Thread Roll Die Project

Current State

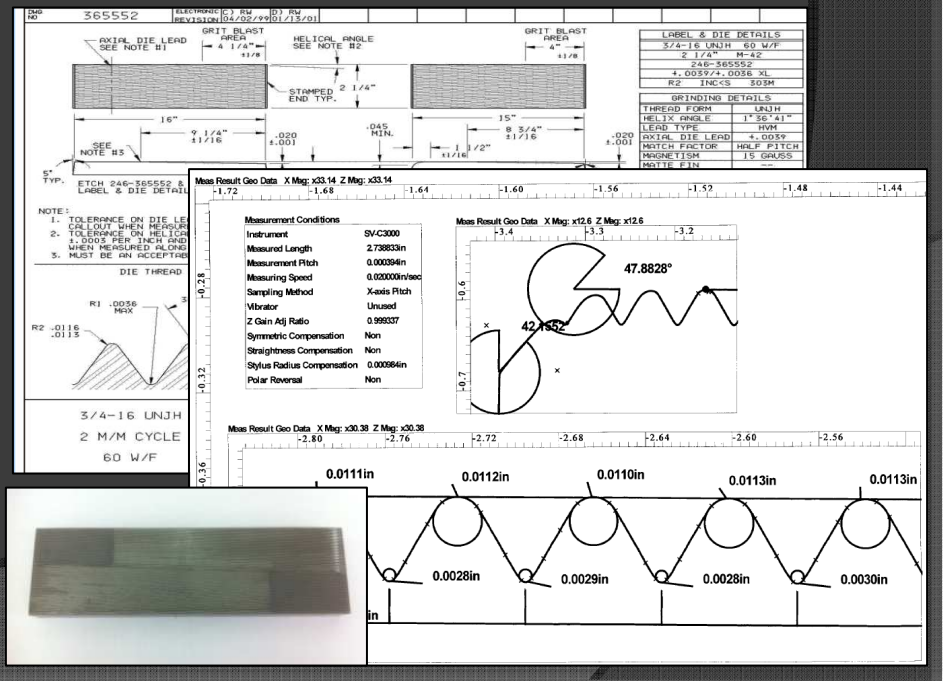
- All bolts at SPS Technologies Jenkintown have threads rolled on with thread roll dies
- The dies used are either circular or flat dies with the majority being flat
- The flat dies are being produced at PTG in Ireland
- SPS identifies the characteristics required on CAD prints that are sent to PTG to be manufactured
- At the current time PTG and SPS do not have a method or machinery that can accurately measure thread form characteristics

Desired State

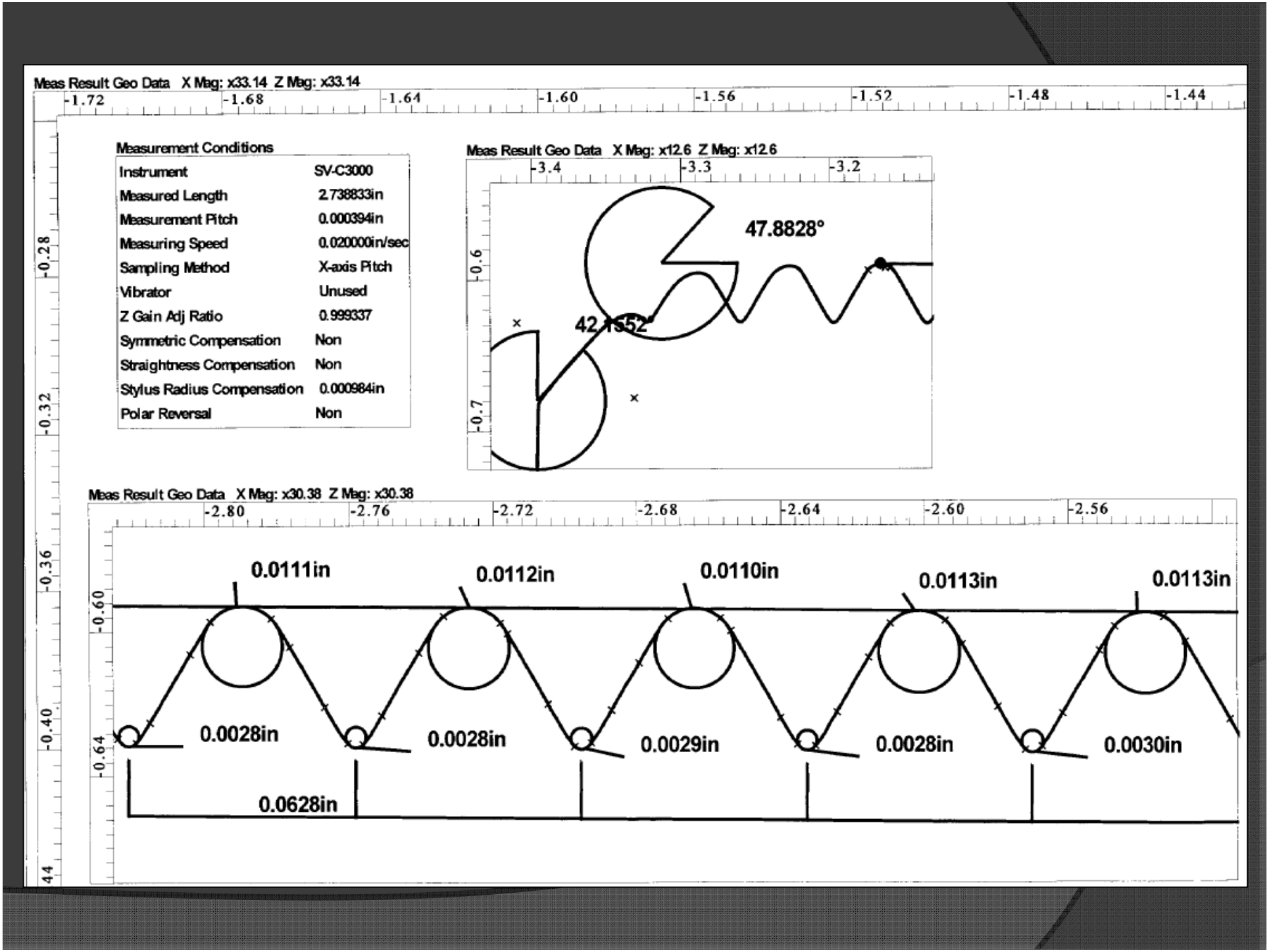
- Develop a measurement system that can measure required thread die sizes and forms
- The system should be able to clearly determine if dies are conforming to the SPS blue print
- The system identified should also have the standard work required for using the system
- This system should help minimize defective dies coming into the manufacturing process at SPS Technologies

Risk

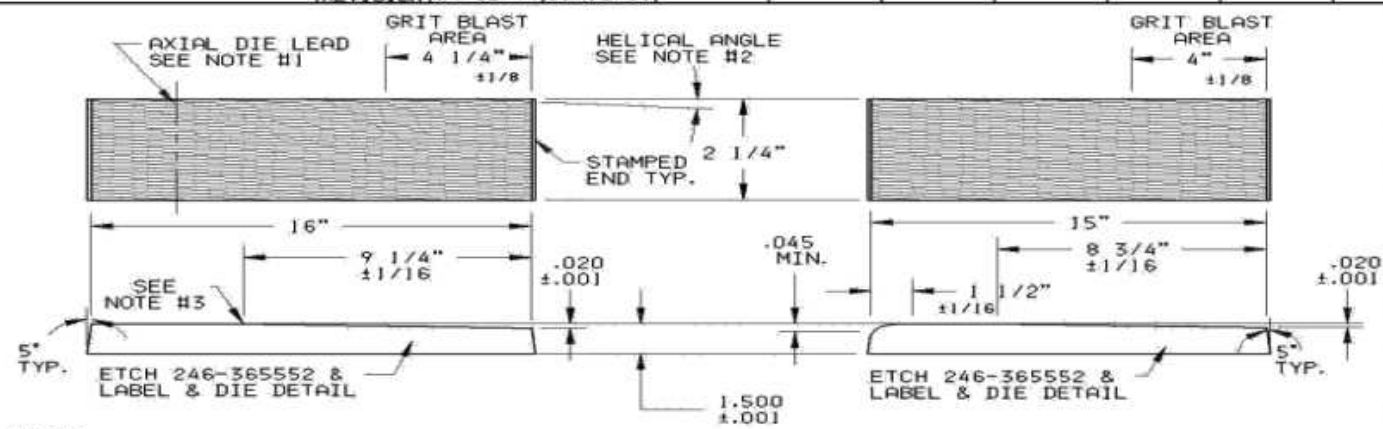
- High customer return potential to PTG for thread die performance issues caused by inadequate inspection
- Production setup issues:
  - Repeat setups caused by installation of damaged tools
  - Incorrect spread – Caused by too much positive or negative lead
  - Incorrect runout – runout thread dimension or location wrong
  - Double/Fish Tail – Caused by incorrect or inconsisitent thread form
- Potential for shipping delays due to depleted die supply



PCC SPS Fastener Division


Meas Result Geo Data X Mag: x33.14 Z Mag: x33.14
Measurement Conditions
Instrument SV-C3000
Measured Length 2.738833in
Measurement Pitch 0.000394in
Measuring Speed 0.020000in/sec
Sampling Method X-axis Pitch
Vibrator Unused
Z Gain Adj Ratio 0.999337
Symmetric Compensation Non
Straightness Compensation Non
Stylus Radius Compensation 0.000984in
Polar Reversal Non
Meas Result Geo Data X Mag: x12.6 Z Mag: x12.6
47.8828°
42.1552°
Meas Result Geo Data X Mag: x30.38 Z Mag: x30.38
0.0111in
0.0112in
0.0110in
0.0113in
0.0113in
0.0028in
0.0028in
0.0029in
0.0028in
0.0030in
0.0628in

DWG NO	365552	ELECTRONIC REVISION	C) RW 04/02/99	D) RW 01/13/01

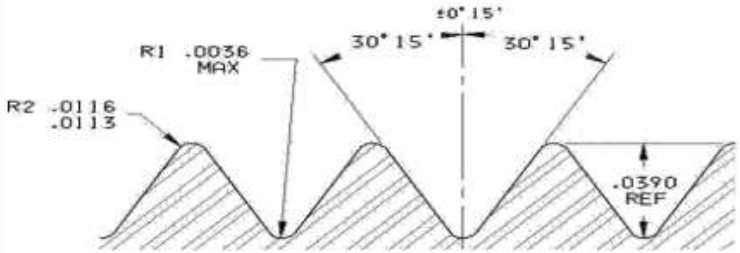


LABEL & DIE DETAILS
3/4-16 UNJH 60 W/F
2 1/4" M-42
246-365552
+.0039/+.0036 XL
R2 INCONEL 303M

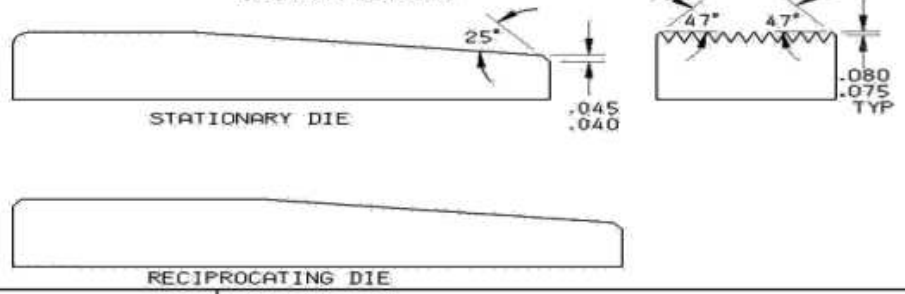
GRINDING DETAILS	
THREAD FORM	UNJH
HELIX ANGLE	1°36'41"
LEAD TYPE	HVM
AXIAL DIE LEAD	+.0039
MATCH FACTOR	HALF PITCH
MAGNETISM	15 GAUSS
MATTE FIN	--
GRIT BLAST	320
R.R.O.	--
R.R.O. SPEC.	SPS-F-303M

NOTE:
1. TOLERANCE ON DIE LEAD IS ±.0003 PER INCH FROM CALLOUT WHEN MEASURED SQUARE TO SIDE.
2. TOLERANCE ON HELICAL ANGLE IS #00 THRU #20 WF. ±.0003 PER INCH AND #30 THRU #100 WF ±.0002 PER INCH WHEN MEASURED ALONG DWELL SECTION OF DIE.
3. MUST BE AN ACCEPTABLE BLEND ON BOTH DIES.
4. ETCH AS SHOWN AND ALSO ON BACK. AT THE BOTTOM OF BOTH DIES.
5. PARALLELISM. FRONT TO BACK. IS NOT TO EXCEED .0005 PER INCH MEASURED ACROSS DWELL SECTION OF DIE.
6. R2 RADIUS & FLANK ANGLES HAVE TO BE HELD & MARKED ON DIE FOR A 2 M/M CYCLE PART.

DIE THREAD FORM DETAILS



CHAMFER DETAILS



3/4-16 UNJH
2 M/M CYCLE
60 W/F

TOLERANCE U.O.S.		MATERIAL: M-42	SPS TECHNOLOGIES	AEROSPACE PRODUCTS DIVISION JENKINTOWN, PA.			
FRACT ± 1/64	ANGLES ± 2°	MAT'L SPEC: -					
SURFACE FINISH 63 RMS		HEAT TREAT: 65-67 RC	STRENGTH N/A		N/A		
DECIMALS		DRAWN BY: RICH WASSON	SIZE A	FSCM NO. 56878	DWG NO 365552		REVISION D
.X ± .015	.XX ± .010	DATE: 04/02/99					
.XXX ± .005	.XXXX ± .0005	CHECKED BY: NA	APPROVED BY: NA	SCALE 2.75 :1	SHEET 1 OF 1		