

# Water Jet Removal of HVOF.

# Activity Undertaken

## ▶ MD and VLN jointly worked to

Develop an experiment with VLN Advanced Technologies Inc. to address the following objectives with respect to forced pulse water jet (FPWJ) removal of WC-Co-Cr HVOF coating:

1. Removal of HVOF coating using forced pulsed water jet (FPWJ) technique without damaging the metal substrate, using only water.
2. Optimize/develop parameters (stand off distance, traverse speed, water flow rate & pressure) that do not damage substrate.
3. Demonstrate reproducible results using the optimized parameters.

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## ■■■■ Coating being removed.

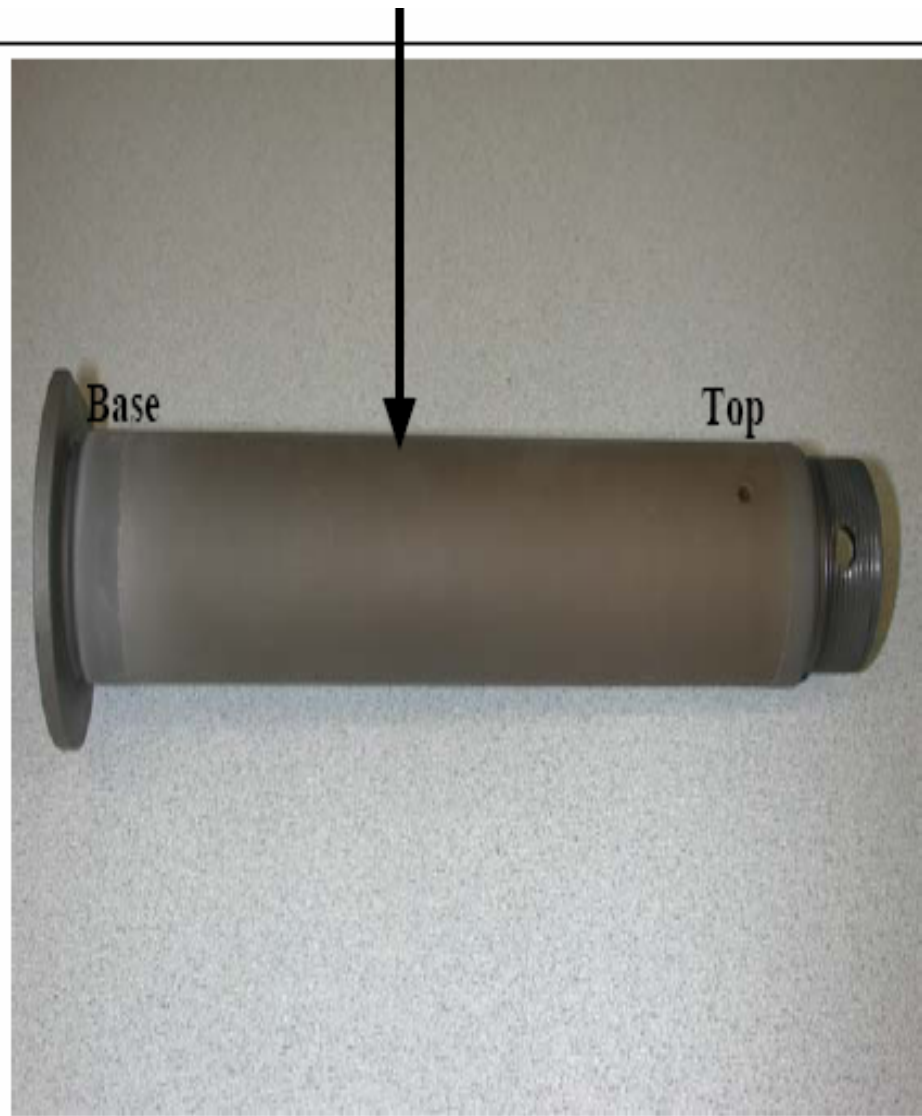


**Figure 2. Pin in Turning Assembly with Jet in Position.**

## Sample Pins

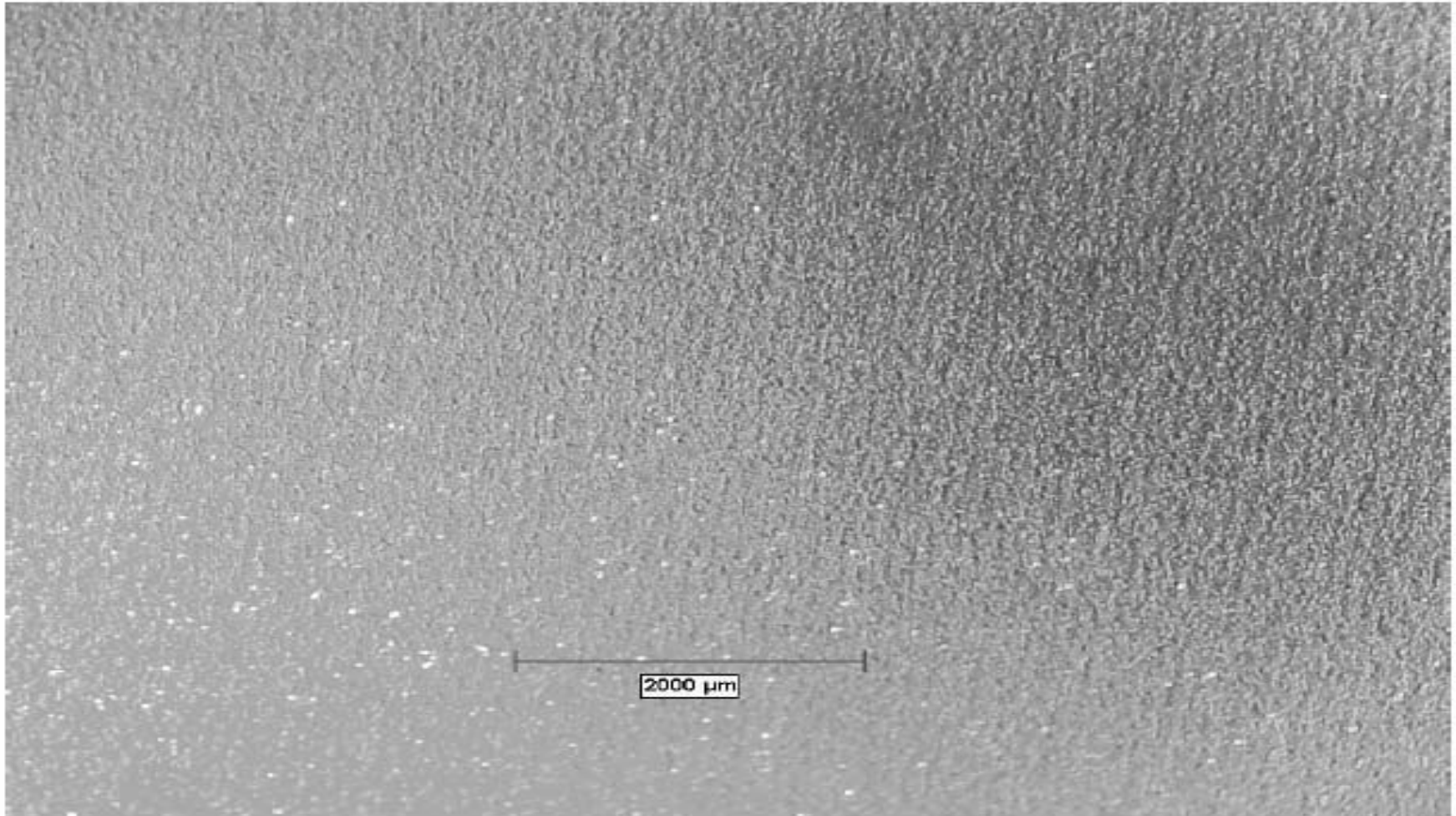


(a) Pin 2399



(b) Pin 2401

# ■ ■ ■ ■ Magnified View of Pin 2399



# Dimensional and Surface Texture

PIN	D1	D2	D3	D4	D3-D1	D4-D2	Ra (1)	Ra (2)	D5	D6
2399	1.8000	1.8020	1.8155	1.8175	0.0155	0.0155	132	131	1.8000	1.8035
2324	1.7990	1.8010	1.8140	1.8150	0.0150	0.0140	140			
2392	1.8000	1.8020	1.8150	1.8165	0.0150	0.0145	130			
2409	1.7960	1.8000	1.8110	1.8140	0.0150	0.0140	137			
2401	1.8000	1.8020	1.8145	1.8165	0.0145	0.0145	135	132	1.8010	1.8030
<b>Average</b>	<b>1.7990</b>	<b>1.8014</b>	<b>1.8140</b>	<b>1.8159</b>	<b>0.0150</b>	<b>0.0145</b>	<b>135</b>			

**D1** = Dimension (OD) before HVOF Coating - Top (inches)

**D2** = Dimension (OD) before HVOF Coating - Base (inches)

**D3** = Dimension (OD) after HVOF Coating - Top (inches)

**D4** = Dimension (OD) after HVOF Coating - Base (inches)

**D5** = Dimension (OD) after HVOF Stripping - Top (inches)

**D6** = Dimension (OD) after HVOF Stripping - Base (inches)

**Ra (1)** = Average surface roughness measurement before coating application (micro inch)

**Ra (2)** = Average surface roughness measurement after coating removal (micro inch)

## ■ ■ ■ ■ Way Forward

- ▶ **MD's HVOF specification is being updated to permit the VLN technology by suppliers.**
  - **Suppliers must demonstrate industrialization and appropriate QA system.**