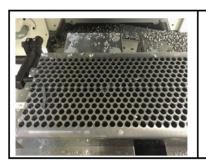


Tool Life Testing

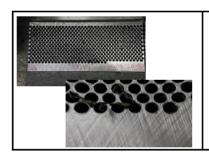
SIO Case Study # 1: ROBODRILL - ROBODRILL Continuous Drilling



ROBODRILL Continuous Drilling # 1										
Machine		ROBODRILL α-DI4MiB5 (FANUC)								
Coolant		Water Soluble								
Tool		AD-4D Ø6.1 (OSG)								
Process Notes	Outer coolant nozzles only, hole depth 30 mm									
Workpiece	F-S55C (406)									
SIO	RP M	Feed Rate	Cut per to oth	Tool Life	Drilling Process	Evaluation				
	(min-1)	(mm/min)	(mm/rad)	(m m)						
With out SIO (C lien t's original process conditions)	2700	377	0.07	69,000	Step	-				
W ith S 10	3500	565	0.16	116,000	Non-step (continuous)	Excellent				
Rate of Improvement	1.3 times	1.5 times	2.3 times	1.7 times						

Note: Even after increasing speed and feed rates from baseline tool life was improved by 1.7 times.

SIO Case Study # 2 : ROBODRILL - ROBODRILL Continuous Drilling



ROBODRILL Continuous Drilling # 2										
Machine	ROBODRILL α-DI4MiB5 (FANUC)									
Coolant		Water Soluble								
Tool	EX-SUS-GDS \$\phi 6.0 (OSG)									
Process Notes	Outer coolant nozzles only, hole depth 25 mm									
Workpiece	SS400 (280 ×150 ×25)									
\$10	RP M	Feed Rate	Cut per tooth	Number of holes before	Tool Life	Evaluation				
	(min-l)	(mm/min)	(mm/rad)	failure	(mm)	Evaluation				
With out SIO (Client's original process conditions)	1900	560	0.19	-	-	-				
Without SIO	3800	1120	0.38	8 8	2200	-				
W ith \$10	3800	1120	0.38	6 4 5	16125	Excellent				
Rate of Improvement	2 times	2 times	2 times	7.32 times	7.32 times					

Note: Tool life improved over <u>7 times</u> baseline and process conditions also improved (better productivity)