

## Appendix A

The statistical results of cutting forces for thin wall samples in a vertical orientation are presented in Table A1, comparing titanium alloy and nickel alloy.

**Table A1.** Summary of statistical analysis of cutting forces

Material	Side	Sample	Mean	Median	Min.	Max.	Var.	Std. Dev.	Std. Error
Titanium alloy Ti6Al4V	Input side	T1_1	121.55	121.33	112.22	133.46	45.16	6.72	2.38
		T2_1	114.27	110.75	109.48	136.85	85.52	9.25	3.27
		T3_1	552.77	554.40	535.33	566.30	75.46	8.69	3.07
		T4_1	133.95	133.06	128.47	140.11	13.48	3.67	1.30
		T5_1	132.47	132.78	126.94	137.16	8.14	2.85	1.01
		T6_1	374.26	373.97	357.80	392.45	139.07	11.79	4.17
	Output side	T1_1	125.36	124.82	119.74	130.86	9.96	3.16	1.12
		T2_1	120.91	120.75	116.27	128.36	12.81	3.58	1.27
		T3_1	503.90	509.30	468.10	533.45	639.47	25.29	8.94
		T4_1	134.01	134.89	122.44	139.30	25.18	5.02	1.77
		T5_1	133.16	134.31	122.72	138.42	23.18	4.81	1.70
		T6_1	402.42	408.57	355.98	425.52	446.26	21.12	7.47
Nickel alloy Inconel 625	Input side	N1_1	345.65	345.98	330.06	357.07	72.48	8.51	3.01
		N2_1	365.22	367.11	344.04	373.59	87.80	9.37	3.31
		N3_1	420.55	422.17	397.06	437.15	128.45	11.33	4.01
		N4_1	386.68	391.33	364.37	397.88	157.60	12.55	4.44
		N5_1	367.74	372.07	349.85	376.71	110.45	10.51	3.72
		N6_1	466.68	465.66	459.03	477.68	35.29	5.94	2.10
	Output side	N1_1	351.45	346.94	343.20	362.38	73.61	8.58	3.03
		N2_1	387.53	386.60	376.41	397.40	52.00	7.21	2.55
		N3_1	428.40	427.87	416.05	442.27	78.21	8.84	3.13
		N4_1	363.94	381.78	236.99	388.76	2658.94	51.56	18.23
		N5_1	347.01	364.96	233.94	370.27	2126.12	46.11	16.30
		N6_1	476.64	477.64	466.26	485.34	32.99	5.74	2.03