



September 2015

Carmagen. Partnering in Engineering Excellence.

The Business of Engineering and Science Consulting

By Lori Carucci

I have threatened to write an article for this newsletter for years, thinking that our engineers and scientists would keep writing articles just to make sure I didn't do it. Well – today is the big day, and I like the idea of writing an article.

First off, please understand that I am NOT an engineer or scientist – my college major was psychology. That being said, since I have been with Carmagen since its inception some 28 years ago, I can actually talk some engineering and know who to go to when I need help. I know what corrosion holidays are (thanks, Jack), I know what some process solutions look like (dark beer, light beer or was it coffee, coffee with cream – thanks, Paul), and I can discuss tank bottom foundations, sand, gravel, concrete (thanks Roger and Vince). Second, this is not the typical technical article normally found in our newsletter and website.

My expertise has become running an engineering consulting company – Vince gets the engineering part, and I get the rest. At one point in time, my job description was: if it isn't engineering, it's hers. So client contracts, purchase orders, NDAs, payroll, invoicing, payments, marketing materials, website, staff hiring, etc., etc. became my responsibility, and they pretty much still are.

I have read a myriad of business books along the way (and I just pre-ordered Charles Koch's new book "Good Profit") and talked to many professionals (not just engineers.) In so doing, I have come up with a list of 12 rules of running a consulting company that worked for us in our engineering consulting business.

Those reading our newsletter for the most part work for large companies. So you might wonder how this might apply to your company, department, or you personally. I suggest that you read on – I think that much if not all can be adapted and potentially be useful to your situation.

Here are the first four rules – if there is any interest in this, I will provide the next group of rules in a later newsletter.

Work Highlights

Machinery Engineering

- Performed a root cause failure analysis of seal design and installation for a hot crude oil pump after multiple failures had occurred, one leading to a fire that caused a unit shutdown. The analysis revealed fundamental problems with bearing design that led to seal failures and issues related to the seal itself. Recommendations were made to improve the situation, which also apply to other hot pumps at the refinery.

Mechanical Engineering

- Provided conceptual mechanical sketches for two coke transfer lines between major pressure vessels that are part of a high temperature process being developed by a third party. Work included specification of refractory versus bare wall design, preliminary specification of insulation requirements, pipe thickness and metallurgy, connection types, and overall assessment of mechanical feasibility of the design.

Process, Operations & Safety

- Provided analytical chemistry forensic support and troubleshooting regarding a client's recent failure to consistently meet jet fuel JFTOT specifications.

First Rule: You have to want to do this! To be successful, this will take up a lot of your time and energy. For the most part, at the beginning, weekends and vacations will no longer be the carefree time that they were. Decide what you want this firm (group, section, department) to look like in a few years. If you are most comfortable with a one or two person organization, then that is what you should aim for. If your vision is larger, I would still start slowly with one or two people and get everything well planted and working well. Once everything is in place, then I would evaluate future growth.

Second Rule: Be willing to learn a lot! Know what you don't know and need to find out. Don't bluff. My psychology courses were no help when it came to business leases, how payroll works, contract agreements, confidentiality agreements, etc., etc. I had to learn a lot of new things, and 28 years ago, you could not just look it up on a website. It was the library or the bookstore.

Third Rule: Hire what you don't know. Accounting and legalities were new areas for me. I found accountants that could break down the tasks and terminology so that I understood the implications. I looked for an accountant that had a good client base that was similar in size to ours and also had clients that were a bit larger. The early accountants we had were great at helping us plan for growth while containing costs. Later on, the larger accounting firms became valuable assets in helping us navigate different issues that came with being a larger firm. I was also fortunate to find a great attorney (thanks, Jim) that I could email simple questions to. Many times, one paragraph of a contract didn't make sense or seemed too restrictive – I could email the paragraph to him and get a quick explanation back. To my mind, an accountant and attorney are important in that you have experience to bounce questions and ideas to – you aren't alone in this.

Fourth Rule: Don't spend money you don't have! Sounds simple but in the excitement of building a company, you may be envisioning things that are further down the road and not quite in reach of your checkbook yet. If you are consulting, you don't need to start with a grand office. An affordable office is far better at the beginning – if you are meeting a client, you can always meet them at a restaurant. We also used hotel meeting rooms if we were meeting larger groups of people. Desks and other office furniture can come from second hand shops, and there are many discount stores for office supplies. Use your startup funds wisely – they have to last until you start getting paying clients.

There you have my first four rules – there are eight more. If you want to see more articles like this in future issues, send an E-mail to icarucci@carmagen.com with just the word "Rules" in the subject line. If there is enough interest, I will put the next group in a later newsletter.

About the Author

Lori Carucci is the Vice President of Operations at Carmagen Engineering. In addition to this, Lori has responsibility for contracts as well as responsibility for all personnel, business, and marketing needs of the company. This includes contract negotiations with clients, employment agreements for engineering staff, vendor negotiations and bid review, payroll, human resources, hiring and training support staff, development and maintenance of employee handbook, development and maintenance of safety manual.

