The forecasts for the industry’s need for aircraft, mechanics, and pilots reflect aviation’s growth trend. The numbers from Boeing, Oliver Wyman, Aviation Technician Education Council (ATEC), and others show the importance of aviation training. The question is how will the industry get the aircraft technicians it needs?

A recent report from ATEC found that aviation maintenance technician schools produce about 60 percent of new mechanics and the military and on-the-job training account for the rest. In a report prepared for the Aeronautical Repair Station Association (ARSA) by Oliver Wyman and released at ARSA’s annual Legislative Day in March, the demand for aircraft mechanics will outstrip the available supply by 2022 (See arsa.org/news-media/economic-data). (Also see Dr. Bill Johnson’s article in this issue.)

What are the challenges?

Challenges include the need to promote aircraft maintenance as a career, lack of resources, lack of students, and the difference in what the FAA mandates and what the curriculum should be for today’s aircraft. This spring, bills in the house (H.R. 5701) and senate (2506) were introduced in support of the curriculum change.

“The biggest challenge we are facing today,” says Jeffrey Krein, AMT instructor, Northland Community and Technical College, in Thief River Falls, MN, “is that high school graduates don’t know that working on aircraft could be a career. By the time I see students at career fairs, they have already

By Barb Zuehlke

Aircraft Maintenance Technology talked to several Part 147 schools and MROs on the challenges and the solutions.
been told by their high school teachers that the only way to have a happy and secure future is to go to a four-year institution and receive a bachelor’s degree.”

Dennis Moehn, Fox Valley Technical College A&P instructor, says. “Another challenge is maintaining instructional equipment that is relevant to what our graduates will be working on in the field,” Moehn says. “A tear down PT6 turboprop engine currently sells for around $28,000. Manufacturers are reluctant to give equipment to colleges because they are worried the equipment will get back in to airworthy equipment.”

“I have been at Spartan College for seven years, and the challenge has remained the same: presenting aviation and aerospace as viable and in-demand career options to high school students as well as veterans, and adult populations,” says Ryan Goertzen, vice president of international development and the past president of ATEC.

“The primary challenge,” says Pittsburgh Institute of Aeronautics' Steven Sabold, “has been in finding ways to include current and/or new technologies, soft skills, and the human factors necessary to be a top quality technician, without further increasing the length or cost of the education for the student.”

“We have definitely noticed challenges with newer students that revolve around their communication skills and study habits,” says Karen Jo Johnson, associate professor, Southern Illinois University Department of Aviation Technologies, Carbondale, IL. “Younger students fail to see the necessity in written and oral communication skills, which requires faculty to place a larger emphasis on those types of assignments in addition to the favored hands-on labs. Faculty struggle to get newer students to do something as simple as a reading assignment. Rather, students tend to want more just-in-time type training.”

“The greatest challenge to today’s AMT student in many ways lies in the depth of the material to be covered in only 15 months,” says Michael Gross, director of college communications for Cape Cod Community College (CCCC), Plymouth, MA. “It is an intense learning schedule with vast amounts of material to absorb. Students who come into the program with a stronger background will obviously have an easier time. However, the students who need the most help often are the ones who come in with no prior experience at all.”

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WHAT IS INDUSTRY DOING?

AMT: What sort of recruitment programs is AAR involved in?

Kleiman: AAR partners with local community colleges and technical training schools near our five MROs in the U.S. to help develop curriculum to teach students modern airframe and powerplant technology. We also hire students and grads from these programs and have created on-ramps to full-time employment. We’ve also stepped up recruitment of veterans transitioning out of the military as part of a recruitment strategy to target individuals who have a strong skills training and development background. The goal is to reduce the time it takes to upskill freshly minted A&P mechanics from about one year down to six months.

An example is AAR’s partnership with Rock Valley College in Rockford, IL. We stood up a new wide-body MRO facility there in 2016, and the college agreed to enhance its A&P training program and build a 40,000-square-foot training facility near the airport. We grant interviews to anyone who completes the program. As a result, enrollment in the A&P program at the college went from about 40 to full capacity at 170 students.

AMT: What challenges are you facing in developing the next generation of aircraft technicians?

Kleiman: The industry remains challenged by the loss of vocational and technical programs in middle and high schools and a negative perception toward hands-on skilled labor. The focus turned almost solely to careers that require a bachelor’s degree, made worse by the airline industry slump after 9/11. What’s more, maintenance careers take place behind the scenes and off most people’s radar. So it’s imperative that maintenance providers raise the curtain and introduce these careers to young people starting in middle school. Until Part 147 schools are no longer tied to teach old techniques such as dope and fabric, employers will have to develop their own training programs to get AMTs work-ready. There has been some movement legislatively, with support in both houses of Congress for an aviation workforce development pilot program bill that would provide grants for training initiatives operated jointly by a business or labor group, school and government entity. Both measures will help us begin training the additional employees that we need and can put to work immediately in our repair facilities.

AMT: What skills do new graduates need more training on?

Kleiman: Next generation aircraft using advanced technologies will require AMTs to become more proficient in STEM. I believe we’ll see more focus on continuous learning and critical thinking with this generation of tech savvy young adults. Even with current platforms, new grads need more hours of experience and specialization in specific areas and this lack of experienced mechanics remains a key issue.

AMT: What sort of outreach programs is AAR involved in?

Kleiman: AAR hosts programs at middle and high schools in Chicago, Miami, and Oklahoma City to expose students and their teachers to aviation careers and to help change their perceptions about hands-on skilled labor. This includes visits to our nearby MRO hangars to see the aircraft and mechanics in action. One ongoing program involves AAR employees, along with our recently retired CEO David P. Storch, mentoring high school students at Perspectives Charters Schools on Chicago’s South Side and exposing them to opportunities in aviation. We continue to look for new ways to raise awareness of and interest in aviation careers. For example, we are initiating a partnership with our customer Republic Airlines in Indianapolis to go into high schools and middle schools to talk about these exciting careers. Also, AAR just announced its sponsorship of the Design Hangar in the How Things Fly Exhibit at the Smithsonian Air & Space Museum, including a $1 million gift from AAR, former CEO David Storch, and the family of our late founder Ira Eichner. We’re also sponsors of the Cradle of Aviation Museum’s high-school program in Long Island, NY, and the Royal Aeronautical Society’s Cool Aeronautics programs in the UK.

For more information visit www.aarcorp.com.

WHAT OPPORTUNITIES IS THE SHORTAGE CREATING?

“While the technician shortage is a problem facing the industry, it is creating excellent opportunities for our graduates,” says Chuck Horning, Embry-Riddle Aeronautical University (ERAU) associate professor and department chairman. “Recent graduates have filled positions in manufacturing, MRO, corporate and commercial aviation, unmanned systems, and space. For the foreseeable future, graduates have an amazing opportunity to pretty much go anywhere they want in the industry.” ERAU is headquartered in Daytona Beach, FL.

“The technician shortage has opened a very robust communication between
CAPE COD Community College attracts students of all ages from high school graduates to career changers and retirees who have always wanted to work in aviation.

CAPE COD COMMUNITY COLLEGE

the schools and the industry,” says Mark Holloway, Aviation Institute of Maintenance (AIM) corporate director of aviation programs. “Our schools are entering partnerships with major carriers, regional airlines, and manufacturers that guarantee access to graduates during their job search.” AIM is headquartered in Virginia Beach, VA, and has 11 locations.

Russo says, “Some recruiters have even come out to visit our school and talk to our students about their company’s employment opportunities.”

HOW ARE YOU ATTRACTING STUDENTS?
Promoting aviation as a career is an industrywide concern, and the aircraft maintenance schools have to get in front of students to promote the industry as well as their individual schools.

“How are you attracting students?”

Promoting aviation as a career is an industrywide concern, and the aircraft maintenance schools have to get in front of students to promote the industry as well as their individual schools.

“The biggest competitor for students right now is the robust job market,” says CCCC’s Gross. “Very low unemployment means students likely are already working one or two jobs, and giving all that up for 15 months is very challenging.” The school is working to make its program more flexible for potential students by offering housing at the Bridgewater State University campus, and developing a hybrid model of the program where instruction is offered online.

At UDC, Russo says, “We utilize social media and community outreach as our primary means of attracting new students, allowing students to see what we do firsthand. Many high school students who have never even considered a career in aviation become inspired after visiting our facility during a field trip.”

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How to Give Back

Avocet MRO Services is a central Florida-based aircraft maintenance services provider with facilities at Orlando-Sanford International Airport and Lakeland Linder Regional Airport, offering best-in-class services and capabilities. Hands-on training and education have helped the company to deliver service excellence without compromising asset value or turnaround time.

As the company grew, Avocet recognized two opposing needs — a desire for greater education, economic and career opportunity among young people in the communities where they work and live, and a short-fall within the industry of qualified, trained professionals that could keep up with the changing needs and technology demands driving the industry forward.

It is a long-held belief by Avocet’s founders Patrick (president and CEO) and Susan Arellano that with business success comes a responsibility to give back, along with a personal duty to positively affect the society in which we live.

To honor their commitment to give back, Avocet launched STAND UP for STEM focusing on training, education, and employment initiatives to help build a sustainable future for the industry by ensuring the next generation of highly skilled engineers and specialists are in place; while also inspiring and encouraging young people to pursue careers in STEM that can provide well-paying opportunities in the aviation industry.

Patrick Arellano: As it relates to training, one of the things that continues to set us apart is the integrated approach to training that we take, in that we train our technicians across multiple disciplines against a specific aircraft type. The knowledge and capability of our technicians is not limited or restricted to one repetitive maintenance task. This helps make them more well-rounded, and thereby significantly increasing their technical aptitude and versatility.

In addition, we also provide our technicians with general familiarization training when beginning work on a specific aircraft type they will be assigned to work on so that they have a much broader understanding and knowledge-base starting out.

AMT: How many maintenance technicians do you employ, and how many would you like to have?

Arellano: Avocet currently has 75 maintenance technicians. As the company continues to grow, we would like to add an additional 200 technicians to the team over the next two years.

AMT: What programs has the company implemented to alleviate the maintenance technician shortage?

Arellano: In 2017, Avocet MRO Services launched its STAND UP for STEM program. The program is aimed at promoting careers in MRO and improving readiness for the aviation workforce with the goal to address and impact the growing need for qualified labor in the aviation maintenance sector.

While still in the program’s first year, Avocet has helped raise awareness of the need and demand for a more qualified workforce, and the company has been applauded by its partners and customers for taking up the charge to help make a positive impact to benefit the industry overall. Avocet has also received overwhelming interest in its apprenticeship and internship programs by young people, whom the company hopes to be able to train and develop as the industry’s next generation of specialists and technicians.

AMT: Has the company partnered with schools or other companies to offer additional training programs?

Arellano: Avocet has implemented three programs working directly with schools and the education community:

- The development of a three-year apprenticeship program in partnership with the Florida Department of Labor
- An 18-week internship initiative with Embry-Riddle Aeronautical University
- Active membership on the Seminole County Public Schools Aviation Program Advisory Committee

In addition, our long-term goals for the program include expanding our facilities at Orlando Sanford International Airport with an on-site STEM-focused school, workshop, and training area; direct outreach to young students through hosted field trips; and onsite and offsite career days.

For more information visit www.avocet.aero.
WHAT NEW PROGRAMS ARE BEING OFFERED?
Many of the schools interviewed mentioned new avionics programs to meet the needs of the industry. Cape Cod is creating an avionics/aircraft electrical technician program that it hopes to start this fall. ERAU offers an avionics minor. The University of District of Columbia has a new avionics program which includes both FCC GROL and NCATT AET. Aviation Institute of Maintenance is opening its 12th facility in Charlotte, NC, toward the end of the year. Spartan is currently working on an A&P project that will standardize its program offerings across each of its campus locations. It acquired new campuses in Los Angeles in 2014 and Denver in 2016.
Other new programs are online offerings and unmanned aircraft systems courses. Northland added a Large Unmanned Aircraft Systems (UAS) course six years ago and is now the leading UAS technician school in the United States. Spartan is now in its third year of offering a hybrid AMT program; it consists of 13 months online, followed by seven months in Tulsa, OK, and is branching out internationally. Southern Illinois University added an online BS degree in aviation maintenance management and also plans to expand its existing unmanned aircraft program.

WHAT IS INDUSTRY’S ROLE?
Industry involvement has greatly impacted student recruitment, the availability of internships, and the tools and equipment schools need. Companies that offer tours or equipment for training schools open the door to ideas for career choices and future employment. And many schools have advisory boards to keep up on the latest trends and industry needs.

“Our schools work closely with the local airlines, repair stations, and manufacturers in order to form those partnerships in order to provide the workforce they need,” says AIM’s Holloway. “We have a great relationship with local industry,” says Tulsa Tech’s Oxley. “They are happy to serve on our advisory committee and have been an important part in our program’s success. We acquire donations from them frequently.”
ERAU’s Horning says, “We have been fortunate to have a number of excellent relationships with industry. The department is one of the Delta Air Lines partner schools. Additionally, a number of industry partners have worked with us to establish internship programs.”

The lack of new aircraft and components is a common challenge for aviation schools.

“While finding willing participation in the advisory committee is not difficult,” SIU’s Johnson says, “obtaining the necessary equipment donations to support our lab environment is. We are constantly faced with decreases in state funding and a lack of widespread aviation industry involvement so we are always actively searching for donations.”

Northland’s Krein says, “We’ve found obtaining new equipment and training aids difficult. We have not been able to procure new aircraft for student training as quickly as we’d like and we look for every opportunity to get donations of, and purchase new (to us) aircraft to replace the aircraft that are getting to the end of their useful life as training aids.”

WHAT DOES THE FUTURE HOLD?
With support from industry associations like ATEC, ARSA, General Aviation Manufacturers Association (GAMA), and others, and the push from 147 schools, passage of the bills in congress will go a long way in making aircraft technician training what it needs to be to fill the industry’s workforce needs.

“The looming technician shortage is not an AMT school problem or an employer problem, it is an industry problem,” Russo says, “and we need to come together as an industry in order to solve it. If you are an employer of AMTs but are not currently partnering with an AMT school (at least informally), then please reach out to your local school and open a dialogue to see how you may work together to meet the needs of future AMTs. Please take the first step, as the school may be operating on a shoestring budget with minimal staffing (especially if it is a public school), and may not have the resources to reach out to you. Let’s work together, so that the next generation of AMTs can aspire, accomplish, and take on the world.”

SOUTHERN ILLINOIS University’s helicopter lab. Its helicopter specialization is supported by a strong relationship with Bell.

NORTHLAND COMMUNITY AND TECHNICAL COLLEGE has a well-known large unmanned aircraft systems program and recently started a small unmanned aircraft systems field service tech program that is a standalone certificate.

NORTHLAND COMMUNITY AND TECHNICAL COLLEGE