Chemical Processing Overview: Spirit AeroSystems’ chemical processing capabilities accommodate a comprehensive range of hard and soft metals with one of the largest automated lines in the industry. Capable of processing parts up to 48 feet in length, Spirit can manufacture a wide range of finished products — from machined fittings to large fuselage skin panels. Anodizing, chemical milling, cleaning, coating, penetrant processing, plating and surface preparation can be accomplished on a wide variety and size of parts. Also, Spirit’s high-volume, high-velocity processes deliver reliability and industry-leading turn times.

<table>
<thead>
<tr>
<th>conveyor stretches</th>
<th>hood launch every</th>
<th>parts produced annually</th>
<th>square footage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5 miles</td>
<td>34 minutes</td>
<td>4 million</td>
<td>276,378</td>
</tr>
</tbody>
</table>

**Soft Metal Capabilities**
- 16 large tanks (automated)
  - Hood launches every 34 minutes
  - 50’ x 6.5’ x 13’
- 18 small tanks (manual)
  - 25’ x 5’ x 6.5’
- 17 plating tanks (manual)
  - 10’ x 3’ x 4.5’

**Hard Metal Capabilities**
- Chemical line
  - Maximum processing length of 12’
  - Processing basket envelope of 2’ x 4’ x 12’
  - Maximum weight of 1,500 pounds
- Paint shop
  - Maximum processing length of 10’
- Penetrant inspection
  - Maximum processing length of 12’
  - Processing basket envelope of 2’ x 4’ x 12’
  - Maximum weight of 1,500 pounds
- Magnetic particle inspection
  - Maximum processing length of 39.5’
### SPIRIT AEROSYSTEMS CHEMICAL PROCESSING (continued)

#### Anodizing
- Aluminum, type 1 non-hexavalent chrome (e.g., boric / sulfuric)
- Seal

#### Conversion Coating
- Aluminum
- Titanium

#### Heat Processes (Part Drying) Passivation Plating
- Electroplating
- Cadmium plating

#### Penetrant Processing
- Automated penetrant line
- Manual penetrant
- Pre-penetrant etch

#### Stand-alone Cleaning and Descaling Processes
- Acid cleaning
- Alkaline cleaning
- Emulsion cleaning
- Solvent cleaning
- Titanium cleaning – acid
- Titanium cleaning – alkaline

#### Surface Preparation for Metal Bond
- Testing performed internally in support of the Chemical Process Accreditation
- B03 – Metallographic preparation
- B05 – Salt spray testing
- B10 – Adhesion testing (adhesion tape testing)
- B12 – Adhesion testing (adhesion bend testing)
- Coating weight testing
- Conductivity testing
- Coating thickness measurement
- Adhesion testing (climbing drum peel)
- Other testing