Colleges and Universities Providing Opportunities for Industrial Automation

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The industrial automation profession has a significant dilemma as older professionals who have extensive knowledge and experience are retiring while skilled and educated replacement talent is not available to fill the gap. For the past decade, many industrial companies have been hiring retired employees on contract to try to meet the need, but this has been a short term fix. With older employees retiring later in life the source of retired talent is dwindling. Developing younger skilled and educated talent is essential.

Many colleges and universities provide very good chemical, electrical, mechanical and industrial engineering programs and degrees. These degrees provide a good, broad-based education for students aspiring to develop industrial professions. But it can take years after graduation to develop the specific industrial automation knowledge and skills needed to become fully effective professionals.

Unfortunately, to this point in time, colleges and universities have been reluctant to develop degree programs focused on industrial automation and control. There are many reasons for this reluctance. Industrial automation is a very specialized field. As a result, starting programs in this area has been seen as a risk to the universities in terms of getting the students to fill these programs. Additionally it is difficult to get talent to teach industrial automation and control courses. Finally, since many of the necessary courses involve hands-on experience, the expense for developing the laboratories has been seen as a deterrent.

On the other hand, there have been considerable discussions among academic leadership teams on how colleges and universities can become more relevant in this age of digital media. Truly excellent “on-line” college level training programs have been on the rise, are accredited and are becoming well accepted. These programs have initially targeted traditional academic subject matter normally taught in classroom environments. This type of training can be very effectively done through online venues at very low cost. Often these programs are superior to classroom training because they can call on the best trainers in the world to lead the training which is impossible for traditional college environments.

This is causing the colleges and universities huge concerns because their traditional big lecture hall, large-volume, on-campus courses can be more effectively satisfied through on-line training. The big lecture hall courses are the ones the colleges tended to make most of their revenue from because the faculty to student ratio is so low. For colleges and universities to survive in terms of on-campus programs, they need to rethink their traditional delivery model. As a result, College leadership teams are re-evaluating the future of their on-campus course offerings. Some of these leadership teams are realizing that academic training will be provided using online training approaches while on-campus training must evolve toward more hands-on, vocational courses and programs involving laboratory and practical environments, such as industrial automation and control.

The solution to the industrial automation skills gap may be at hand. But it will not happen without some effort and leadership by the automation and control community. As colleges and universities search for the new generation of on-campus vocational training, the automation community must step up and help them develop industrial automation and control programs.

This will require that the obstacles the universities are facing are removed so they can see that developing industrial automation and control programs is both desirable and practical. There are four specific things required to help the universities effectively move in this direction. First, measurement, automation and control professionals must help universities establish course curricula in automation and control. Most universities do not have automation and control specialists on staff and developing a curriculum is a daunting task for educators not intimately familiar with a specialized domain like automation. The task of developing such a curriculum is often relegated to the science department leadership of the colleges. They may know biology or physics, but typically do not have the expertise to develop a measurement, automation and control curricula.

Second, automation professionals, even those recently retired, should deliberately make themselves available to colleges and universities to fill faculty requirements and to advise on the automation and control programs as they are starting up. This may be particularly attractive for automation professionals who have recently retired, but have a desire to stay in touch with the field. There is a wealth of talent among both working and retired automation professionals that universities may not know exists. These professionals need to make ourselves known.

Third, the universities need hands-on laboratories to provide the practical skills students require. Today, with the rise of digitization and advanced software, much of what is required may be able to be provided in software. Complete, first principle models exist in software for many industrial plants and processes. These can be used to provide a good amount of the laboratory experience students require. Although this software may satisfy a large percentage of the need, there will still be a need for some basic hardware, such as instruments, valves and PLCs to supplement the training. To develop effective automation and control employees, the automation industry has to make a concerted effort to help universities with this equipment. This investment may result in longer term payback, but without moving in this direction lack of a skilled and trained workforce will lead to a much more painful business situation.

Finally, companies requiring new measurement, automation and control talent should team with colleges and universities to develop joint programs to improve the skills of existing employees and develop the next generation automation workforce. This type of partnership can help encourage the colleges and universities to invest in this area since they will see an immediate payback and a source of skills and guidance.

Additionally, colleges and universities are often evaluated on their ability to turn out students who immediately enter the workforce with good and well-paying positions. With the current lack of skilled and trained automation talent base that is predicted to get even worse over the next decade as more automation professionals retire, there is plenty of work and plenty of positions for new graduates with measurement, automation and control training and skills. The opportunity for colleges and universities to grow their reputations in this area is real and should be very attractive.

A skills gap exits in industrial automation today. Industry has been working to find reasonable ways to fill this gap for decades. As colleges and universities work to determine their future, industrial companies have an unprecedented opportunity to drive positive change to expand industrial automation and control education. This is almost a perfect storm of driving forces converging to meet a real need across industry.

The time is now! It is up to us, as industrial professionals to make this positive change happen.

It cannot happen without us.