

Where Are all the Women?

Has the Engineering Industry Let Them Down?

By Israa Ajam



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Nearly 40% of women who go through the challenge of completing an engineering degree either leave the profession or never enter the field. Just 11% of practicing engineers today are women; yet over 20% of engineering graduates have been female for the past 20 years. Why aren't more of them embracing the world of engineering? Some clues to this puzzle can be found in the data collected by many sources, as cited below.

Climate Change

One reason why women leave the engineering industry is because they often don't feel welcome. The business climate can change if we put in the work of making that change possible. But the change must come from within the workplace and must come from greater mutual respect and understanding among the sexes.

This idea of changing the current climate has been illustrated in the Project on Women Engineers' Retention (POWER) which was funded by the National Science

Foundation. It resulted in a 3-year study, *Stemming the Tide: Why Women Leave Engineering*, conducted by four PhD's from the University of Wisconsin-Milwaukee. It targeted female engineering alumnae in varied life and career stages. The respondents represented over six decades, dating back to the 1940s. The 5,000+ survey participants helped frame the reasons women leave the industry. Here are some of the ways that workplace climate issues influenced their decisions:

- Lack of work-life balance
- Being treated in a patronizing manner by managers and co-workers
- Having their contributions undermined
- Being expected to take on traditional female roles
- Feeling pushed back when trying to succeed at work

One of the respondents, a civil engineer, summed it up quite succinctly: "Women leave engineering due to a lack of job satisfaction, lack of reliable female role models, inflexible work schedules, workplace discrimination, white mid-western men syndrome, and glass ceiling issues."

Recognizing and acknowledging problems can lead to solutions. As the study found, women engineers can find satisfaction and fulfillment in their work if the climate provides these important conditions:

- Supportive bosses and co-workers
- Public recognition of women's contributions
- Investment in training and professional development
- Paths for advancement
- Supportive work-life balance and policies

Embracing Change

Change can sometimes be difficult; however, it also has the potential to open wide some closed minds. Katherine Phillips is the Paul Calello Professor of Leadership and Ethics and a senior vice dean at Columbia Business School. In her recent article in *Scientific American*, *How Diversity Makes Us Smarter*, she contends that, “being around people who are different from us makes us more creative, more diligent and harder-working.”

Phillips points to the value of informational diversity. That is, when dissimilar people solve problems together, they logically come equipped with disparate backgrounds, knowledge, opinions and ways of perceiving things. She says that a male and a female engineer might, for example, have perspectives as different from one another as an engineer and a physicist; and that, she says, is a good thing.

Phillips says that diversity does more than bring different perspectives to the conversation; it “makes people believe that differences of perspective might exist among them and that belief makes people change their behavior.” She explains that homogeneous groups assume that they will agree and be like-minded. Less homogeneous groups automatically assume that they will have differing opinions and will have to work harder to reach consensus. “People work harder in diverse environments both cognitively and socially. They might not like it, but the hard work can lead to better outcomes,” she adds.

Retaining Women

After going through the rigors of earning their degrees, and/or working in the field, why are women leaving and what can be done to stop this trend? One possible avenue is to become more mindful of personal passions. An engineer who is football fanatic will jump through hoops to work on a big stadium project. A person who loves to travel the world will be a likely candidate for one of her firm’s projects in another country. Doing things we enjoy gives us greater fulfillment and sense of purpose.

This was underscored in a recent *New York Times* editorial, *How to Attract Female Engineers*. It was written by Lina Nilsson, the innovation director at the Blum Center for Developing Economies at the University of California, Berkeley. Her belief is that women seem drawn to engineering opportunities that attempt to achieve societal good. She makes her case by citing various scenarios:

At Arizona State University, twice as many women enrolled in humanitarian engineering courses than in traditional engineering classes.

At Princeton, the executive board of the student chapter of Engineers Without Borders is nearly 70% female. The university also supports a student-run Sustainable Engineering and Development Scholars program, which is also 70% female.

The interdisciplinary D-Lab at the Massachusetts Institute of Technology focuses on developing technologies to improve the lives of people living in poverty. In 2014, 74% of the students were women. Though these statistics paint a picture that some women are drawn to the softer side of engineering, some may take exception to the perception of women only being interested in the societal issues surrounding engineering because it may stereotype them.

The concern is having women labeled as nurturers as it may trivialize their work in the industry. Passion is what drives employees, female or male. With this in mind, companies can improve performance and satisfaction by providing them with work they are passionate about. If that passion for some is making the world a better place, then all the better.

Bottom Lines

While there are many problems which are endemic to the gender gap we currently face, there are many possible solutions. Among the potential solutions that a progressive firm might consider are:

- Recognize employees' contributions
- Respect employees' work-life obligations and responsibilities--without any career penalties, actual or implied
- Implement company-wide changes and reinforce those changes with metrics and accountability
- Invest in skills-based training and professional development that can lead to promotions and career enhancements
- Provide transparent career paths with fair criteria for mobility and advancement
- Provide both formal and informal mentoring programs as well as networking opportunities

As we all know change is slow; however the importance of beginning a national dialog cannot be overlooked. By acknowledging the issues in the engineering industry, we can start working towards solutions that make the work environment not only more inclusive but also more productive and sustainable.

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