280 PN6.3	2,551	$ 81,208.81
DN280 PN8	1,593	$ 62,290.09
DN280 PN10	1,024	$ 49,235.43
DN280 PN12.5	3,933	$ 229,973.56
DN280 PN16	10,057	$ 709,892.72
DN280 PN20	662	$ 56,362.27
DN280 PN25	511	$ 51,468.91

Size	Length (m)	TUBI
DN315 PN6.3	429	$ 17,362.23
DN315 PN8	980	$ 48,506.89
DN315 PN12.5	718	$ 53,196.22
DN315 PN16	5,435	$ 487,013.37
DN315 PN20	2,958	$ 318,315.86
DN355 PN6.3	1,324	$ 67,337.50
DN355 PN8	1,646	$ 103,060.78
DN355 PN10	2,472	$ 190,746.70
DN355 PN12.5	2,518	$ 236,928.26
DN355 PN16	8,123	$ 921,870.72
DN355 PN20	814	$ 111,012.05
DN500 PN6.3	2,108	$ 212,944.33
DN500 PN8	3,487	$ 434,373.57
DN500 PN10	5,205	$ 792,443.67
DN500 PN12.5	2,425	$ 451,337.03
DN560 PN6.3	1,976	$ 250,194.15
DN560 PN8	91	$ 14,257.69

Size	Length (m)	TUBI
DN630 PN6.3	5,250	$ 841,045.10
DN630 PN8	1,141	$ 224,704.21
DN630 PN10	1,594	$ 385,634.39
DN630 PN12.5	441	$ 130,224.33
DN710 PN6.3	3,756	$ 765,449.59
DN710 PN10	464	$ 142,695.90
DN800 PN8	2,454	$ 780,407.67
DN800 PN10	3,041	$ 1,186,905.63
DN800 PN12.5	2,420	$ 1,152,246.55
DN800 PN16	313	$ 180,598.88
DN900 PN6.3	2,915	$ 951,030.33
DN900 PN8	510	$ 205,049.28
DN900 PN10	580.93	$ 287,635.10
Tot.	**239627.39**	**$ 16,037,026.73**

NOVEL METHODOLOGY OBJECTIVES

- ✓ Reducing Transport Costs
- ✓ Reducing Total number of joints required on Project
- ✓ Improving Site Productivity
- ✓ Reducing Mob/Demob Cost for personnel and equipment
- ✓ Reducing Project Risks

TECHNOLOGIES OVERVIEW

HDPE Seamless Technology

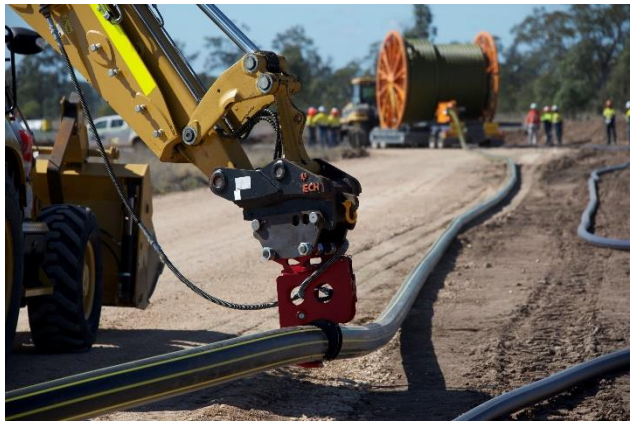
TUBI HDPE Seamless Technology can offer a unique novel approach for **the deployment of pipelines** which foresee the ability to extrude **SEAMLESS** HDPE pipe directly on site **reducing as such consistently number of joints and welds required to deliver Pipeline Work and consequently Project Costs and Risks.**

TECHNOLOGIES OVERVIEW

HDPE Seamless Technology

New Zealand Project - Facts

- ✓ Completion target 30th Jan 2018
- ✓ Total of 6000 Tonnes of Pipe Manufactured – DN125 up to 710 (majority of PN)
- ✓ 8 months continuous operations
- ✓ DN 250 down – average of 20 t / day
- ✓ DN 280 above – average of 27 t / day
- ✓ 24 Hours to change line
- ✓ Only 2 days to set up plant
- ✓ Reeling option depending on PN and DN up to 900 m sections
- ✓ DN 315 above – section deployment in 100 m and over.
- ✓ 100 % x-Ray quality control Technology



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HIGH LEVEL COMPARISON – Standard Vs TUBI Method

HDPE / Standard Method (Coils and 21lm)		
Qty of joints with Coils and 21m lghts	10121.00	joints
Lm	239627.39	lm
Total Joint Cost	$ 4,785,775.95	AUD
Supply	$ 14,773,502.30	AUD
Tot. Stringing Cost	$ 397,875.00	AUD
Transport circa 250 trailers	$ 237,000.00	AUD
Tot. Project Man Hours	31711.28	hrs
Gran. TOT	**$ 20,194,153.25**	AUD

Labour Rate A$100 P/h 3 ppl per crew. Note added 20ph to incl tool rental
Equip A$100 /hr

HIGH LEVEL COMPARISON – Standard Vs TUBI Method

HDPE / TUBI Method (Coils, 250, 200, 150 and 100 lm)		
Qty of joints with Coils / 200 , 150 and 100m lghts	1828.00	joints
Lm	239627.39	lm
Total Joint Cost	$ 828,147.00	AUD
Supply	$ 16,037,026.73	AUD
Transport included	*included*	
Tot. Stringing Cost	$ 111,750.00	AUD
Tot. Project Man Hours	5865.19	hrs
Gran. TOT	**$ 16,976,923.73**	AUD

Labour Rate A$100 P/h 3 ppl per crew. Note added 20ph to incl tool rental
Equip A$100 /hr

- ✓ Reducing 80% of Total number of joints required on HDPE Project

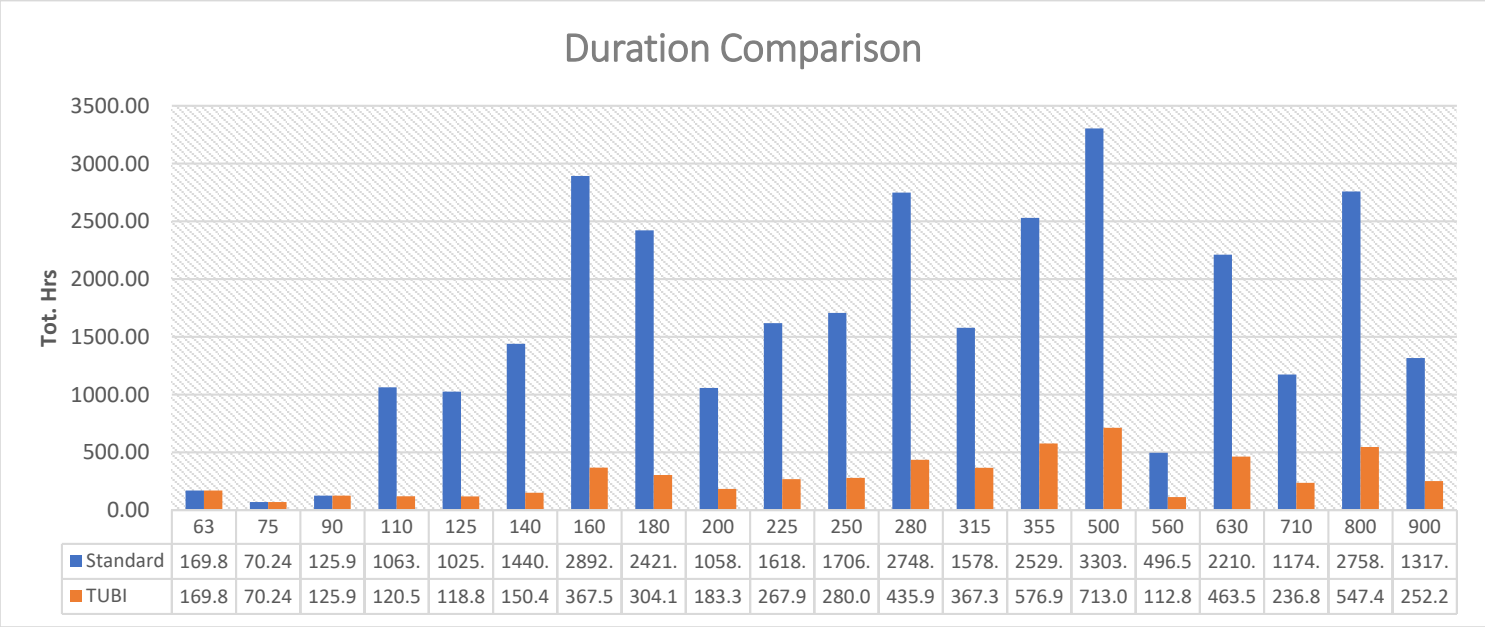
HIGH LEVEL COMPARISON – Standard Vs TUBI Method

DURATIONS	63	75	90	110	125	140	160	180	200	225
Standard										
Qty of joints with Coild and 21m lghts	179	66	119	481	460	641	1232	1014	437	624
Time in Hrs fusion	169.85	70.24	125.99	1063.68	1025.46	1440.65	2892.14	2421.90	1058.00	1618.34
TUBI										
Qty of joints Coils, 250, 200, 150 and 100m lghts	179	66	119	43	42	56	133	108	63	90
Time in Hrs fusion	169.85	70.24	125.99	120.50	118.84	150.47	367.57	304.11	183.36	267.95

DURATIONS	250	280	315	355	500	560	630	710	800	900
Standard										
Qty of joints with Coild and 21m lghts	665	971	503	807	632	100	403	202	393	192
Time in Hrs fusion	1706.75	2748.04	1578.55	2529.64	3303.83	496.54	2210.76	1174.63	2758.96	1317.33
TUBI										
Qty of joints Coils, 250, 200, 150 and 100m lghts	96	140	108	173	135	21	86	43	85	42
Time in Hrs fusion	280.08	435.92	367.38	576.99	713.03	112.81	463.52	236.89	547.42	252.27

HIGH LEVEL COMPARISON – Standard Vs TUBI Method

Difference	Savings	
Standard vs TUBI	**25846.09**	hrs
Capex	**$ 3,217,229.52**	AUD



	63	75	90	110	125	140	160	180	200	225	250	280	315	355	500	560	630	710	800	900
Standard	169.8	70.24	125.9	1063.	1025.	1440.	2892.	2421.	1058.	1618.	1706.	2748.	1578.	2529.	3303.	496.5	2210.	1174.	2758.	1317.
TUBI	169.8	70.24	125.9	120.5	118.8	150.4	367.5	304.1	183.3	267.9	280.0	435.9	367.3	576.9	713.0	112.8	463.5	236.8	547.4	252.2

- ✓ Improving Site Productivity
- ✓ Reducing Project Risks

CONCLUSIONS

- Methodology objectives achieved by reduction of tot. Direct Man hours required for project delivery
- High level cost reduction to be further investigated based on the below:
  - Expected Mob/Demob Equipment figure reduction due to reduced welding requirements (less equipment required on site for less time)
  - Reduced Accommodations and Flights requirements for Project Personnel (less overall personnel required to deliver pipelines projects)

THANK YOU