

Test Date: 10.04.2019  
 Location: SIO R&D Base  
 Machine: ROBODRILL α-D14MiB5  
 Tool: OSG ADO-SUS-3D Φ12  
 Workpiece: SUS304 (150 x 150 x 35 mm, L x W x H)  
 Drilled 72 holes per plate (9 x 8)  
 Processing Conditions: Center Through-Spindle Coolant only, CT (1.5M)  
 Measured value: Center Through (1.5M) only

**★ Test Results Table - Main Spindle Load Meter Percentage**

Test Run	SIO Mixer	Spindle Speed, S (RPM)	Feed Rate, F (mm/min)	Average Spindle Load	RMS	Max	Min	Ratio
① Ref Std	No	2100	525	63.121	78.555	208.0	0.000	100.0%
② 20% up	Yes	2520	630	46.986	59.712	226.0	0.000	74.4%
③ 40% up	Yes	2940	735	50.440	64.136	225.0	0.000	80.0%
④ 60% up	Yes	3360	840	56.469	72.467	230.0	0.000	89.4%
⑤ 80% up	Yes	3780	945	62.046	80.178	220.0	0.000	98.2%

**Notes:**

- Reference Standard “① Ref Std” is S = 2100 RPM and F = 525 mm/min without SIO Mixer
- All other conditions “② 20% up” to “⑤ 80% up” with SIO Mixer installed
- Percentage improvement in performance (ex. 20% up) refers to increases in both S (Spindle Speed, RPM) and F (Feed Rate, mm/min)
- “Ratio” is the ratio of each “Average Spindle Load” in relation to the Reference Standard “① Ref Std” condition, with 100% being equal to reference conditions load

**Experiment Photo (showing ⑤ 80% up run):**

**Conclusion:**

Installing the SIO Mixer resulted in 80% increase of both Spindle Speed (RPM) and Feed Rate (mm/min) while maintaining the same Average Spindle Load as the reference without SIO Mixer installation.