

CAPacity

Newsletter for the ISA Certified Automation Professional® (CAP®)



December 2006

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CAP® Profile – Andy Mobley



Becoming an ISA Certified Automation Professional® was a personal goal for Andy Mobley. He learned that the organization was developing the certification program while he was attending an ISA show a few years ago.

In response to industry requests, ISA established the CAP® program in 2004 to recognize and document the specialized knowledge, education, and experience of automation professionals. Mobley participated in the team of senior-level professionals who developed the exam.

Having worked in instrumentation, controls and automation for 30 years now, Mobley offered extensive experience and expertise to the team. He made two trips to ISA headquarters for writing and reviewing the exam questions.

“The CAP provides an opportunity to update your knowledge in automation and makes you more valuable to your employer,” Mobley said, explaining why the certification was a personal goal for him. His experience with the exam has expanded his view of the automation industry and brought him up-to-date on the numerous changes.

“We tend to know what goes on in our own companies,” he said. “The CAP gives a global view. It requires candidates to have a broad understanding of the whole industry.”

Mobley works as systems safety engineer for 3M in St. Paul, Minn. He has worked for the company 31 years, beginning as a maintenance engineer. In his current position which he has held for the last 16 years, he oversees the operational safety of plants using flammable vapors and gases.

3M is a diversified technology company with \$21.2 billion in annual sales and a worldwide presence in the following markets: consumer and office; display and graphics; electro and

communications; health care; industrial and transportation; and safety, security and protection services. The company operates 139 plants, and its products are sold in nearly 200 countries.

Mobley’s responsibilities extend to approximately 40 plants primarily located in the U.S. He surveys the plants regularly for safe use of flammable vapors and gases, provides internal certification of equipment installed in the plants, and monitors plant safety standards. He answers questions of plant operators, participates in project design reviews, and updates applicable manuals and documents.

For those who are considering the CAP exam, Mobley recommends studying a broad range of information. “You will need to have a little knowledge about a lot of things,” he said, recommending candidates study all aspects of the industry at a basic level. “The exam has many elements and covers a broad knowledge base.”

He recommends the CAP as a means for automation professionals to distinguish themselves in the industry. “The changing landscape in American corporations and so much work shifting offshore create a very competitive environment,” he said. “Having the CAP gives evidence of your knowledge and expertise in the field. It provides an advantage to those who have it.”

CAPs are responsible for the direction, design and deployment of systems and equipment for manufacturing and control systems. They must renew their certification every three years. This is accomplished earning Professional Development Points (PDPs) by working, training, and continually gaining knowledge in the field.

Mobley plans to renew his certification when it is due next year.

New Twist in 'Blending' Engineers' Careers

By Ellen Fussell Policastro

Whether you're in the chemical, electronic, manufacturing, or other engineering realms, you could see new horizons open up for your career in the next few years. The U.S. employed 1.45 million engineers in 2004, and by 2014 that figure could increase to 1.64 million, said a U.S. Department of Labor (DOL) Bureau of Labor Statistics study.

The healthiest growth will be in the professional, scientific, and technical services, the second largest engineer employer. In fact, employment growth should be fastest for biomedical engineers (30.7%) and environmental engineers (30.0%). Civil and industrial engineers will see healthy employment growth as well, with increases of 16.5% and 16% respectively. Mechanical, electrical, and chemical engineers will grow moderately. Manufacturing engineer employment should grow by only 4.4%. The mining and petroleum industries should see decreases in employment.

Biomedical engineers

Biomedical engineers develop devices and procedures that solve medical and health-related problems by combining their knowledge of biology and medicine with engineering principles and practices. Pharmaceutical manufacturing and related industries could see a boost in the demand for biomedical engineers because of the demand for more sophisticated medical equipment and procedures as well as an increased concern for cost effectiveness.

The significance of this profession's evolution to the manufacturing environment all ties back to a convergence with and interdependence between the pharmaceutical and biotech industries, said Dan Matlis, president of Axendia in Yardley, Penn. (See June InTech article, "Chemicals to Cell Cultures.") The term "biomedical" is sometimes generic, he said, but based on the definition from the U.S. Department of Labor, it covers every engineering role in the pharmaceutical industry. The DOL site said engineers in the biomedical realm need a background in other engineering specialties, such as mechanical or electronics engineering, in addition to specialized biomedical training. While the good news is "the government is saying the need for our types of skills will be higher," Matlis said, he offers one cautionary word of advice: "We need to broaden our knowledge base in order to fit into this evolving life sciences market. If you're a chemical engineer, and you're used to blending, you need to grow your skills to understand the overall process and how these generic therapies fit into your core competencies and education, and most definitely enhance that level of education to fit."

"In the pharmaceutical industry, it used to be you were hired in a particular department, and that's where you spent most of your career," he said. "But now we're seeing companies are hir-

ing new employees and giving them rotations, allowing them to experience different parts of the business. If they're at a company with specialties in pharmaceutical, medical devices, biotechnology, and diagnostics, it really gives them a good foundation to be able to leverage and look outside the box. It's a very repetitive cycle."

From an educational standpoint, Matlis said he sees the trend leaning toward a much tighter alignment between academia and industry. Universities are developing programs to address particular needs of a specific industry at the undergraduate and even graduate level, he said. "I'm also seeing continuing education courses coming out where instructors tend to be industry people teaching in an academic environment. They have a wide variety of degrees, ranging from chemical, mechanical, and electrical engineering, he said. "So it's more of a cooperative approach with education, academia, and industry. My sense is there will be more concentration [in degree curriculums]. You'll still graduate with a Bachelor of Science in engineering, but within that there will be more detailed concentrations."

Chemical engineers

Again, the pharmaceutical industry is your best bet when seeking employment in the chemical manufacturing industry, the study said. Although overall employment in the chemical manufacturing industry is expected to decline, chemical companies will continue to research and develop new chemicals and more efficient processes to increase output of existing chemicals. Service industries such as scientific research and development services, particularly in energy and the developing fields of biotechnology and nanotechnology, should see the most growth for chemical engineers.

Environmental engineers

The environmental industry will require more environmental engineers to comply with environmental regulations and develop methods of cleaning up existing hazards, the Bureau of Labor Statistics study said. The emphasis will shift to preventing problems instead of controlling existing ones. Increasing public health concerns will also boost demand. While economic conditions might not affect environmental engineers as much as others, a downturn could reduce environmental protection, reducing environmental engineers' job opportunities.

Right now though, environmental job roles are evolving mostly because the government is requiring emissions control vendors to engineer, design, and construct a lot of technologies for the power industry, refineries, and auto diesel engines to meet more stringent standards, said Chad Whiteman, deputy director at Institute of Clean Air Companies (ICAC) in Washington, D.C. Some of the chemical engineers are actually process engineers who design a chemical process for, say, a scrubber system, which will take the exhaust gas coming out of the boiler or the turbine and run it through a treatment process, Whiteman said. There's a wet treatment process, typically limestone or alkaline materials mixed with water, which sprays the gases coming off the boiler. So they have to design the size of the

equipment to handle the amount of gas coming out. "There's also the concentration of the pollutants they're trying to control," he said. "It's all dependent on the type and size of the equipment. Structural engineers are basically civil engineers who design the structural steel to support these new technologies."

Another reason for employment demand in the air pollution control industry is an aging workforce, similar to the power industry, Whiteman said. "Because of this, there's a lot of experience in the industry from people who will be retiring in the next five years. They're hurting for new people to step up and start taking the reins over for these folks who've been in the industry for 25 years."

On the education side, few universities actually provide a true environmental engineering degree, Whiteman said, "although you can get an environmental engineering curriculum. At least since the mid 1990s, most come through civil engineering departments. But it may be growing." People coming into the environmental industry now are either civil or chemical engineers, he said. Although some are electrical and manufacturing engineers who deal with electrical processes and controls. Source: U.S. Department of Labor Bureau of Labor Statistics (<http://stats.bls.gov>)

About the Author

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As the Career Coach – InTech Article Reprint July 2006

Testing Windows for ISA Certification Electronic Exams

Beginning 1 January 2007, ISA electronic certification exams will be available during three testing windows. Each exam testing window will have a deadline for applications to be considered for testing in that window. Eligible candidates will only be able to test during the testing windows.

The candidate eligibility window is nine (9) months. Once your application is approved, testing must be completed within two exam testing windows. Your first exam testing date must be scheduled during the first available window after your application is approved. All rescheduling and retesting must be completed within the two consecutive exam testing windows within your nine (9) month eligibility period.

You may reschedule your exam once, and the rescheduled date must be during your first exam testing window. If you must retest, you must allow 30 days between your initial exam date and your retest date. If you are not able to schedule a retest in

Networking Success at CAP EXPO Luncheon

By Kristy Becker, CMP, Certification Administrator

CAP Luncheon...A Real Find

As those of you who have attended ISA Expo know, to have a large event, you need a large facility. And Reliant Center in Houston fits the bill.

Just a few minutes prior to this year's CAP networking luncheon, I had a group of potential CAPs in the room, but not one certified CAP. I ran into Dick Caro, and offered him a free lunch! Shortly thereafter, the CAPs came marching in.

I was pleased to have Vernon Trevathan, Chair of the CAP Steering Team, Don Gillum, Chair of the ISA Certification Board, and ISA authors Greg McMillan and Caro attend this luncheon to share the industry importance of certification and CAP. Add to the group Greg Lehmann of Washington Group International, Henri Christiansen with Total Petrochemical, and Nick Sands with E I du Pont, who works with Castle Worldwide to update and maintain the CAP program, and there began a great opportunity to learn how the CAP program can and will benefit the automation professional and the companies that employ or contract them.

I hope more of you will find your way to ISA...and to the path that leads to CAP certification. If you, or a potential CAP has questions on the CAP program contact ISA today at cap@isa.org. See you at next year's ISA EXPO CAP luncheon.

the same window you took the initial exam, you can retest in the next available window. A total of two retests are allowed within your two eligible exam testing windows with each retest scheduled at least 30 days apart.

If you do not successfully complete the exam within the two exam testing windows within your nine (9) month eligibility period, you must reapply submitting another application and fee.

In order to schedule an exam, you will need to send your completed application by the specified application deadline for the exam testing window. The application deadlines and testing windows are as follows:

| Exam Testing Window | Exam Application Postmark Deadline |
|--|------------------------------------|
| Window 1: 1 March – 30 April 2007 | Tuesday, 16 January 2007 |
| Window 2: 1 July – 31 August 2007 | Tuesday, 15 May 2007 |
| Window 3: 1 November – 31 December 2007 | Monday, 17 September 2007 |



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Frequently Asked Questions

How is the Passing Point Set?

A modified Angoff Method is used to determine the pass point for each form of each exam. The modified Angoff Method uses expert judgements to determine the difficulty level of the exam. The easier the exam, the higher the pass point. Likewise, the more difficult the exam, the lower the pass point. The following is a basic outline of the modified Angoff Method (some details have been omitted):

A group of Subject Matter Experts (SMEs) independently rate each exam question within a given form of the exam. The ratings are defined as the probability, or likelihood, that an acceptably (minimally) competent person with the requisite education and experience will answer the question correctly. An acceptably (minimally) competent person is defined as someone who adequately performs all job functions safely and requires no further training to do so.

The SMEs review each exam question as group. A statistical consensus is reached for the difficulty rating of each exam question

After the data are refined, the final step is to calculate the mean, or average, of all the test question ratings. This becomes the overall pass point estimation.



Founded in 1945, ISA (www.isa.org) is a leading, global, nonprofit organization that is setting the standard for automation by helping over 30,000 worldwide members and other professionals solve difficult technical problems, while enhancing their leadership and personal career capabilities. Based in Research Triangle Park, North Carolina, ISA develops standards; certifies industry professionals; provides education and training; publishes books and technical articles; and hosts the largest conference and exhibition for automation professionals in the Western Hemisphere.

Certification

ISA certification provides an objective, third-party assessment and confirmation of a person's skills, and gives them the opportunity to stand out from the crowd and be recognized. ISA currently offers three certification programs: Certified Automation Professional® (CAP®), Certified Control Systems Technician® (CCST®), and Certified Industrial Maintenance Mechanic® (CIMM®).