MAKING OUR WORLD SAFER AND MORE SECURE,
MORE COMFORTABLE AND ENERGY EFFICIENT,
AND MORE INNOVATIVE AND PRODUCTIVE
Our Company

UOP is an international company that has been a key technology supplier to the petroleum refining and petrochemical industries since 1914. Many of the refining processes in common use today originated with UOP research and development. With a focus on customer service, UOP offers a greater number of proprietary products and processes – and more engineering experience and innovative solutions – than any other company of its kind.

This unique combination has enabled UOP to stay on top in an increasingly competitive marketplace. We maintain our leading-edge position by investing in research and development, which feeds new ideas that enable groundbreaking discoveries. Through the years, UOP employees have been awarded thousands of patents in the U.S. and internationally, nearly 3,000 of which are currently active.

Many significant advancements, including unleaded gasoline, catalytic converters, biodegradable detergents, economical polymers for clothing, and renewable jet and diesel fuel can be attributed to processes developed using UOP technology.

To keep our approach fresh, we build strong alliances and relationships with customers, institutions of higher learning, and companies outside our core industries in order to apply our technology in new ways. For example, working with an alliance partner in Norway, UOP developed combinatorial chemistry methodology and complex data collection and analysis systems for rapid experimentation.

In addition to creating new technologies, UOP develops, designs and commissions new equipment installations in the majority of petroleum refineries and petrochemical complexes throughout the world. UOP also advises its customers on ways to continuously improve the operating efficiency and performance of these facilities.

An integral part of many of the solutions UOP provides is the supply of catalysts, adsorbents and other advanced materials. These materials are produced at UOP manufacturing facilities in several locations, including the U.S., Italy, Japan and China, using advanced technology. Our experience ranges from the manufacture of spherical alumina catalysts for naphtha reforming to the production of xylene isomerization catalysts, which incorporate proprietary zeolite formulations. The formula for our success continues to be very basic – to fulfill our customers’ needs … and the needs of those we hire … to create an environment for our employees that encourages individual growth and development and provides them with opportunities for advancement and promotion.
UOP has continued to be innovative because of the caliber of men and women it employs. There are more than 3,000 employees worldwide, many of whom are engineers who came to UOP right after college. Building on the academic knowledge of new graduates, UOP provides hands-on training and tools for success. A critical part of the Career Development program for Mechanical and Civil Engineers is the initial training, which prepares each individual for a career applying traditional engineering skills to challenging design work. This intensive 12- to 18-month program begins with a thorough orientation to UOP, our business model, and key technologies.

What do mechanical & civil engineers do at UOP?

UOP engineers are called upon to provide many services throughout the life of a project, including:

Developing innovative technology

At the heart of UOP’s technology are chemical reactors where lower value hydrocarbons are transformed into higher value products such as high-octane gasoline or petrochemical feedstock. These are used in the production of detergents, polyesters, pharmaceuticals, plastics, and many other products. UOP engineers develop innovative ways to make this happen inside pressure vessels operating under extreme temperature and pressure, and in corrosive environments. They find ways to properly distribute multi-phase flows, support beds of catalysts that are sometimes moving, select and use exotic metallurgy, and deal with complicated thermal expansion issues.
Using proprietary software
Much of the design process incorporates a variety of proprietary knowledge using commercial software for design, analysis, and drawing generation. Beyond computers, however, are the resources of some of the most capable and experienced people in the industry, including engineers who create globally accepted standards and are world-renowned for their expertise.

Providing answers
After completed designs are submitted to contractors for construction, UOP engineers answer questions and provide information to expedite fabrication. This gives them the opportunity to follow a design through its many phases.

In cases where there is a competitive value to the customer or a risk of losing intellectual property, UOP not only designs the engineering package, but also supplies equipment to the customer. In these projects, UOP combines the detailed design, supply of assembled equipment, and inspection services to deliver increased value to the customer. Engineers who work in our equipment business manage projects, perform competitive bid reviews, write requisitions, perform detailed design, and ensure quality of purchased components. This gives them the opportunity to follow a design from start to finish, as well as to interact with customers at contractor offices, vendor shops and fabrication facilities.

Troubleshooting problems
After unit startup and throughout the life of the project, UOP engineers continue to answer questions, solve problems, and provide assistance to customers. In addition, travel to a refinery is sometimes necessary to obtain or verify information or to check the installation and operation of a completed project. Because UOP serves customers around the world, engineers can travel internationally throughout their careers.
Following this initial period, most mechanical and civil engineers will progress by undertaking progressively more complex and challenging assignments associated with various UOP technologies, learning advanced mechanical design concepts, and the practical application of engineering principles. After that, engineers can choose their career path. Many engineers continue to focus on advanced mechanical design. Others move into detailed design or project management. Still others spend a few years traveling the world in support of new plant startups. All of these opportunities emphasize learning by doing, and entrust the engineer with a high level of responsibility and opportunity.

**How will I be trained?**

To expand upon the basic skills learned in school, newly hired engineers are given immediate, hands-on experience by working on actual projects. Training at UOP involves a mentoring approach in which new engineers work with experienced technical experts. Mentors guide the engineers during new projects and are available for questions, assistance, and review of initial work. Early in their careers, new engineers become familiar with industry practices and with the UOP engineering design process by creating the equipment specifications and design drawings required for a complete UOP design package. In addition to project work with a mentoring approach, training for new engineers is rounded out with a series of weekly seminars. These are designed to teach broad concepts, including pressure vessel design and metallurgy, as well as more focused topics, including training in most of the technologies that UOP offers.

**What skills will I use at UOP?**

Core engineering courses prepare Mechanical and Civil engineers to work in a variety of areas at UOP. Engineers apply the principles of strength of materials and stress analysis courses throughout their careers for tasks such as designing vessel internals
and shells, analyzing and predicting the remaining operating life of reactor components, and analyzing piping strength and flexibility. Structural design and analysis is used extensively to design process equipment modules, analyze vessel structural support capacities, and establish pipe supports. Finite element analysis and computational fluid dynamics are used to improve equipment design or to troubleshoot problems in the field. Other projects require knowledge of fluid mechanics for specifying pump sizes, determining hydraulic heads, analyzing fluid dynamic forces, and designing piping layouts. Specification of heat exchangers requires knowledge of thermodynamics and heat transfer.

**Is UOP right for me?**

UOP’s application of science and engineering to energy and material-related problems has helped produce some of the most significant advances in the hydrocarbon processing industry. Nearly every refinery in the world relies on at least one UOP process, and some of those refineries have been completely designed by UOP.

UOP seeks engineers who are willing to respond to a variety of challenges. The wealth of engineering talent at UOP allows the company to maintain and build on its reputation for providing leading-edge technology to the petroleum refining and petrochemical industries.

The Career Development Program provides new engineers with many responsibilities at an early stage of their career, helping them to acquire knowledge and experience in design engineering, equipment supply, UOP products and services, and customer relations. This equips them with the tools and the experience they need to build a successful career at UOP.

UOP employs more than 3,000 men and women at 11 manufacturing plants and more than 20 sales offices worldwide.

UOP is headquartered in Des Plaines, Illinois, a northwest suburb of Chicago, close to all the cultural and entertainment activities that a major U.S. city can provide. UOP employees live in downtown Chicago as well as many suburbs, all of which are an easy commute.
Find out more

If you are interested in learning more, please contact your UOP representative or visit us online at www.uop.com.