



## ***Ingenuity and Persistence Leads to Innovative Solutions and Cost Savings***

### **Product**

Extrusion Screen

### **Metal**

22GA 304 Stainless Steel

### **Hole Size**

0.9mm/.0354"

### **Open Area**

9.984%

### **Fab Processes**

Punching, shearing, rolling, leveling, grinding and bending

### **Finish**

Polishing

### **Challenge**

To perforate a hole in stainless steel that is smaller than the industry recommended hole diameter to gauge thickness—without distortion, burrs or ridges.

### **Solution**

Hendrick's team developed a cluster punch tool and a method of perforation that would punch without distortion. Design refinements were made to accommodate the customer's manufacturing process, leading to quality improvements in their production.

### **Benefits**

- Innovative solutions for the customers need.
- Quality improvement
- Cost savings

*Hendrick's manufacturing team was posed with a unique challenge to produce an extrusion screen for a new customer. The customer was developing a new process to manufacture pellets and required a stainless steel screen to do the extrusion. To manufacture it, Hendrick would have to push perforating boundaries by punching holes smaller than industry practice for stainless steel.*

### **Overcoming small hole challenges**

The extrusion screen would need to be a workhorse, withstanding the constant flow of abrasive material forced through the holes. Further, corrosion was a concern. The best option was 22GA (.030) 304 Stainless Steel, which provided the optimal hardness properties and corrosion resistance needed for job. The blueprint called for 0.9mm/.0354" round holes. The Hendrick team knew this wasn't going to be a standard manufacturing operation. The recommended industry practice for perforating stainless steel requires a hole diameter to be 1.5 times bigger than the gauge thickness. The designated hole sizes were the same diameter as the

material thickness which would cause punch breakage and distortion of the panel.

### **Manufacturing success**

To avoid punch breakage, Hendrick's manufacturing team developed a cluster punch tool. After testing the punch using several different manufacturing methods, the team found success.

Once the extrusion screen was successfully manufactured, it went through one more design evolution to improve the customer's extrusion quality. Extrusion rejects were occurring due to support bars on the equipment behind the screen. They partially blocked holes, causing the rejects. Hendrick modified the hole pattern on the screen by adding margins to match the support bar locations. This successfully eliminated the extrusion rejects and improved yield.

### **Reduced costs**

The end result was a large cost savings to the customer. They saved almost 8% in the cost of manufacturing the extrusion screen, plus they eliminated the associated rejects and quality costs.

*Extruder screen that was developed by Hendrick in Elgin, IL. Made of 22GA 304 stainless steel perforated with 0.9mm/0.0354" holes, the manufacturing team developed a way to reduce the recommended industry practice of perforating a hole diameter 1.5 times bigger than gauge thickness.*

