

## HYDRAULICS



Figure 1 – Moog service team with the OSIS truck.

# The Inspection Service Gets Wheels

The On-Site Inspection Service by Moog has a major demand in the area of Tangshan, China, due to lack of skilled maintenance professionals. They restore servo valves to the original performance level quickly using authentic parts. In addition, the end-user trainings help to prevent future downtime.

**CHINA'S HEBEI** province, which encircles Beijing, is home to a number of steel mills and the city of Tangshan. Tangshan produces approximately 130 million metric tons of steel each year, more than the total output of the United States of America. With production levels like these, one would think China had more than its fair share of technicians to help maintain the equipment that produces so much of the world's steel.

In fact, private steel mills in Hebei province have a shortage of technicians, which means there is a genuine need in these facilities for equipment diagnosis and repair. Approximately 10 years ago, the state owned most of the steel companies in China; these were large companies located near Beijing as well as Hebei province. As the demand for steel increased within China and around the globe, entrepreneurs launched small and mid-size steel companies in Hebei province.

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The new companies brought in experienced engineers from a state-owned mill to help with the set-up of the newer plants. But even with a number of newly graduated engineers and technicians, there simply weren't enough skilled professionals to meet the maintenance demands of so many new mills.

To improve the level of know-how on valve maintenance and repair at these mills, Moog Inc. recently tested a new, rapid response service programme to augment its communications and relationships with its Chinese customers. The project was a pilot maintenance and

inspection initiative carried out in cooperation with Moog's distributors. Over the course a few weeks in 2015, Moog and a distributor visited approximately 12 steel plants.

### The Service Enters the Sites

Moog called the programme the On-Site Inspection Service (OSIS). The OSIS tested the concept of delivering around-the-clock response, on-site checks, diagnostics, small-scale troubleshooting, risk-prevention training and insight for steel mills that use Moog's servo valves. The centrepiece for the OSIS was a six-meter long, customized truck capable of quickly reaching steel mills that call for service.

The OSIS truck includes an air-conditioned workspace with a portable test bench (constructed by Moog) and hydraulic power unit (HPU), a variety of tools for inspecting and adjusting servo valves, a computer, a large visualization screen

and a printer for producing reports. Using the visualization screen, the OSIS team showed customers a real-time test curve to explain what was happening with a servo valve.

Riding with the truck were two technicians and a service engineer who supported on-site training and valve failure analysis at each steel mill. A sales engineer accompanied the truck, so the team could learn more about customer maintenance requests and challenges. There were also support personnel for the truck's equipment and test bench.

After the pilot programme and discussions with customers at several steel mills in Hebei province, the OSIS team learned that the cost of servo valve repair is the primary reason smaller, private steel companies often turn to third parties to fix valves. The mills see the quality of repair is not as good as Moog's approach.

But they choose third-party methods because an overhauled valve is quickly returned and put into service. While the plant managers care about maintenance, they say their first priority is maintaining or increasing production rates. Their second priority: reduce maintenance costs.

The challenge they find themselves in is that they can often get a third-party repair house to overhaul a valve in less time, for less money than the original equipment manufacturer (OEM) charges. But the repair does not last as long. Sometimes, the valve fails shortly after the third-party repair house completes its overhaul, which leads to another repair.

Through the OSIS programme, the team impressed upon the plant managers that the way to restore servo valves to their original performance level is to go through Moog because only the servo and proportional valve OEM has authentic parts made in the factory to original specifications. Moog also includes upgrades and technology improvements in both repairs and replacement products.

The OSIS truck staff also explained to plant managers that repairing a valve to like-new condition isn't the only goal. Instead, the goal should also include analysing the overall hydraulic system to ensure



**Figure 2—Inside the OSIS truck, a technician examines a flow control servo valve on the truck's test bench as two customers look on.**

the conditions are right for long service life of motion control products.

The best service teams go beyond repairing components; they recommend system improvements and maintenance programmes aimed at decreasing downtime, minimizing repair costs and increasing productivity.

### Root Cause to Improve Reliability

Getting to the root cause of hydraulic system problems was a primary goal for the OSIS truck's staff. At each steel mill the truck visited, the OSIS staff taught technicians and plant managers how to prevent unplanned downtime through proactive inspection and testing.

The manufacturers of motion control products such as servo valves can provide expert assistance beyond what a local third-party service company can offer. Here's why: The original equipment maker has vast experience applying products in many machines over a long period of time.

For example, Moog recently completed a contest to find the Oldest Operating Servo Valves among its customers. Two of the four winners were steel mills with servo valves manufactured in 1969, still operating today. Experience and longevity like this leads to improvements to the product design, which an OEM can incorporate as upgrades in both new and repaired products.

In conducting the pilot programme, the OSIS team encountered a number of challenges. First, the working conditions and environment were not always conducive to on-site inspections. For example, a servo valve test requires a very clean

environment and the nature of steel production puts a lot of impurities into the air to contend with.

When possible, the team would test equipment inside the OSIS truck. Finding an adequate power supply was also a challenge for the OSIS staff, as the area in and around the plants is not always conducive to making an electrical connection to the truck at the required voltage.

When the optimum conditions weren't available, the team improvised with a hands-on workshop in or near the truck for technicians and plant managers. Regardless of the type of interaction and testing that took place, the steel mill customers stated that the level of education was superior to anything they had received previously.

If the OSIS concept is approved by Moog, OSIS would serve as Moog's primary tool for delivering on-site service and helping customers sharpen their maintenance skills. Moog is now eyeing China's Northeastern provinces and Southeastern China near Guangzhou as places to take the OSIS concept.

To follow up on the success of the pilot programme, Moog is working with customers and a distributor to decide how best to provide on-site education and analysis for everyone involved in the maintenance process.

### About the author

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**The project was a pilot maintenance and inspection initiative.**

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