

## Changing Workforce Demographics Transform Manufacturing

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### Keywords

Aging, Training, Certification, Careers, Demographics, Retention

### Summary

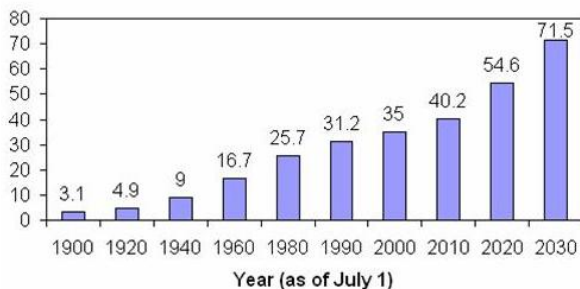
The technical and operations workforce in most production environments is changing. In the developed countries it is getting older - and in many cases retiring and leaving manufacturing industries for good. Retaining employees has also become as important as recruiting them, following a long period of re-engineering when workforces were downsized. There are obvious impacts to production if the required training and certification is not given to the employees remaining at a facility, but research has shown that manufacturers have been slow to heed the warnings, as annual training hours remain a very low percentage of total hours worked.

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### "Baby Boomers" Reach Retirement

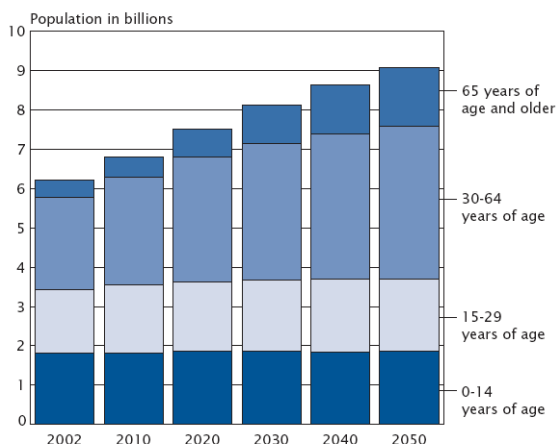
"Baby Boomers" - children born after the Second World War and into the boom years of the 1960s - are starting to reach retirement. Many of them are now, or soon will be 60. This is starting a wave of retirements that will see the number of people aged 65 and over in the USA alone reach over 70 million by the time the last boomer retires in 2030. The age of workers in manufacturing industry in the developed countries is already over 50 on average. Companies have downsized, right sized and re-engineered their workforces without apparent thought for the consequences of this upcoming retirement tidal wave. The paradox is that although workers are getting older on average,

1900 - 2030 (numbers in millions)



Persons 65 and Over — US Census 2002





Source: U.S. Census Bureau, International Programs Center, International Data Base.

the average retirement age has dropped to 58 years, in many cases due to the re-engineering process of the past couple of decades.

Data from the US Census Bureau also shows that as a percentage of the world population the largest growth area in the next 50 years will be in the ranks of the elderly. Several governments have responded by increasing the statutory age of retirement, in the case of Germany for instance, to 67 years. In a recent interview, a major refining company stated they had lost 2500 years of experience last year when 100 operators retired at one site, each with an average of 25 years experience.

As further evidence, a major chemical company they said they analyzed their plant demographics and found one of their largest plants would lose 75 percent of its operating staff to retirement by the end of this decade. The same is also true of many discrete manufacturers.

### Manufacturing Lacks Appeal for Today's Youth

The potential resource pool is diminishing too, as today's youth has little to no interest in studying traditional engineering subjects and following a manufacturing career. Additionally, there are currently no US universities offering process automation as a major. Younger people are interested in computers, but want careers in "internet" and computer gaming related areas. Manufacturing industry has failed to show young people that most plants are computer controlled today and computer skills are as necessary in a modern manufacturing facility as any other skill. In fact, many plants could not run safely without process automation. There is a huge opportunity for manufacturers to convince these young people that there is a challenging future involving all the computer skills needed for computer games in the real world of manufacturing.

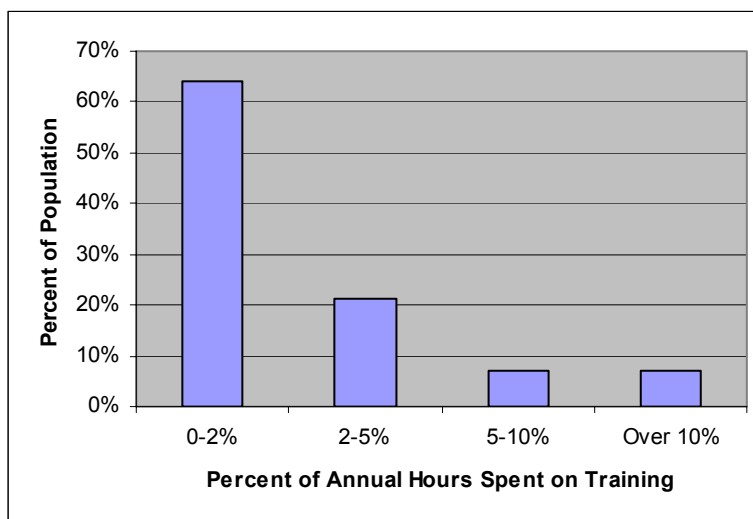
### The Days of the 30-Year Employee Are Over

Many of the technical and operations employees now heading for retirement will have worked for their companies for over 25 years and many for much longer than that. However, things have changed in the marketplace due to the changing demographics. It has gone from being a buyer's market where manufacturers could select the best and discard those that did

not make the grade to a sellers market where manufacturers really have to sell themselves to prospective workers. Younger workers no longer feel loyalty to a company, as many companies have not returned that loyalty in recent times. These younger workers will gain the needed experience and then start looking for a better opportunity in a five-year timeframe and based on the statistics above, the opportunities will be there. The onus will therefore be on manufacturers to return to older traditions of treating employees with fairness and respect, giving them good and adequate training and a challenging working environment. In recent research by ARC Advisory Group, several manufacturers told us that tomorrow's operators will be much more than "valve turners" they will be challenged with continuously improving the plants they operate and provided with the skills and training needed.

### Retention Is as Important as Recruitment

It is clear that employee and skills retention will become more important than they have been for many years. Replacing a lost employee is already a costly exercise, especially for specialists such as process control engineers and process operators. However, that pre-supposes that the replacements



**ARC Survey Showing Training Hours Spent per Year as a Percentage of Total Hours**

are available. Statistics show that they will be less available as time goes on. As an example, ARC Advisory Group research has shown that manufacturers are trying to raise the standards for qualifications when hiring new operators. The reality is that many of them are accepting lower qualifications than they would like, but are providing in house training to an acceptable level followed by a testing and certification process. Additionally, ARC Advisory Group's research has shown that manufacturers are slow at reacting to the impending skills crisis, as most of them still provide less than two percent per year of training time for their employees. The leaders are responding though by putting programs and standards in place to ensure skills are retained and employees are given the training to do their jobs. Some of these leading

manufacturers are trying to address the issue by working closely with local educational establishments to put together good technical curricula and providing pilot plant equipment and control systems.

### **Automation Promises To Be a Major Part of the Solution**

Manufacturers will be forced to increase automation to compensate for a diminishing workforce. This actually has a silver lining because it will remove humans from manual processes, which should have been automated in the first place. It also opens the door for empowering the workforce with operating information, which leads to the next level of human performance as a result of collaboration between "knowledge workers.

### **Recommendations**

- Manufacturers need to establish a technology platform to capture the undocumented organizational knowledge and experience of their workforce.
- Manufacturers should put training and certification programs in place for all job functions in their organizations. All functions should have a succession plan in place.
- Manufacturers should read ARC Advisory Group's report on Human Factors Best Practices for Automation.

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