In the last couple of issues of The Consultant we have looked back at the history of the company and our founder. In this issue, we will look forward to the opportunities that the world presents today. Engineering is the process of applying physical principles and mathematics to solve problems, and we certainly have abundant problems that need solving today. Our world population is at an all-time high, and human nature being what it is, this creates an unlimited desire for goods, services, and creature comforts. Satisfying all of these desires requires engineering, and we are ready to do it.

When you wake up in the morning, you can thank engineers that you have not died during the night from freezing in the winter or heat stroke in the summer. When you wander to the kitchen to find something to eat for breakfast, you can thank more engineers for the agricultural machinery that harvested it, the highways it was delivered on, the trucks it was transported in, and the refrigeration that kept the bacteria levels low enough that it did not kill you outright to eat it. When you turn on the lights or launder your clothes in a washing machine instead of taking them to the river to pound them on the rocks and dry them in the sun, you can thank several more engineers. When you head out into the world to make your living, driving a car or taking public transportation, going into an office building or restaurant or retail store or manufacturing plant, you can thank myriad engineers who designed the hundreds of systems that we all take for granted every day. We would likely be huddling in a dark cave with a sharpened stick waiting for the next onslaught of beasts or nature. The fact that we as engineers have a hand in creating the things that make modern life possible is what insures that we will stay busy.

When a natural disaster strikes, the immediate first responders in a municipality are neighbors with private resources and the front line public safety, waves of people who perform the large scale restoration of infrastructure that supports civilized living conditions are those who make sure the water, power, and communication systems are working. These technicians are executing the physical works designed by engineers of many disciplines.

When economic disaster strikes, employment is disrupted and societal order is threatened. In these situations, private capital, central banks, and governments step in as first responders to restore economic stability. The next wave of help comes from entrepreneurs with a vision to restart the economy by identifying niches of opportunity that can match a need with a solution. This requires engineering services on a scale from minute to grand. As we work through the economic turmoil created by the recent spike and subsequent collapse in world oil and gas prices, we are constantly on the lookout for these opportunities to solve economic problems. We are lucky at NELSON to have under one roof capability in all the engineering disciplines, architecture, environmental services, project management, procurement, and whatever creative energies a client may require. We look forward to helping solve the next wave of problems, or opportunities as we like to consider them, which our ever-changing world presents. The key is to anticipate what the next opportunity will be and be prepared to meet it.

So what are the next challenges on the horizon? We have become so inventive and efficient in producing...
oil, gas, and coal that there is currently an oversupply of these carbon based fuels and they are cheap to buy, but legislative mandates have brought “renewables” such as wind and solar into the global mix of electrical power generation. Recent publications suggest that the challenge is not generating enough electrical power from conventional and alternate sources, but rather introducing the mix of intermittent currents to the national grid. So we are on the lookout for opportunities to help electrical utilities adapt and upgrade their transmission and distribution networks to reliably accommodate a changing generation landscape. On the generation side, we are looking for opportunities to adapt our vast history of offshore experience to the placement of wind turbines on platforms in U.S. waters. While we are waiting for the landscape of renewables to solidify, we continue to search for ways to more efficiently apply our experience in the “upstream” production of carbon fuels and to seek further opportunities in the “midstream” market moving the fuels and the “downstream” market using them at their final destination.

Another area affected by the above mentioned record population is the market surrounding production and transportation of food products. It is a terrific feat to grow enough food to feed the world today, and the logistical challenges of storing it and moving it to market present many design opportunities for engineers. We have recently designed ship moorings for the midstream transloading of grain products from barge to ship for the international market. We have previously designed coffee storage facilities, cold storage for seafood, and sugar refining facilities. We have designed facilities for the production and storage of fish oil. Some years ago we performed a feasibility study for offshore mariculture in the Gulf of Mexico, a practice that has been developed in other parts of the world. There will always be a need for further ways to serve the food industry and stave off world hunger, and we are on the lookout for these opportunities.

Perhaps the most basic of all requirements is the design of facilities to provide fresh drinking water and the design of sewage treatment plants to deal with the waste of a burgeoning population. These are at the foundation of living in concentrated urban centers and have contributed to increasing human lifespan than any other technical innovation in history. We have performed major feats in these fields and know there will always be opportunities to meet expanding needs and enhance reliability of supply. Another task that desperately needs attention in the country is the renewal of our public infrastructure. The American Society of Civil Engineers regularly assess the condition of such assets and issues a “report card” on the state of the nation’s infrastructure. Unfortunately, much of it is old and has fallen into disrepair. The repair or replacement of these facilities will be a monumental task requiring years of engineering effort, and we have the technical capability to take part in this renewal.

In southern Louisiana, we face the unique challenge of trying to save our coastal region from the encroachment of the Gulf of Mexico on our sinking and eroding land. There are massive efforts being planned to stop the land loss. We are actively pursuing these projects, and our decades of experience working in the marshes of Louisiana positions us well to assist in these important undertakings. When engineers see a problem, our first instinct is to figure out how to fix it as efficiently as possible. It is in our blood to operate like this, and it is what keeps clients coming back for solutions to their latest challenge. It’s what we do, and we love taking on problems in any discipline that we can help with. We will continue to serve the needs of the economy and society in the ever-changing landscape we operate in as consultants. None of us have run out of challenges yet, either individually or as a society, so it’s unlikely that we will run out of engineering opportunities either. We have our eyes on the horizon and are looking forward to the next wave of possibilities.
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Looking Forward

By: Kenneth H. Nelson, P.E.

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