

TAM Airlines Innovative Approach to Aircraft Maintenance Efficiency and Cost Savings

An inside look at how TAM Airlines approaches maintenance training and the investment they are willing to make in order to deliver big results.

"We wanted the best product on the market and we wanted the training solution that continued our excellence in training. Insurance doesn't cover maintenance issues. Quality training is vital. At TAM, we believe that maintenance training should be the same or better than pilot training. We chose the Aerosim VMT because we thought it was the best product in the market. We wanted the training solution for excellence in training. The cost benefit of implementing this solution will become a reality through reduced remedial training because the learning is so much more interactive and intense."

--- Captain Leonard Grant, Operational Training Director

Background

Airline maintenance training methods in hangars today typically involve an instructor leading a small team of technicians working on the aircraft in tight, awkward spots, which makes for a less than desirable training situation. The probability of aircraft component damage, personnel injury, or the instructor repeating the exercise is much higher. This leads to more liability, inefficient training events, and increased costs. The same goes for the training environment. Maintenance hangars have many distractions and are often not the cleanest or quietest training areas to provide focused learning. In a classroom setting, the instructor can keep the team on task, get better feedback, educate in a cleaner environment and most importantly, make sure the team follows the process.



TAM Airlines was no different and they had the same operational training challenges. They now possess a fleet of over 150 aircraft, offering flights to both domestic and international destinations. They have also grown significantly in the last decade, transporting nearly 35 million passengers in 2010 alone. In addition, the airline provides cargo transport services in 42 airports and 4,200 cities in Brazil, and 45 airports and 120 cities abroad.

In June 2012, TAM and LAN officially merged their holdings into a single controlling entity—the LATAM Airlines Group. Through the merger and increased routes, passengers, fleets, and human resources; it is critical the airline stay on top of operational pressures, such as pilot and maintenance training.



Aircraft: A319/A320/A321 (136), A330 (20), A340 (2), A350 (27 on order), B767-300 (3), and B777-300 (4)

Annual Revenue: Over \$5 Billion

Passengers: 37.6 million in 2011

Maintenance Instructors: 8

Maintenance Technicians: 1,614 (total for all fleets)

Maintenance Classroom Equipment: One classroom with one instructor station (4 monitors) and six student stations (2 monitors). Monitors: Samsung SA300 (model: S22A300B), Projectors (2): Sony XGAVPL-EX100, Computer (Instructor Station): Custom Built with Windows XP OS (specifications meet Aerosim minimum requirements), Computer/Laptop (Student Notebook): Lenovo (Intel Processor), with Windows XP OS.

Opportunity & Challenge

For TAM Airlines, reducing training and operational maintenance costs was the opportunity. They wanted technicians to be more disciplined, further develop good habits and increase standardization. The process is critical. If the process is not followed, gate-returns due to improper fault isolation procedures and troubleshooting can lead to an expensive proposition.

Through investigation into their operating practices and internal maintenance costs, TAM identified that sometimes an incorrect procedure was accomplished in an effort to complete fault isolation and troubleshooting during line maintenance. "Aircraft were taxiing out to the runway and unnecessarily returning to the gate because of some malfunctioning component that was improperly returned to service," said Training Director Leonard Grant. "On certain occasions aircraft LRUs were being replaced, when in fact, they were not the cause of the maintenance issue in the first place." Regardless of whether a removed LRU was operating properly or not it is required to have them re-certified by Airbus, which is a large cost in itself.

The specific challenge for TAM maintenance was to improve training on aircraft systems logic, normal operating procedures, and troubleshooting/fault isolation. Previously, this was not possible all at once. It required the use of manuals, aircraft, and training tools such as static schematics, making it difficult to have all training in one central location. TAM was looking for a solution that could handle all of this material delivered to a larger group and operate in a distraction-free environment where students could concentrate and allow learning to flourish.

"Attempts at fixing something are no good for the aircraft, for solving the problem, and especially to begin formalizing trends in order to analyze and reduce problems in the future," said Captain Leonard Grant. "One must follow a process to understand maintenance trends. To learn this process, troubleshooting, fault isolation, and procedures training is so important and necessary."

Solution

TAM first learned about virtual maintenance training software at the Airbus Symposium in 2010. At the symposium, they experienced the Airbus Virtual Aircraft and became more curious about the benefits in using this type of training technology. They needed technology to address critical questions and provide a different way of thinking while tackling the problem.

"We received a demo from Aerosim on the Virtual Maintenance trainer to address our need for the custom troubleshooting scenarios and associated faults," said Edgar Santos Jr. "What we found was the best integration of the Airbus Virtual Aircraft with a fully simulated virtual cockpit (Aerosim's Virtual Flight Deck)." Bruno Gallinella, International Contracts Administrator continued by saying, "The program was easy to work with, and not complicated making the implementation process very smooth."

After a few on-site visits, the decision was clear to work with Aerosim and implement a classroom setting while simulating a virtual aircraft environment. TAM Airlines selected Aerosim Technologies to implement the virtual maintenance suite in the classroom. The maintenance training solution consists of:

- Aerosim Virtual Maintenance Trainer for Airbus A320 and A330 (active system schematics, custom maintenance shop items, custom troubleshooting scenarios and procedures, and integration of narrative videos) to review component location, system logic/operation, fault isolation procedures, and return-to-service tests.
- Implementation of a 20-day (minimum 120-hour) "Line Mechanic Course" to teach and reinforce systems logic and operation, troubleshooting, fault isolation procedures, and return-to-service tests.

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Results

Since the integration back in February 2012, instructors and students have fully embraced this innovative approach to maintenance training and have high hopes for continued success in the short and long term. Instructors are experiencing better student engagement and motivation.

"It's amazing...students are staying after class to study longer, finish their troubleshooting tasks and fault isolation procedures, and they are very motivated to learn now because of this impressive software," mentioned Paulo Limberti, Technical Training Coordinator at TAM. "The best part about this software is that from beginning to end of one entire maintenance training scenario, the technician can see what the proper fault isolation procedure has accomplished. The technician gets more closure this way and learning is accelerated. The new training environment is fully interactive and permits users to learn by exploring and using free-play technology."



From the inception of this initiative, TAM Airlines will be focused on the primary objective: 80% reduction of aircraft "Gate-return" or "Turn-back" over the next three to five years. No preliminary data has been released or calculated yet, but TAM is keeping a close watch on results and feel these numbers are very realistic due to the enhanced, more refined troubleshooting and fault isolation procedures training.

Other benefits that will result from the implementation of the Aerosim Virtual Maintenance Training Suite include reduction of remedial training, improper removals of Line Replaceable Units (LRU) and the costs associated with both. On the customer side, TAM expects another critical benefit tied to the passenger experience. With reduced aircraft delays and increased measures of safety, TAM expects passenger satisfaction to rise.

Conclusion

Aerosim enjoys partnering with organizations like TAM Airlines. TAM is forward thinking and results driven, which make working together a perfect match. They trust a training partner to provide the best product on the market for a good price that delivers results. Aerosim is focused in a direction of innovation through technology and are pleased to deliver solutions that are impactful to organizations like TAM, and create efficiency while reducing costs.

"Aerosim's warranty, flexibility, customization, and competitive pricing were also important to our decision making process and investigation of all solutions available," said Captain Leonard Grant. "The active system schematics with moving flow, custom maintenance shop items to suit our requirements, and customized line-experienced scenarios are also excellent with this training suite and are a must-have. In the end, Aerosim's solution was the best on the market and was the easy choice to make."