AFSO21 Journey

To learn Lean manufacturing concepts under the Air Force Smart Operations for the 21st Century, aircraft mechanics from the 725th Aircraft Maintenance Squadron, Rota Naval Air Station, Spain, build aeropod airplanes in an assembly line process. (USAF photo SMSgt Bryan Ford)

Submitted by Maj Joe Heilhecker

While dealing with the fog and friction of warfare, have operational commanders ever had everything on their wish list prior to or during a conflict? Have logistics officers ever supported the operational commanders and led in an environment with no constraints? No matter how plentiful or scarce the resources, the victorious commanders reach their objectives more effectively by using their constrained resources more efficiently than their opponents. The art of exploiting the opponent's weaknesses, while minimizing one's own, will endure as long as there is competition on the battlefield, free market, athletic field, etc. The desire to win drives a passion for performance improvement, and that passion resonates throughout airpower history. From the muddy fields of France in 1917, with airpower's exponential growth during World War II through General LeMay's formation of SAC and during the jet fighter era, airpower's performance improved not only with technology, but with process improvements.

The most recent logistics process improvements can be linked back to 1993 when the Air Force asked the Massachusetts Institute of Technology (MIT), "Can the concepts, principles and practices of the Toyota Production System be applied to the military aircraft industry?" This simple question was the genesis of the Lean Aerospace Initiative (LAI)—a collaborative effort among the Air Force, aerospace defense companies, and MIT focused on implementation of Lean principles throughout the acquisition, development, and production processes of military aerospace systems. Through extensive research, LAI eventually developed a holistic Lean implementation guide titled "Transitioning to a Lean Enterprise." Meanwhile, WR-ALC embarked on their Lean journey providing significant early results thereby spurring the other two ALCs to kick start their own continuous process improvement journeys. Each center started by developing their own body of knowledge and training implementation skills from various Lean experts. The experts hailed from consulting firms, industrial partners, and universities, each with unique vocabularies and/or proprietary continuous process improvement (CPI) tool kits. Although the approaches used at the tactical level varied, the results at the operational level were dramatic. For example, by removing a mechanic's travel by 60% in the C-5 programmed depot maintenance (PDM) process — the flow days dropping from 339 days to below 170 days…allowing a 33% increase in throughput. Similar waste reduction efforts over 5 years, cut flow days on the organic KC-135 PDM line from over 400 to below 180 days and reduced the number of aircraft on station from 53 to 22—that's 31 aircraft returned to combat operations! In conjunction with the parallel efforts at the contracted KC-135 PDM locations, depot possessed aircraft plummeted from 176 to less than 60—that's 116 aircraft returned to combat operations! Along with the MAF, the CAF felt the impact of the CPI journey with F-16 Common Configuration Implementation Plan (CCIP) line established an 11-cell, single piece flow process. The results reduced flow days from 142 to 119, with aircraft on station dropping from 20 to 9. The PDM lines might be the most visible examples of success, but results were also found in the commodities arena as well. In fact, results to date in all areas show successfully led process improvement efforts result in increased productivity of Airmen, dollars, and machinery, plus

Air Force senior leaders take a tour of Boeing's 737 Production Facility in Seattle as part of the AFSO21 industry exchange. The site visit gave Air Force representatives a first-hand look at how Boeing incorporates Lean processes into its business practices. (Boeing courtesy photo)

improved availability of critical equipment, and faster respond to new logistical requirements.

AFSO21 is about combat capability, strengthening the Air Force by systematically reducing waste, variability and unevenness. AFOS21 program objectives became known as the 5 Desired Effects: 1.) increasing productivity of our most valuable asset – people; 2.) significantly increasing in critical equipment availability; 3.) improving response time and agility; 4.) sustaining safe and reliable operations, and 5.) improving energy efficiency. Leaders implemented a CPI program that reached out to numerous academia and industry experts, as well as the AFSO21 program office, to build their body of knowledge in application of CPI tools, thereby resulting in some differences between the ALCs, i.e. slightly different terminology and models.

If the core of AFSO21 is to assess current operations, set targets on strategic needs, take action and follow through to conclusion, then while taking action, problems must be solved for a team to reach their new performance targets. From site visit observations, there was an absence of consist problem solving methodology looking for the proper leverage points at the constraint(s) instead of the problem's symptoms in the value stream.

To once again borrow from the origination of Lean, the AFSO21 office tailored the 8-step problem solving process from Toyota's Georgetown, Kentucky plant. Slightly modifying on the descriptions and replacing Plan, Do Check, and Act (PDCA) cycle with the Air Force's Observe, Orient, Decide, and Act (OODA) loop, the AFSO21 team delivered a scalable problem-solving process. [The process is detailed in the AFSO21 Playbook, volumes B and

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J.] Now, the OODA problem-solving methods are introduced in the Level 1 and 2 implementers' courses, senior leaders' class, general officer class, and eventually will become part of the curriculum at all levels of professional military education. Properly following the 8-step model will focus the performance improvement desires while preventing some of undesirable effects and smooth the CPI journey path. As the Air Force's CPI program matures, the AFSO21 system will evolve to improve the habits of Airmen to become better system thinkers; see value streams; solve problems at the root cause; and reduce firefighting.

Dr. Ronald Ritter, Air Force secretary's special assistant for Air Force Smart Operations 21, discusses improvements that the 374th Maintenance Squadron's engine shop is making for the AFSO 21 project with Senior Master Sgt. Guy Ragan, 374th MXS propulsion flight chief, Yokota AB. (USAF photo by SrA Veronica Pierce)

Integration of solutions found at the tactical level across the entire enterprise is the greatest challenge for AFSO21 advocates. What does a model engine line look like and how do we replicate it? What is the standard KC-135 or C-130 isochronal inspection process? How do we take the Vandenberg AFB Light Emitting Diode (LED) street light solution and deploy it across the Air Force to save millions of dollars? Unfortunately, we can't just take the solution and say "make it so" it is not that easy. It will involve functional sponsorship of policy change and overcoming budget hurdles. It will require teams working on shared goals across common value streams. It will take communication of not only the solution but the starting point of the problem and the journey along the way.

Col. Charles Fox records inputs at a breakout session during a three-day meeting of U.S. Air Forces in Europe leaders designed to help USAFE-wide implementation of Air Force Smart Operations for the 21st Century. (USAF photo Col. Susan Strednansky)

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