

Inside a Summer Camp Powered by Women Engineers

Camp Engies is a hands-on program that helps girls discover engineering early.

By Sharon Aschaiek

Many different efforts have been made to engage more women in Ontario's engineering profession, but only one involves the potent formula of an all-girls weekend with fun technical challenges, access to mentors and warm camaraderie.

That formula is embodied by Camp Engies, a non-profit weekend summer camp for girls ages 10 to 14 to creatively explore their engineering talents in an inclusive environment. Operated voluntarily by women engineering professionals and students who run annual editions in Muskoka, ON, and at times in other parts of Canada, the camp provides an opportunity for girls to engage in hands-on activities, hear inspiring talks by accomplished women engineers and discover how engineering innovations advance society.

"We want to show them that engineering is all around you; it is a part of everyday life," says Cassandra Fonseca, P.Eng., founder of Camp Engies. "The idea is, 'I'm an engineer, you can be like me and I'm here to support you.'"

DRIVING EARLY ENGAGEMENT

Such support was in short supply in the latter half of the aughts, when Fonseca was an electrical engineering undergraduate student at Queen's University. She recalls being one of very few women in her class and having just one woman engineer as a professor.

The gender gap became more apparent to Fonseca during her first job as a project manager at Hydro One. When she volunteered to be a corporate ambassador, which involved representing the company at engineering conferences and competitions, she noticed few women participants. Fonseca discerned a distinct need to inspire more girls to consider engineering before they subscribed to limiting gender stereotypes.

"I thought, why are we not showing and proving to girls at a younger age that they can do engineering, they can be part of this community, they can succeed?" says Fonseca, who is the global director of governance, risk and compliance for Four Season Hotels and Resorts. "By the time they get to Grade 9 or 10, they think, I'm not good at math, or science isn't for me. They need to have the right mentors and role models."

Fonseca's conviction is underscored by data reflecting a continuing gender imbalance in the profession. Of the approximately 90,000 professional engineers licensed by PEO, just 14.5 per cent are women. Meanwhile, the Council of Ontario Universities reported that in the 2023–2024 academic year, women made up 27 per cent of engineering students in the province.

INVESTING IN TOMORROW'S TALENT

Fonseca piloted Camp Engies in June 2018 at Camp Tamarack in Bracebridge with 75 girls. Receiving an overwhelmingly positive reception from campers and their parents, Fonseca expanded the operation to include periodic offerings in British

Columbia, the Northwest Territories and the Yukon. The camp operated online during the height of the COVID-19 pandemic. And in 2023, Fonseca introduced the Cyber Edition, a one-day camp in Ontario focused on cyber engineering and related digital skills. Over the years, Engies has engaged about 2000 girls in discovering the world of engineering.

A key part of campers' experience is participating in hands-on problem-solving activities that involve engineering-related skills. They have made soap or ice cream from scratch to learn about chemical engineering processes. In a previous year, a challenge with a mechanical engineering angle involved taking apart a vacuum cleaner, examining its components and rebuilding it, while another connected to environmental engineering involved designing, building and testing a climate-resilient earth dam.

The second day of each two-day session features a design-and-build competition. This year's challenge was to create a trebuchet, or catapult, using Meccano, the popular construction kit, along with materials such as elastics, paperclips and a golf ball. The girls worked in teams to devise and develop their model and demonstrate its efficacy in different contests to a panel of judges consisting of industry professionals.

"The whole thing about this camp is letting the girls see that engineering is fun. Engineering is not necessarily sitting in front of your laptop all day, counting numbers. It's more than you think," says Engies' Director of Logistics Karen Callery, P.Eng., a civil engineer who works as a grid operations field manager at Hydro One.

Rounding out the camp's board of directors is Director of Supply Chain and Volunteer Engagement Mandy Weigensberg, P.Eng., an electrical engineer who helps lead electricity services at Hatch; Director of Finance Rana Tehrani Yekta, P.Eng., a structural engineer who is the general manager at Toro Railings; and Director of Talent Management and Administration Bryn Sexton, P.Eng., a civil engineer who is a senior project manager of transit expansion at the City of Toronto. Campers are guided by these accomplished women engineers along with others who volunteer as counsellors, and from guest speakers who are leaders in domains such as telecommunications, construction, software, medicine, mineral processing and cosmetics.

"The engagement of these women offers the campers valuable role models," says Fonseca, who was bestowed with the Ontario Professional Engineers Awards 2025 Engineering Achievement of the Year. "I think representation really matters."

CREATING A COMMUNITY OF SUPPORT

Programs like Camp Engies complement PEO's focus on inclusion by encouraging early interest and access for groups historically underrepresented in engineering. PEO has strived to make the profession more welcoming to women in various



Cassandra Fonseca, P.Eng., founded Camp Engies to inspire more girls to consider engineering as a career.



Attendees of Camp Engies learn about chemical engineering while making bath bombs.

ways, including by cohosting a Women in Engineering Summit in 2024 and adopting Engineers Canada's initiative to have 30 per cent of newly licensed engineers be women by 2030. More broadly, universities, the Ontario Society of Professional Engineers and the Ontario Network of Women in Engineering have also worked to recruit and retain more women via mentorship, networking and scholarships.

Improving gender parity in engineering is also a priority for Engies' long list of sponsors and partners and the dozens of companies that provide engineering services or employ engineers. These supporters provide financial contributions or equipment donations that enable the camp to charge a highly subsidized registration fee, which this past summer was \$110 per camper, a sum Fonseca says is equivalent to about 5 per cent of the actual cost. As part of its annual community outreach, PEO's Willowdale-Thornhill Chapter supports the camp's mandate by covering the fee for eligible children of its members.

The ongoing growth in the number of campers led Fonseca to introduce in 2020 Next Gen Engies, a leaders-in-training program for previous campers who are in grades 9 to 12. They gain hands-on experience in organizing activities while getting mentored by engineers and fulfilling their required high school volunteer hours. Importantly, Fonseca says, by maintaining this connection to engineering, they become more likely to study the discipline at university.

"We want them to know, we're here to support you, to be your references for your university programs or jobs,"

says Fonseca, noting multiple former campers have gone on to pursue engineering degrees. "It's about creating a community of support."

One former Engies camper and leader-in-training whose experience shaped her post-secondary path is Karen Callery's daughter, who is now studying chemical engineering at Lakehead University. Callery, who says she was also marginalized by the "boys club" nature of her engineering education at Queen's in the 1990s, says that even though women are still outnumbered in engineering programs, her daughter is well equipped with the experience, contacts and confidence she gained from Engies to hold her own.

"This camp is making that difference for girls, and that's really special," Callery says. "I just want the world to be better for the girls coming behind us."^e