

# Air Tractor, Inc.

Success Story



Air Tractor Achieves High Flying Productivity with VERNON Tool™

Air Tractor, Inc. of Olney, Texas produces the world's most extensive product line of aircraft for agricultural spraying, seeding, fertilizing, or firefighting.

## »» CHALLENGE

Improve the efficiency of manufacturing the over 120 tube sections that comprise a fuselage frame.

## »» SOLUTION

MasterTube™ Cutting Machine (MTC) from VERNON Tool™, A Lincoln Electric Company.

## »» RESULTS

- Fuselage frame tubes are cut and profiled in half the time.
- End profile is more accurate and requires less fine trimming.



Air Tractor is the world's leading manufacturer of agricultural and firefighting aircraft.

On any day in Olney, Texas, you are bound to see a dusty cowboy walking through town or in sharp contrast; you will more than likely also see a brightly colored, state-of-art firefighting plane soaring through the sky. Olney is a rural, relaxed town on the outskirts of Wichita Falls with a few surprises up its sleeve. The local landing strip seems to be a hotspot of activity for this unique, small town.

Recently renovated, this WWII-era airport has three long runways and serves as home to Air Tractor, Inc. A 100% employee owned company, Air Tractor is the world's leading manufacturer of agricultural spraying and firefighting aircraft. Producing more than 2,400 aircraft since 1974, this motivated team of employees is quality driven and productivity conscious.

With more than 50 years associated with the design and manufacture of agricultural and aerial firefighting planes, the Air Tractor team continually proves they know their customers and they know their business. Being a global supplier and a results driven company, Air Tractor strives to improve productivity by repeatedly looking for new efficiencies in their manufacturing operation.

The Air Tractor plane design is an all tubular fuselage frame, with more than 120 different tube sections in each frame. Finding a method to produce tubes with profiled ends efficiently was a bottleneck the team needed to overcome. After several years of searching, the Air Tractor team determined that there were few affordable ways to profile small diameter tubes in an automated, effective manner.



Rick Turner, Vice President, Operations at Air Tractor and Don Cagle, Sr. Group Leader, visited the VERNON Tool™ exhibit at the 2005 FABTECH-AWS show in Chicago. Conversations lead to another small sport & utility aircraft company, Aviat Aircraft, Inc., in Afton, Wyoming. Using an early VERNON MasterTube™ Cutting Machine (MTC) to fabricate airframes, Aviat increased its manufacturing of experimental aerobatic and air show aircraft. VERNON furnished a formal proposal to Air Tractor and after additional investigation, Air Tractor awarded an order in January 2008.

It was VERNON Tool™, an industrial pipe and tube cutting company from Oceanside, California that provided Air Tractor with the solution they needed.

In mid 2008, a MasterTube™ Cutting Machine, or MTC, was supplied as the right fit to the Air Tractor challenge. The MasterTube™ machine is a rugged, 4-axis computer controlled system. Two axes of motion are used to advance, retract and rotate the tube while two additional axes are used to simultaneously adjust the torch angle and horizontal travel. This field-proven design was a versatile and economical solution to the Air Tractor application.



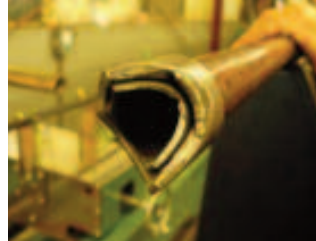
VERNON Tool™ MasterTube™ Cutting Machine (MTC)



Together with VERNON Tool™, Rick and his staff refined the cutting requirements and raw material shape and length. Raw lengths of 20 ft. round tubing were used to fabricate complex multiple intersection joints.

The results were immediate. According to Rick Turner, Vice President, Operations at Air Tractor, “VERNON Tool™ has changed my perception; we are producing profiled tubes in 50% of the time and the conversion to this method was virtually painless with no down-time at all.”

Air Tractor's previous manufacturing process consisted of slipping pre-shaped metal templates over the raw material. Once properly oriented relative to other structural members, workers followed the template shapes with a hand-held plasma torch.



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After the contour outline was achieved, significant grinding and filling of the weld preparation followed. Hand fitting each and every member was exceptionally time-consuming and inconsistent. Subsequent profiles were manually measured and marked to ensure proper overall distance and angle orientation.

With the touch of a button, the VERNON MasterTube™ machine automates this entire process, eliminating all manual measuring, marking and cutting. It burns the proper contour and weld prep angle on both ends with a precise length and axial orientation. Tight fit-ups and code-welded connections ensure the structural integrity of each fuselage.

The MasterTube™ burns the proper contour and weld prep angle with a precise length and axial orientation on both tube ends.



Shown (Left to right): Don Cagle, Air Tractor Sr. Group Leader and Davey Perez, Air Tractor operator



Prior to installation, Air Tractor may have had reservations on the employment of a mechanized tube cutting machine and PLC controls. However, it was soon clear that the ease of programming was the most important feature to the Air Tractor employees.

“VERNON Tool™ convinced me how simple the programming process could be; installation, upfront training and conversion to the new process was painless,” said Rick Turner. The VERNON Tool™ machine was up and running and producing results in a timeframe that this Texas manufacturer could appreciate.

In large part, this was due to Davey Perez, a talented young Air Tractor employee. Davey was an operator with previous CNC experience who had joined the Air Tractor team. It was soon clear that Davey Perez was an essential part of the VERNON Tool™ integration project.

Since the 70's, Air Tractor had followed drawn patterns for the tube profiles. It was Davey who accomplished the task of taking four different plane models with 120 patterns each and converted them into 500 programs he built himself. “He was a key contributor to the success we achieved with VERNON Tool™,” said Rick Turner.

The main goal for Air Tractor had been to improve the cutting and profiling time which would save money and increase productivity time. Air Tractor also achieved a more accurate end profile with minimal training. Using computer-generated precision shapes meant less fine trimming at the backend of the operation. The result was improved quality and also increased efficiency.



Eight different aircraft models are listed in Air Tractor's current catalog.

With 2010 production goals set at 100 aircraft, there is no stopping the Air Tractor team. Whether the job is spraying, seeding, fertilizing, or firefighting, Air Tractor is focused on producing the highest quality and cost-effective agriculture planes available anywhere, at any price.

Both VERNON Tool™ and Air Tractor rely on innovation to help them set a course for business success. From Leland Snow's humble beginning in 1951, Air Tractor will soon surpass the 2500th aircraft milestone. Started under Ward Blackburn's leadership in 1948, VERNON Tool™ is rapidly approaching its 1000th pipe & tubing cutting machine installation. If Air Tractor and VERNON Tool™ have anything to do with it – they will easily fly past these and future milestones for many years to come. ■



Each fuselage frame is comprised of more than 120 different tube sections.

»» **ABOUT VERNON TOOL™**

Lincoln Electric Holdings, Inc. acquired the assets and business of VERNON Tool Company, Ltd., a privately-held manufacturer of computer-controlled pipe cutting equipment used for precision fabrication purposes.

Based in San Diego, California, founded in 1930, the VERNON Tool™ Company provides solutions to difficult pipe fabrication and process flow issues in industrial construction, as well as heavy fabrication uses in the infrastructure and energy-related segments.



**VERNON Tool™**

A Lincoln Electric Company

503 Jones Road • Oceanside, CA U.S.A. • 92054-1285

Phone: +1.760.433.5860 • [www.vernontool.com](http://www.vernontool.com)



**THE LINCOLN ELECTRIC COMPANY**

22801 St. Clair Avenue • Cleveland, OH U.S.A. • 44117-1199

Phone: +1.216.481.8100 • [www.lincolnelectric.com](http://www.lincolnelectric.com)