

# Toro Golf Utility Tractor Restoration

## HISTORICAL RESTORATION CASE STUDY

### DRY ICE AND CRUSHED GLASS SUCCESSFULLY USED TO RESTORE 70 YEAR-OLD HISTORIC TRACTOR

#### OWNER

Dave Otterdahl,  
Valley Construction Repair Inc.

#### CONTRACTOR

Midwest Dry Ice Blasting

#### APPLICATION

Remove years of paint and rust to restore one-of-a-kind Toro General Golf Utility Tractor

#### SOLUTION

Farrow System 185<sup>®</sup> Mobile  
Cleaning Unit

Cold Jet Aero 80 HP

#### BENEFITS

Cleaned 70 years of paint and rust down to bare metal to prep tractor for restoration.



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## THE SITUATION

In early 1941, three Toro General Golf Utility Tractors were on the production line to be built for their respective customers. When World War II started, Toro stopped all domestic mower manufacturing in order to build tanks, cannons and anti-aircraft gun parts so the three tractors were put on hold. When the war ended, two of the tractors were finished and delivered to their original customers. One of the tractors was no longer needed so Toro removed the engine and rear end and stored it in the warehouse. This was before red became the staple color of the Toro brand so the tractors were painted "machine blue" – a trial color that they had on-hand.

Minnesota Valley Country Club, located in Bloomington, MN, received one of the tractors and the other one was delivered to another Toro customer. In 1955, Minnesota Valley Country Club asked Toro if they would manufacture a pull-behind trailer for their tractor. This was not a common practice for Toro at the time but they decided to take the last production

tractor that was in the warehouse and modify it for this need. They used the original frame and dump box from the tractor, installed a model 'A' front end for the rear end and installed a set of Toro wheels. This created a one-of-a-kind matching dump trailer for the country club.

In 1982, famous golfer Arnold Palmer visited the country club for a grand opening celebration of the Minnesota Valley Country Club Condominiums and shot a take-off commercial using the club's Toro General Golf Utility Tractor.

Twenty seven years later in 2009, Dave Otterdahl, a structural repair contractor and owner of Valley Construction Repair Inc., was doing work at the country club and came across the old tractor, which was no longer in operation. After a little research into the history of the tractor, Otterdahl, an avid golfer himself, bought the tractor and custom trailer so that he could restore it back to its original condition.



*"CLEANING THE INTRICATE, HARD TO REACH PARTS WITH COLD JET'S DRY ICE CLEANING TECHNOLOGY WAS THE PERFECT SOLUTION BECAUSE IT USED NON-ABRASIVE MEDIA IN THE FORM OF RECYCLED CO<sub>2</sub> PELLETS THAT WILL NOT DAMAGE SURFACES."*

The tractor was in operating condition; however, had acquired a good deal of rust over the years and the surface paint was severely damaged. In order to fully restore the tractor, the paint and rust needed to be removed.

## THE PROBLEM

The main challenge of this restoration project was to remove all of the paint and rust without damaging or warping any of the metal. Sand blasting and cleaning with chemicals were considered for the project but there was concern that they would be too abrasive on this historic, one-of-a-kind piece.

"Preservation was very important for this tractor and I didn't want to use a method that would profile the metal," said Otterdahl. "I own a sandblaster but did not want to use it because the process may damage the tractor."

With such a unique and important restoration project in front of him, Otterdahl needed some guidance. He researched alternative options and came across dry ice cleaning and wet slurry blasting as alternative solutions to sand blasting. He contacted Midwest Dry Ice Blasting, Inc., a local contractor with 26 years of industry experience, to discuss the project.

Midwest Dry Ice Blasting specializes in high pressure blasting through the exclusive use of Cold Jet dry ice cleaning equipment. They provide service to all aspects of the Industrial, Manufacturing, Commercial, Government and Restoration industries. Kent Krause and Ray Beauvais, owners of Midwest Dry Ice Blasting, also shared Otterdahl's love for golf.

## THE SOLUTION

After closely examining the project, Krause and Beauvais decided to use three different cleaning methods to fully clean the tractor: The Farrow system® wet abrasive cleaning unit, Cold Jet dry ice cleaning and a blast cabinet.

First, the Farrow System 185® Mobile Cleaning Unit was used to aid in the surface preparation and cleaning process of the tractor. The Farrow System uses a wet abrasive, or slurry, to quickly remove coatings from surfaces without damaging them. It combines water with a media made from 100 percent recycled crushed glass and then adds heat to speed the cleaning process. By using heat, The Farrow System reduces labor costs, reduces media use, minimizes containment and lowers cleanup and disposal costs.

With The Farrow System, Midwest Dry Ice Blasting could quickly remove the paint and rust from the tractor surface without damaging it. And because the Farrow System media is made from 100% recycled glass, the use of chemicals or hazardous materials is avoided, resulting in an environmentally responsible process.

The Farrow system allowed for removal of all layers of rust, paint and primer down to bare metal or a white metal finish, leaving behind a surface ready for repainting. A chemical was also added to preserve the parts and prevent flash rust. The profile would now easily accept the new primer and the process was faster than dry abrasives, without creating dust or requiring extensive cleanup.

Next, Cold Jet's Aero 80 HP was used as a surface preparation method to clean the oil and grime off areas where the wet abrasive media could not get into – such as the transmission, pushings, bearings and wheel hubs. Cleaning the intricate, hard to reach parts with Cold Jet's dry ice cleaning technology was the perfect solution because it used non-abrasive media in the form of recycled CO<sub>2</sub> pellets that will not damage surfaces. The combination of dry ice cleaning's kinetic energy and thermal effect breaks the connection between the dirt and surface, lifting away contaminants. Unlike blasting with other media, dry ice cleaning does not leave any secondary waste, because the dry ice particles sublime on impact – converting from a solid to a gas. Dry ice cleaning is safe, non-toxic, does not create downstream contamination and eliminates exposure to dangerous chemical cleaning agents.

Smaller parts on the tractor, including the leaf springs, clamps, nuts and bolts were cleaned in a blast cabinet. The blast cabinet is a closed loop system that allowed them to clean the parts while also recycling the media. It consisted of four components: the containment/cabinet, the abrasive blasting system, the abrasive recycling system and the dust collection. Midwest Dry Ice Blasting was able to clean the parts from outside of the cabinet by placing their arms into the gloves that were attached to the cabinet, viewing the part through a view window.

## THE RESULTS

The golf tractor and trailer were cleaned in stages with the parts cleaned as they were disassembled. It took a total of 12-14 hours to remove the original paint and accumulated rust. Approximately 500 pounds of recycled glass and 400 pounds of dry ice were used on the project. These methods took minimal time, required very little labor and almost no cleanup. To complete the restoration process, the tractor parts were painted the same shade of "machine blue" as the original and all parts were reassembled.

As an added touch, Otterdahl arranged for Arnold Palmer to sign the hood of the tractor. He took the freshly painted tractor hood to Latrobe County Club and watched as Arnold Palmer kindly signed the tractor, further reinforcing the rareness of the tractor.

"Arnie was happy to sign the hood of the tractor," said Otterdahl. "He was excited to know that such an important part of golf history was going to be restored. He also said he'd like to drive the tractor when the restoration was complete and I told him that he would be the first."

Otterdahl plans to take the tractor on tour to various golf courses and tournaments around the world, including a possible showcase appearance at the 2014 Masters Tournament. He also plans to put a book together on the birth, death and rebirth of the famous Arnold Palmer Toro General Golf Utility Tractor.