

Hydro Honing Labs Receives Patent on 3D Modeling Process

HYDRO HONING LABORATORIES, the parent company of Peening Technologies, has patented a process for producing Almen strip fixtures utilizing 3D modeling called “Apparatus and Method for Quantifying Metal Surface Treatment” (Patent Number US 9,063,049 B2). The process was developed by Thomas and Walter Beach of Peening Technologies and is already in use at Peening Technologies’ two shot peening job shops in Connecticut and Georgia.

The job shops service aerospace, automotive, and power generation industries. Peening Technologies specializes in work for the demanding aerospace industry and was the first shot peening company to receive Nadcap accreditation. (Peening Technologies is Nadcap accredited in Surface Enhancement and Nondestructive Testing - Liquid Penetrant, Magnetic Particle.) A third company, Peening Technologies Equipment, designs, builds and sells custom shot peening equipment to a variety of markets.

“We were looking for ways to make Almen fixtures quickly, efficiently, and at a lower price point. Typical Almen fixtures—at least, accurate ones—often require a lot of expensive machining along with long lead times. Scrap parts make nice Almen fixtures but are not often available and they can be expensive to convert,” said Walter Beach, Vice President of Peening Technologies.

Most specifications require Almen strips to be placed in locations representing the surfaces requiring intensity verification. However, these specifications offer very little guidance on how to obtain accurate verification data. As a result, Almen fixtures can often be no more than rough representations of the part being peened. “Our method allows us to make our fixtures very accurate without pricing ourselves out of business,” said Mr. Beach.

The first step in Peening Technologies process is to create a computer-generated 3D part model that identifies the location(s) where intensity should be verified. With this information, Almen strip holding blocks are positioned on the model in the 3D computer program and a support structure is designed. This structure is then typically laser cut into a collection of parts. These parts, along with the Almen strip holders, are welded together to create a customized unit.

Peening Technologies developed this process soon after their investment in a Trumpf Model 1030 laser cutter several years ago. OEM customers began saying that they had never seen fixtures like this and several said, “you should patent that!” Encouraged by their customers’ response, Thomas and Walter began writing their first patent.

The 3D modeling method has become Peening Technologies’ primary tool for fixture fabrication. With the company’s in-house laser cutter, they can easily save the test fixture’s digital files for easy storage and retrieval. “This method greatly accelerates the development of a new shot peening process. What used to take days or weeks now can be done in only a few hours. In the world of aerospace manufacturing, time is in short supply, so being able to react quickly and deliver parts quickly is key to our success,” said Mr. Beach. ●

**UNITED STATES PATENT:
Apparatus and Method for
Quantifying Metal Surface
Treatment**

**Patent Number:
US 9,063,049 B2**

**Applicant:
Hydro Honing Laboratories Inc.**

**Inventors:
Thomas A. Beach, Walter A. Beach**

*The following fixtures were created
with Hydro Honing Laboratories’
patented process*

