

# The Focus

## THE M&T COMPANY

December 19, 2011  
Issue 2

### Holiday Message

THE M&T COMPANY  
WOULD LIKE TO WISH  
YOU AND YOUR  
FAMILIES A VERY  
HAPPY HOLIDAY  
SEASON AND A NEW  
YEAR FILLED WITH  
PEACE AND  
PROSPERITY!  
WE LOOK FORWARD TO  
WORKING WITH YOU  
ALL DURING 2012 AND  
BEYOND.



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### Rapid Prototyping

By Bradley Sherrill

Each year many newly designed aircraft support parts are created and many more parts become obsolete. Modern aircraft sustainment relies on the ability to produce new parts and replace old parts rapidly. Newly developed design and manufacturing tools are available to allow this to be done less expensive and quicker than ever before. This ability to rapid prototype parts allows the aircraft to have less down time. Also, rapid prototyping is a low cost method for

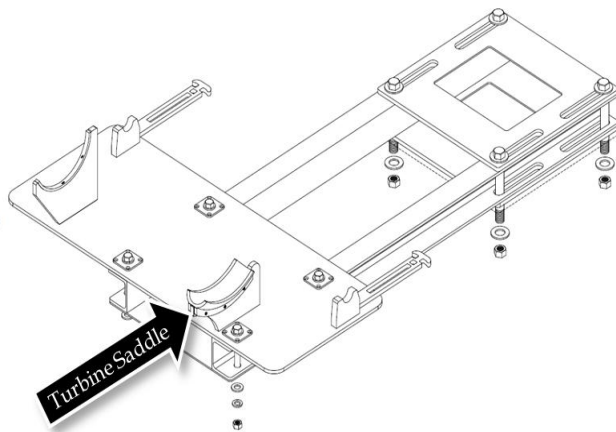
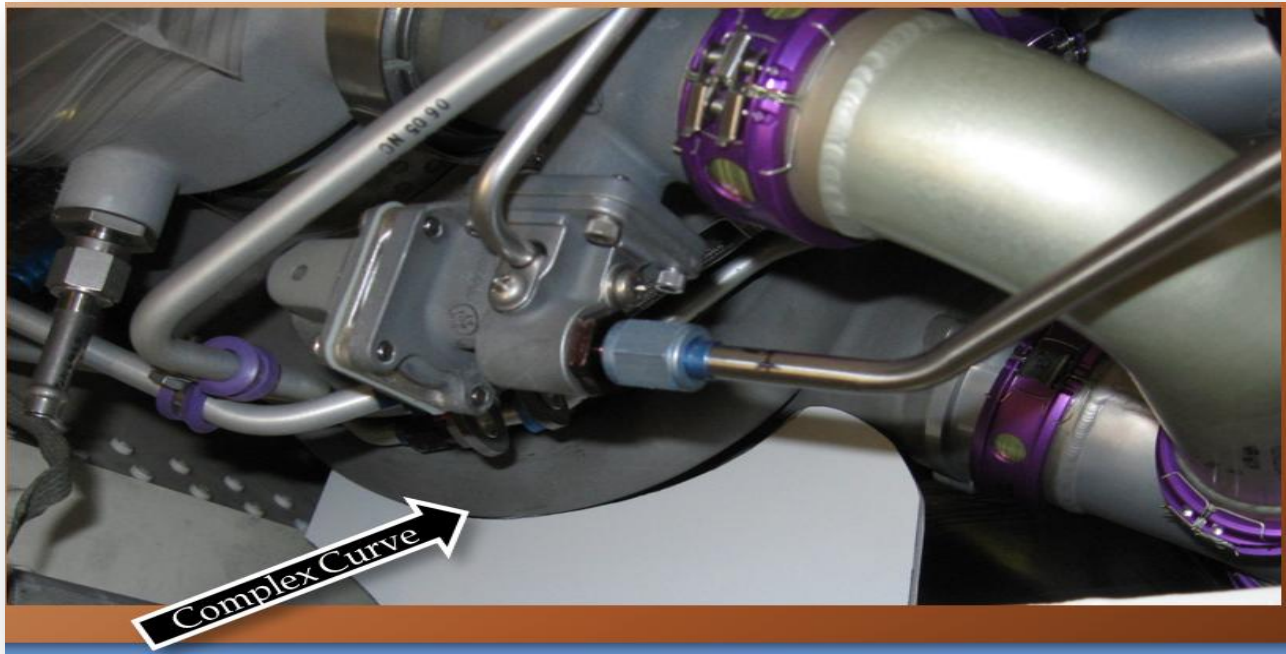
design verification of new hardware. Utilizing the available tools will allow current aircraft designers and maintainers to effectively and efficiently keep aircraft flying. Rapid Prototyping (RP) is the automatic construction of physical objects using additive and subtractive manufacturing technologies. Rapid prototyping was first developed in the late 1980s and was used to produce models and prototype parts. Today, rapid prototyping can

produce functioning production-quality parts at lower costs and more efficiently than conventional prototyping techniques. This process takes virtual designs from computer aided design (CAD) or animation modeling software and transforms the information to machines which then create the parts. Parts that used to take weeks to manufacture can be produced in a matter of minutes.

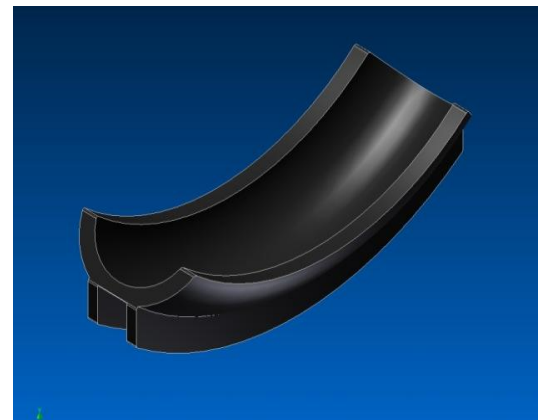
The M&T Company has utilized the rapid prototyping process to develop and verify parts that require quick turnaround or have unique characteristics that require the use of RP. M&T used RP to develop and verify a very complex component used on the E-6B Auxiliary Air Conditioner Adapter Assembly. This item required the design of a Turbine Saddle that would cradle the air conditioner's main duct to allow for removal of the air conditioner from the E-6B aircraft. The complex compound curve of the saddle was

developed from a foam board cutout taken from the air conditioner while it was still installed in the aircraft. The foam board cutouts contained the detailed complex curve information that would be transferred to the design. This item was then designed using ACAD Inventor and sent to a 3D print shop which supplied the part back the next day. The newly printed part was taken to the aircraft to verify that it fit properly on the duct. The 3D printed model required minor modifications which was completed on the aircraft and brought

back and incorporated into the baseline design. This process allowed for an accurate turnaround of the complex part in a short period of time. It also allowed for minimal rework time and was a great way to minimize cost and risk on the project.



Aux Air Conditioner Adapter Assembly



ACAD Inventor Rendering of Turbine Saddle, showing compound curve

# ISO & WHY

By Charles Sakelakos

Why is it important that vendors are certified to one of the many standards of the International Organization for Standardization (ISO) and just as important; how is it helping me as the customer? To answer these questions we need to look at what ISO is and just as important, what it is not. A few facts about ISO:

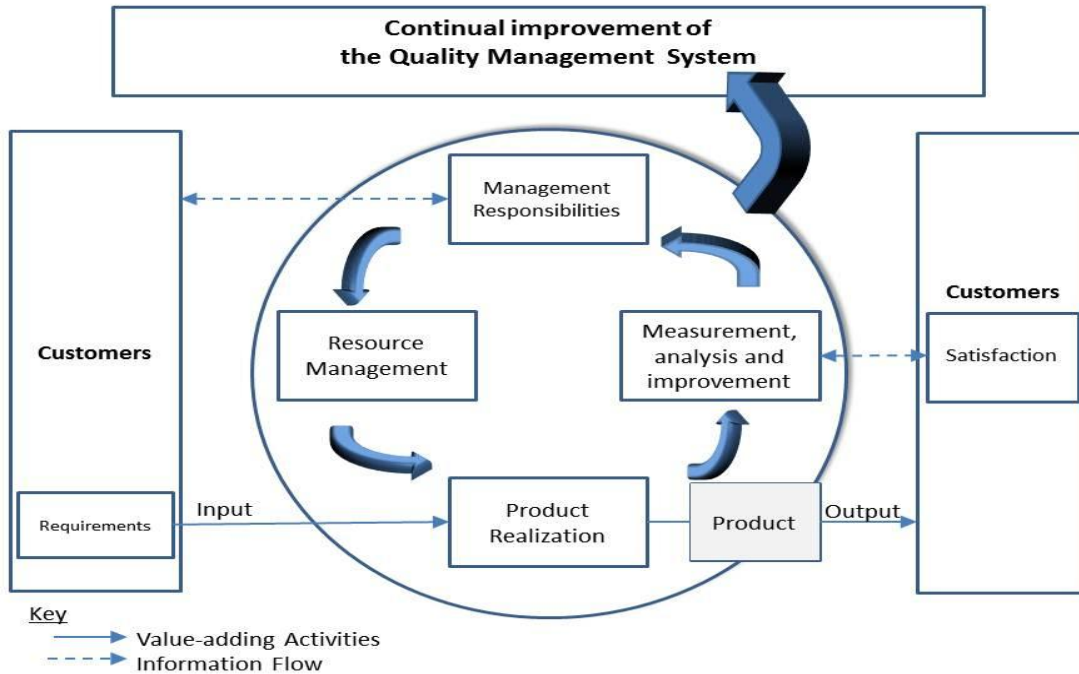
- ISO is the world's **largest developer** and publisher of **International Standards**.
- ISO is a **network** of the national standards institutes of **162 countries**.
- ISO is a **non-governmental organization** that forms a bridge between the public and private sectors.
- ISO portfolio consists of over 18,600 standards.

- A company that is ISO 9001 registered means that an independent, accredited registrar has audited its Quality Management System (QMS) and certified that it meets ISO 9001 requirements.
- Please note that when a company says it is certified or compliant it's not saying that its products and services meet the ISO 9001 requirements. The ISO 9001 standards are process standards, and not product standards.

Therefore, ISO enables a **consensus** to be reached on solutions that meet both the requirements of business and **the broader needs of society**.

In brief, ISO standards make it possible to avoid having to reinvent the wheel. By collaborating with many global experts, ISO has designed standards that are the foundation for companies to model their processes after. ISO does not design a process for a company or provide pre-established forms or methods, but instead states that a process must meet certain requirements and leaves how that is done to the individual companies.

The M&T Company has a Quality Management System that is recognized by ISO as being certified to ISO 9001:2008. This standard follows a model of a process-based quality management system as shown below.



The product requirements feed the realization of just what goes into making the end item product. The goal of the QMS is to realize high quality products while delivering customer satisfaction, and facilitating continuous improvements.

The QMS follows the basic quality assurance cycle of Plan, Do, Check, and Act. Plan what you need to do and are going to do in order to satisfy the customer's needs. Do what you have planned including the creation of documents and records

needed. Check what you have done to make sure it meets the requirements and documents are complete. Act on all this information to see if you can improve the process or product.



# CASS / VDATS COMPATIBILITY RESEARCH STUDY

By Mark Rodeghier

In 1960, a couple of MIT graduates with a 4 page business plan and \$50K of their own money started up a small component testing company that resided over a hot dog stand in downtown Boston. Their first venture into Automatic Test Equipment (ATE) was called the "Semi-Automatic Diode Test Set", and was built for Raytheon for the purpose of testing diodes as they came off the production line at the rate of 3600 per hour. Two years later, Teradyne Inc. started by Alex d'Arbeloff and Nick DeWolf, had submitted quotes on 57 different testers using scalable architecture designed by their engineering team. By 1964, Teradyne introduced DEC's PDP 8 computer to their lineup which would lead to the advent of true ATE as it is known as today. From this point on, ATE gained wide spread acceptance in both the commercial and military industry.

As an engine for change, the military adopted ATE as their primary means of testing their ever increasing inventory of complex electronic and avionics systems. Using ATE resulted in decreased repair times which had the effect of lowering support costs and less downtime for mission critical systems. Before long, all branches of the military bought into the ATE concept and had independently begun the task of designing, developing and producing customized test sets that focused on support of service specific platform systems. This led to a dramatic proliferation of support equipment with niche applications. At one point, the USAF had designed and built over 200 testers in support of their aircraft while the Navy had a significant number of ATE of different configurations in support of fleet aviation. The Army and Marines have their own separate ATE development effort, but with lesser numbers.

In 2005 the Department of Defense (DoD) issued the Navy ATE and Test Program Set (TPS) Acquisition Handbook which was designed to streamline the design process and minimize proliferation of unique testing equipment used by the various services. The following is a list of approved ATS families to be recognized by the Handbook for the different branches of the military:

- Consolidated Automated Support System (CASS) for the Navy
- Integrated Family of Test Equipment (IFTE) for the Army
- Marine Corps Automatic Test System (MCATES) for the Marines
- Versatile Depot Automatic Test Station (VDATS) for the Air Force

The objective, of course, is to minimize unique types of ATS in DoD, thereby reducing redundant ATS non-recurring investments and lessening logistics burdens and long-term costs.

When the DoD issued the Automatic Test Systems Master Plan in 2009, the goal was to further streamline the process of ATE acquisition with emphasis on increased interoperability of TPS's across the different services. To further this effort, it needed to be determined what potential, if any, exists for testing electronic hardware designed for one service (i.e. Air Force VDATS) on another service's ATS (i.e. Navy CASS).

In September 2011, The M&T Company was awarded a contract by the Warner Robins Air Logistics Center Robins in cooperation with NAVAIR FRCSE to conduct a research study to determine the compatibility

of the USAF VDATS tester and the Navy's CASS family of testers. The basic objectives of the study are:

- Develop a Requirements Traceability Verification Matrix (RTVM) to list differences between CASS and VDATS.
- Produce a list of common UUTs that could be tested by CASS and VDATS
- Outline key differences in software and operating system architecture ( i.e. ATLAS vs. Windows/CVI)
- Identify of a TPS test case that could be migrated from CASS to VDATS and from VDATS to CASS at a future date.
- Develop a preliminary design concept and requirements specification for an adapter to interface CASS TPS's to VDATS and VDATS TPS's to CASS.

Depending on results of this study, a further merge of ATS systems could take place in the future that could end with a single ATE tester with a minimum of configurations. Given that all of the services maintain electronic systems of a similar nature, a single, all encompassing ATE would go a long way in reducing development / logistic costs and allow common support for all avionics systems, without regard to what branch of the military they originate.

#### References:

1. Alex d'Arbeloff and Nick DeWolf - [http://www.chiphistory.org/legend/s/nick\\_dewolf/nick\\_dewolf.htm](http://www.chiphistory.org/legend/s/nick_dewolf/nick_dewolf.htm)
2. About Teradyne - A Brief History - <http://www.teradyne.com/corp/history.html>
3. Navy ATE and Test Program Set (TPS) Acquisition Handbook – 2005
4. DoD Automatic Test Systems Master Plan - 2009



VDATS Tester



CASS Tester



## UPCOMING CONFERENCE SCHEDULE

- Dixie Crow Symposium, Museum of Aviation, Warner Robins, GA, March 18 - 22, 2012.
- Joint Services Wiring Action Group (JSWAG), Virginia Beach, VA March 26- 29, 2012.

**Come by and visit our exhibits!**



## RECENT AWARDS

\*Contract GS-35F-0254R, Manufacturing part number MTEQP000157 H-46 Test Set Torque Indicators quantity 25, for NAVAIR Cherry Point.

\*Contract N00178-04-D-4027 4Y03, Performing CASS / VDATS Compatibility Research Study for Warner Robins ALC.

\*Contract N00178-04-D-4027 4Y03, Assembling prototype T-44 ASU Harnesses for NAVAIR Jacksonville.

\*Contract N00383-12-C-P029, Manufacturing part number 70700-77590-041 SH-60/MH-60 Environmental Test Sets quantity 30, for NAVSUP Philadelphia, PA.

\*Contract SPM7MC-12-M-1468, Manufacturing part number 10053651-101 AC/DC Power Supply quantity 8, for DLA Land and Maritime Columbus, Ohio.

\*Contract N00178-04-D-4027 4Y03, Providing continued CASS Training Set Engineering Support for NAVAIR Jacksonville.

\*Contract N00178-04-D-4027 4Y03, Providing continued H-1 OTPS Engineering Support for NAVAIR Jacksonville.

\*Contract N00178-04-D-4027 4Y03, Providing continued E-2C Orphan TPS Engineering Support for NAVAIR Jacksonville.

\*Contract N00178-04-D-4027 4Y03, Providing continued PEMA Engineering Support for NAVAIR Jacksonville.



## CURRENT M&T CONTRACTS

F09603-01-D-0211	F2AST Sub to SSAI	IDIQ
FA8530-11-D-0003	SbAST Sub to AMS JV	IDIQ
F09603-02-D-0065	SSSC II Sub to SSAI	IDIQ
W15P17T-10-D-D410	CECOM R23G Program Sub to CSC	IDIQ
W15P17T-10-D-D422	CECOM R23G Program Sub to TAMI	IDIQ
GS-23F-0016K	GSA – Professional Engineering Support (PES) SIN 871	IDIQ
GS-35F-0254R	GSA – IT SIN132-8 and SIN 132-51	IDIQ
N00178-04-D-4027	Engineering Technical Services 4Y03	CPFF
N00178-04-D-4027	Engineering Technical Services 4Y02	CPFF
N00178-05-D-4461-4Y04	Code 6.7 National Logistics Contract Lakehurst Sub MTG	IDIQ
N00421-11-D-0040	Code 6.7 National Logistics Contract Pax River Sub TLOG	IDIQ
N61340-11-D-1010	Code 6.7 National Logistics Contract Jax Sub Andromeda	IDIQ
N00421-09-D-0011	Code 6.8 National Logistics Contact Sub Alutiiq	IDIQ
AWARD Pending	DESP III Sub to SSAI	IDIQ
AWARD Pending	DESP III Sub to DRC	IDIQ



## GSA Schedule

Our GSA Schedule provides an additional contract option for our customers.

GSA Contract number: GS-35F-0254R Schedule 70; SIN 132-8, Purchase of New Equipment. Do not hesitate to contact us if you have any questions about utilizing our schedule.



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