

## Ramblings of a Chemical Engineer: A Book Review

**Aziatul Niza Sadikin**

*School of Chemical and Energy Engineering, Faculty of Engineering,  
Universiti Teknologi Malaysia, 81310 UTM Skudai, Johor  
aziatulniza@utm.my*

### Article history

Received  
9 December 2021  
Received in revised form  
17 December 2021  
Accepted  
17 December 2021  
Published online  
28 December 2021

### Abstract

Ramblings of a Chemical Engineer is significantly influenced by the author's personal experiences as a chemical engineer who has worked in a variety of chemical companies. It encompasses his college years, time as a university researcher, and professional career; it is told in a fast-paced way via a succession of vignettes that capture the highlights of the events that formed him into the professional chemical engineer he is today. It was his intention to present information about a profession in chemical engineering to potential students seeking degrees in chemical engineering. It also acts as a guide for aspiring chemical engineers and future engineers, emphasizing what they should aim for and how much fun this profession can be.

**Keywords:** chemical engineering, engineering student, process engineer, professional engineer

Ramblings of a Chemical Engineer starts with a foreword by Zaki Yamani Zakaria, academia and author of several papers on chemical engineering and engineering education. With several papers in engineering periodicals over the years, the author has established himself as a widely recognised and highly respected practitioner in the chemical engineering profession. He established Chemical Engineering World blog in 2006 because he recognized that there was a paucity of information or sharing about real chemical engineering careers, experiences, and exposure from practising engineers. Since then, he has used his blog to express his thoughts, opinions, and feelings about his numerous professional developments over the course of his career. He has examined his own professional growth trajectory, which began as a high school student and progressed to engineering school, then to becoming a practising engineer, and eventually to becoming a licenced professional engineer.

Ramblings of a Chemical Engineer is drawn heavily from the author's own experiences as a chemical engineer who has worked in research and development, the oil and gas industry, and the oil and fat industry. A foreword section also explains the authors' motivation for writing this book. He aimed to create a simplified version or a guide for engineering students and young engineers interested in chemical engineering. It was his desire to provide prospective students pursuing degrees in chemical engineering with information about a career in chemical engineering.

The book begins with an intriguing narrative of a chemical engineering student's educational path in the United Kingdom. Zaki has had a passion for chemical engineering since he was 14 years old, and he graduated with a bachelor's degree in Chemical Engineering in 1999. He offers a plethora of anecdotes

that address the essential parts of students' lives that engineering students tend to find the most difficult to deal with in their studies. In this book, there was a sprinkle of humour, as well as a smattering of nice recollections recounted about being an overseas student in the United Kingdom. This book is an excellent human-interest narrative about a chemical engineering student who maintains a positive attitude throughout his education. He holds the view that everyone can learn anything if they are sufficiently motivated to do so. In order to succeed, one must put out the necessary effort despite the chance of failing. Perhaps most importantly, it is realising that making mistakes does not necessarily suggest that one has failed; rather, it signifies that one has the opportunity to learn and develop. Also, he emphasizes that a person's potential for growth is not limited by their own efforts. Rather than that, it is driven to manifest through effort. By choosing to cultivate a growth mindset, you are choosing growth over the fear of failure in life. If you believe you have the ability to improve, your "failures" will merely point you in the direction of a new path to success. Zaki encourages readers to take an introspective look at the type of student they aspire to be and demonstrates how having a growth mindset may help them reach the next level of achievement.

The following section of the book is based on Zaki's experiences as a master's and doctoral student at a local university. A brief background of his journey into the research and development field has been included. Given his enthusiasm for the chemical engineering knowledge, research is no longer a burden but rather enjoyable when he realised that he was working towards a worthwhile goal. He cherished every hour he spent in the laboratory and was grateful of the opportunity to learn from others in his social learning circle who were more experienced and informed than

he was. He initiated the process of acquiring and absorbing new information, as well as developing intrinsic motivation to do so. Thomas Edison once claimed that genius is one percent inspiration and ninety-nine percent perspiration when it comes to reaching achievement. Perspiration entails more than just working hard; it entails working tirelessly and with great passion. His doctorate journey has made him more resilient and given him a positive outlook for the future. His journey would arouse and pique the interest of engineering students, inspiring and motivating them to pursue careers in the research field.

The initial career of Zaki has been an intriguing one, beginning with chemical technologies at a local oil and gas servicing company, where he ascended to the post of project engineer within a year of joining the same company. A special emphasis is placed on this section, which narrates the story of the chemical cleaning method used to reduce corrosion activity in the downstream pipeline. Pipelines, like any other industrial equipment, require routine maintenance to function properly. Pipelines can corrode when exposed to both internal and external conditions, resulting in contaminant build-up, structural damage, and product contamination. Cleaning activities that are scheduled on a regular basis can be used to extend the useful lifespan of pipelines. However, there is another side to the pipeline chemical cleaning process. For pipeline cleaning, blending chemicals is a daunting task. Nonetheless, he manages to explain the procedure in a straightforward manner. Maintaining the reader's focus on the task at hand. It is surprising how interesting a technical story can be. Then he took us all on his journey to work far away from land. If you've never been offshore, you might be interested in this. Maintaining an oil rig operational 24 hours a day requires engineers to be at their best at all times. The book is an easy read that follows a chronological narrative and is quite helpful for anyone interested in learning about working at an offshore platform.

The following section of the book offers a compelling insight of what it was like to work in the oil and gas industry. The book offers an inside look into the oil and gas industry through the eyes of engineers who work in it, as well as how chemical engineering has affected his career. Zaki rapidly established himself and began practising chemical engineering principles in specific areas such as unit operations, process control, and instrumentation. The book contains a plethora of scenarios that cover the critical aspects of unit plant operation that engineering students and early-career engineers frequently struggle to understand. Then he led us all down the path of making decisions and problem solving. The book discusses heavily on technical problems, and how he was forced to come up with solutions to the problems that arise. What is even more impressive is that you end up absorbing a bewildering number of technical problems that he faced in the industry without even realising it.

He used his engineering expertise to discover solutions to the problems that he was experiencing at the time. Problem-solving has always been a hallmark of engineering. To be a successful engineer today, you need to be able to solve problems creatively and effectively in order to effectively communicate your ideas to others. The difficulties and setbacks that he has encountered in the industry are presented in an engaging manner through the use of stories and the sharing of personal experiences. He creates real-industry stories that bring engineering to life in a subject that could otherwise be considered dry and uninteresting. Thus, this book is an excellent read about the life of a chemical engineer and his journey through the oil and gas industry, emphasising the lessons learned from both failures and good decisions along the way.

There are a beautiful combination of science and engineering that is sprinkled throughout the book, and the importance of engineering thinking is emphasised on numerous occasions throughout. Engineers do have distinct ways of thinking and acting, and these distinct ways of thinking and acting are referred to as 'habits of mind' (Lucas and Hanson, 2016). It is a concept founded on the belief that engineers frequently make things function or perform better. Throughout his time in the workplace, he was able to demonstrate engineering habits of mind. He is adept at incorporating systems thinking, creativity, optimism, teamwork, communication, and ethical considerations into all aspects of his work. He emphasises that in order to be a successful engineer, one must develop certain dispositions and habits of mind. Engineers require learning dispositions such as curiosity, optimism, resourcefulness and resilience. Learning never ceases, and this is especially true for engineers. This book emphasises numerous times that engineers must be constantly learning, constantly upgrading their skills, and constantly adapting to new situations. What is vital is that engineers treat their jobs as dynamic entities that require continuous improvement of the quality to work effectively. As a consequence, he is always improving his abilities and skills, he is dissatisfied with his own level of knowledge, and he is very curious about finding the truth about everything. According to the book, one needs to understand how successful engineers think and act when faced with difficult problems. This book reminds us that being an engineer is not about what you do, but how you do it. Zaki asks readers to take an introspective look at the kind of engineer they will be in the future and shows them how improving professional skills can get them to the next level.

Something that makes this book particularly enjoyable is the way it brings chemical engineering into a very personal context. When Zaki writes, he concentrates on the people and events that have affected his life, and he includes a lot of colourful detail that is sometimes amusing, sometimes heart breaking, but always intriguing. He does a wonderful job of

describing some of the most fundamental yet crucial abilities that are rarely taught to most engineers, particularly those new to the industry. He performs a good job of educating the reader on the value of professional skills, dispute resolution, leadership abilities, and mentorship, among other things. He highlights the need of developing those skills in order to create a happier and more productive workplace. One cannot advance engineering career purely on the basis of own technical abilities. Effective engineers must be able to communicate well with others. However, many engineers are woefully unprepared to deal with the inevitable interpersonal conflicts that arise when they work alongside other engineers and engineering managers. Nevertheless, it is refreshing to know that Zaki also does not shy away from conflicts. He identifies some issues that are impeding his progress and implies strategies to avoid or solve the conflicts as they arise. Zaki discusses how our relationships affect our success as individuals and as members of a team. He shared wisdoms for becoming a better engineer, team member, and leader by improving our interpersonal effectiveness. This book may be of interest to anyone looking to improve their

skills as an engineer, but also as a team member, regardless of their level of experience.

In a nutshell, this book follows the journey of a chemical engineer, making it unique and personal. It spans his academic years, his time as a university researcher, and his professional career; it is narrated in a fast-paced manner through a series of vignettes that capture the highlights of the events that shaped him into the professional chemical engineer he is today. It also serves as a guide for aspiring chemical engineers and future engineers, demonstrating what they should strive for and how much fun they can have in this field. The engineering knowledge infused throughout the narrative is authentic and done with finesse, owing to the Zaki's experience in chemical engineering. For those searching for some light reading that puts a human face on the field of chemical engineering, this is the book to read.

### References

- Lucas, B., Hanson, J., 2016. Thinking Like an Engineer: Using Engineering Habits of Mind and Signature Pedagogies to Redesign Engineering Education. *International Journal of Engineering Pedagogy*, 6(2), 4-13. Retrieved December 8, 2021 from <https://www.learntechlib.org/p/207365/>.