TF Automation
Best Solutions

DESIGN & BUILD
SPECIAL PURPOSE MACHINERY

PRODUCTION RATE CONVERSION CHART

ANNUM	MONTH	WEEK	DAY	HOUR	MIN	SECOND
20M	1.66M	384,600	83,680	10,460	209	3.5 comps/sec
15M	1.25M	288,500	62,760	7,840	157	2.6 comps/sec
10M	833,000	192,300	41,840	5,230	104	1.7 comps/sec
8M	667,000	153,840	33,470	4,180	83	1.4 comps/sec
6M	500,000	115,390	25,100	3,140	63	1.0 comps/sec
4M	333,000	76,920	16,740	2,090	42	1.5 secs/comp
3M	250,000	57,690	12,550	1,570	31	2.0 secs/comp
2M	167,000	38,460	8,370	1,050	21	3.0 secs/comp
1.66M	138,000	31,920	6,940	870	17	3.5 secs/comp
1.33M	111,000	25,570	5,560	700	14	4.2 secs/comp
1M	83,300	19,230	4,180	520	10	6.0 secs/comp
750,000	62,500	14,420	3,140	390	8	7.5 secs/comp
500,000	41,700	9,320	2,090	260	5	12 secs/comp
375,000	31,250	7,210	1,570	200	4	15 secs/comp
250,000	20,800	4,810	1,050	130	2.6	23 secs/comp
150,000	12,500	2,880	630	80	1.6	38 secs/comp
100,000	8,300	1,920	420	50	1.0	60 secs/comp

The TF Automation Chart is based on

Quality being at zero defect level

Year = 239 days }
Month = 20 days }
Week = 4.6 days }

Allowing for 8 days bank holiday
14 days shutdown
104 days weekends

Day = 8 hours
Hour = 50 minutes
Minute = 60 seconds

Allowing for 10 minutes non-productive work per hour

GET IN TOUCH

TF Automation is a team of dedicated designers and engineers working with manufacturers across a wide range of industries on small to medium sized process automation projects. With over 40 years' experience, we have the ability to assess and understand the needs and requirements of each individual project and customer ensuring the best solution.

For more information or to discuss your next project, please contact us!

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PRODUCTION TIME CONVERSION CHART

Sec. for 1cycle*	Cycles/min at an efficiency factory of:**				Cycles/hour at an efficiency factory of:**				Cycles/year at Thousand (at 2000 working hours):**					Sec. for 1cycle*	Min for 100 cycles at an efficiency factor of: **				Hours for 1000 cycles (efficiency factor of): **			
	ή = 1	ή = 0.833 (5/6)	ή = 0.75 (3/4)	ή = 0.66 (2/3)	ή = 1	ή = 0.833 (5/6)	ή = 0.75 (3/4)	ή = 0.66 (2/3)	ή = 1	ή = 0.833 (5/6)	ή = 0.75 (3/4)	ή = 0.66 (2/3)	ή = 0.50 (1/2)		ή = 1	ή = 0.833 (5/6)	ή = 0.75 (3/4)	ή = 0.66 (2/3)	ή = 1	ή = 0.833 (5/6)	ή = 0.75 (3/4)	ή = 0.66 (2/3)
120	0.50	0.42	0.38	0.33	30	25	23	20	60	50	45	40	30	120	200	240	267	303	33.3	40	44	50
100	0.60	0.50	0.45	0.40	36	30	27	24	72	60	54	48	36	100	167	200	223	253	27.8	33	37	42
90	0.66	0.55	0.50	0.44	40	33	30	26	80	67	60	53	40	90	150	180	200	227	25	30	33	38
80	0.75	0.62	0.56	0.50	45	37	34	30	90	75	68	59	45	80	133	160	177	202	22.2	27	30	34
70	0.86	0.72	0.65	0.57	51	42	38	34	103	86	77	68	51.5	70	117	140	156	177	19.4	23	26	29
60	1.00	0.83	0.75	0.66	60	50	45	40	120	100	90	79	60	60	100	120	133	152	16.7	20	22	25
50	1.20	1.00	0.90	0.79	72	60	54	48	144	120	108	95	72	50	83	100	111	126	13.9	17	19	21
45	1.33	1.11	1.00	0.88	80	67	60	53	160	133	120	106	80	45	75	90	100	114	12.5	15	17	19
40	1.50	1.25	1.13	0.99	90	75	68	59	180	150	135	119	90	40	67	80	89	102	11.1	13	15	17
35	1.71	1.42	1.28	1.13	102	85	77	67	206	172	155	136	103	35	58	70	77	88	9.72	12	13	15
30	2.00	1.67	1.50	1.32	120	100	90	79	240	200	180	158	120	30	50	60	67	76	8.33	10	11	13
25	2.40	2.00	1.80	1.58	144	120	108	95	288	240	216	190	144	25	42	50	56	64	6.94	8.33	9.25	10.52
20	3.00	2.50	2.25	1.98	180	150	135	119	360	300	270	238	180	20	33	40	44	50	5.55	6.66	7.40	8.41
18	3.33	2.77	2.50	2.20	200	167	150	132	400	333	300	264	200	18	30	36	40	45	5	6.00	6.67	7.58
16	3.75	3.12	2.81	2.48	225	187	169	149	450	375	338	297	225	16	27	32	36	41	4.44	5.33	5.92	6.73
14	4.29	3.57	3.22	2.83	257	214	193	170	514	428	386	339	257	14	23	28	31	35	3.89	4.67	5.19	5.89
12	5.00	4.17	3.75	3.30	300	250	225	198	600	500	450	396	300	12	20	24	27	30	3.33	4.00	4.44	5.05
10	6.00	5.00	4.50	3.96	360	300	270	238	720	600	540	475	360	10	17	20	23	26	2.78	3.34	3.71	4.21
9	6.67	5.56	5.00	4.40	400	333	300	264	800	666	600	528	400	9	15	18	20	23	2.5	3.00	3.33	3.79
8	7.50	6.25	5.63	4.95	450	375	338	297	900	750	675	594	450	8	13	16	17	20	2.22	2.67	2.96	3.36
7	8.57	7.14	6.43	5.66	514	428	386	339	1028	856	771	678	514	7	12	14	16	18	1.94	2.33	2.59	2.94
6	10.00	8.33	7.50	6.60	600	500	450	396	1200	1,000	900	792	600	6	10	12	13	15	1.67	2.00	2.23	2.53
5	12.00	10.00	9.00	7.92	720	600	540	475	1440	1,200	1,080	950	720	5	8.3	10	11	13	1.39	1.67	1.85	2.11
4.5	13.33	11.10	10.00	8.80	800	666	600	528	1600	1,333	1,200	1,056	800	4.5	7.5	9.00	10.00	11.36	1.25	1.50	1.67	1.89
4	15.00	12.50	11.25	9.90	900	750	675	594	1800	1,499	1,350	1,188	900	4	6.7	8.04	8.93	10.15	1.11	1.33	1.48	1.68
3.5	17.14	14.28	12.86	11.31	1028	856	771	678	2057	1,713	1,543	1,358	1028.5	3.5	5.8	6.96	7.73	8.79	0.97	1.16	1.29	1.47
3	20.00	16.66	15.00	13.20	1200	1,000	900	792	2400	1,999	1,800	1,584	1200	3	5	6.00	6.67	7.58	0.83	1.00	1.11	1.26
2.5	24.00	19.99	18.00	15.84	1440	1,200	1,080	950	2880	2,399	2,160	1,901	1440	2.5	4.2	5.04	5.60	6.36	0.69	0.83	0.92	1.05
2	30.00	24.99	22.50	19.80	1800	1,499	1,350	1,188	3600	2,999	2,700	2,376	1800	2	3.3	3.96	4.40	5.00	0.56	0.67	0.75	0.85
1.8	33.33	27.76	25.00	22.00	2000	1,666	1,500	1,320	4000	3,332	3,000	2,640	2000	1.8	3	3.60	4.00	4.55	0.5	0.60	0.67	0.76
1.6	37.50	31.24	28.13	24.75	2250	1,874	1,688	1,485	4500	3,749	3,375	2,970	2250	1.6	2.7	3.24	3.60	4.09	0.44	0.53	0.59	0.67
1.4	42.86	35.70	32.15	28.29	2571	2,142	1,928	1,697	5143	4,284	3,857	3,394	2571.5	1.4	2.3	2.76	3.07	3.48	0.39	0.47	0.52	0.59
1.2	50.00	41.65	37.50	33.00	3000	2,499	2,250	1,980	6000	4,998	4,500	3,960	3000	1.2	2	2.40	2.67	3.03	0.33	0.40	0.44	0.50
1	60.00	49.98	45.00	39.60	3600	2,999	2,700	2,376	7200	5,998	5,400	4,752	3600	1	1.7	2.04	2.27	2.58	0.28	0.34	0.37	0.42

*One cycle comprises a production operation including inserting and removing respectively indexing on automatic machines. With multiple electrodes in one tool the quantity of produced articles is a result of cycles multiplied by multiple electrodes in one tool.

** Explanation of efficiency:

At a factor ή of 0.833 the effective production time per hour would be 50 minutes; at ή 0.75 = 45 min. and at ή 0.66 = 40 min.

The efficiency of an automatic machine becomes unfavourable as soon as interruptions are necessary due to frequent tool changes or defects.

When considering production per year, adjustment, changeover as well as testing and maintenance have to be taken into account.

Various values were rounded up to conform with practice.