

Engineering Profiles

Irish engineers and technicians

[This section has been duplicated in the Student Booklet]

Mechanical Engineer.

Ivan Beirne

Age 24

Job Title: Lithography Improvement Engineer

Employer: Intel Ireland.



Ivan studied Mechanical engineering in University College Dublin. "UCD offers a generic first year programme which has elements of all types of engineering before the student decides his/her chosen career path which is good if, like me you are a little unsure whether it's Mechanical or Chemical engineer you would like to pursue."

Ivan was always destined for engineering as one of those kids who was continually taking things apart and not always putting it back together again. He picked his Leaving Cert. subjects without thinking about what he was going to do in college but more the subjects he liked best. Those turned out to be physics, chemistry and technical drawing. In the end his CAO form contained 10 engineering courses!

Mechanical engineering always appealed to Ivan due to the fact that it opens the door to a wide range of career opportunities from building services to manufacturing to consultancy. In college he gained practical exposure to a range of these subjects as well as being part of Ireland's first entry in the Formula student competition, which challenges final year students to design and build a single seater racecar.

Ivan joined Intel Ireland initially as a shift engineer and gained valuable hands on experience working with a team of technicians in the one of the fabrication plants. After 2 years in this role he transitioned to critical layer owner. "The equipment we use is as technical and complex as that used in F1 and as engineers we are responsible for fine tuning it to get the most from it. The best part of the job is that everyday presents a new set of problems and challenges. Basically no two days are ever the same. Because of the environment that we work in project timelines are quite short and we are constantly being challenged to come up with innovative solutions to problems."

"I would recommend engineering as a career. Even if you are unsure what you would like to do in college, engineering is well worth considering. Engineers are highly sought after in a wide range of job functions and can go directly into business type jobs as well as the more traditional disciplines."

Irish engineers and technicians (continued)

Chemical Engineering

Rita O'Sullivan

Age: 28

Job Title: Chemical Process engineer

Employer: Novartis



When considering her options in secondary school Rita O'Sullivan had an open mind: "I liked the science subjects and maths, but I had made no definite career choice by fifth year in school" says Rita. She was torn between her love of animals, "At one stage I considered becoming a vet," and her interest in science and technology. Eventually, science won out but she still had to narrow the field: "I had a pretty open mind about third level courses in the science and engineering field." She chose chemical engineering. "Cork Institute of Technology's Chemical Engineering course attracted me most. It has a great mix of elements - science, computing and engineering".

Graduating in 1995 with an honours degree, Rita joined Novartis in Cork (formerly Sandoz). The plant employs three hundred and fifty people in manufacturing the active ingredients for many medicines including ones for the treatment of asthma and high cholesterol. These active ingredients are exported to several countries for use. "I work in small teams of professionals, sometimes as the leader, sometimes as a member. My projects are generally in the fields of energy efficiency and safety." Rita is sure she made the right decision studying engineering, "The Chemical Engineering degree at CIT turned out to be a great choice for me".

Civil Engineering

Gerald Bythell

Age: 31

Job Title: Associate Director

Employer: Arup Consulting Engineers, Cork



Chartered Engineer of the Year 1999, Gerald Bythell has 'been there, done that'. In his time with Arup Consulting Engineers, part of the international Arup Partnership, he has worked in the US and Ireland on several major projects for international pharmaceutical companies. Gerald attended Presentation Brothers College in Cork, which has a strong tradition of excellence in technical and scientific areas. In fact, he remembers that a high proportion of his Leaving Certificate class went on to study engineering. He chose to remain in Cork for his third level education and studied for his BE Civil in UCC, a course he describes as "challenging".

Irish engineers and technicians (continued)

After graduating with a first class honours degree he joined Arup and soon found himself in the US as a project co-ordinator for a major pharmaceutical project being built in Cork. There were 180 people in total on the design team. About 30 engineers were based at Arup in Cork and they designed all the buildings and infrastructure. The mechanical and electrical systems; the chemical processes and the equipment were designed in America, and it was Gerald's job to make sure that these production systems fitted into the buildings being designed by Arup in Cork. "I was thrown in at the deep end, which was great", he says. "I learnt a lot very quickly and was involved in every aspect of the project from design to management."

Now back in Ireland, he continues to be involved in managing major projects for Arup Cork and enjoys the challenge of the multidisciplinary tasks associated with these projects. He particularly enjoys the international dimension, with projects in Denmark and the UK, and the interaction with different people and cultures.

Electronic Engineering

John McGivney

Age: 32

Job Title: Chief Clinical Engineering Technician

Employer: St Luke's Hospital, Dublin.



While studying for his Leaving Certificate at Moyne Community School, John decided to pursue electronic engineering as a career since he had always had a keen interest in how equipment works. The course in Dundalk Institute of Technology attracted him as it combined a strong theoretical element with a focus on practical aspects of engineering technology leading to a combination that suited his interests. He graduated in 1990 with a national Diploma in Electronic Engineering.

Since leaving college, John has worked primarily in the healthcare sector, gaining experience with a wide range of medical equipment from anaesthesia systems to heart and lung machines. He has worked for both equipment suppliers and end-users. He has pursued further studies in Physical Sciences in Medicine and in Health Informatics. John has worked as a committee member of the Biomedical Engineering Division of the IEI for several years and to support professional engineering technicians through promotion of their interests.

"One of my most rewarding experiences while working in this field was the involvement I had in organising how a critically ill patient who needed constant ventilation could be moved to theatre for an essential operation. I organised the necessary equipment so that the patient could remain on a critical care ventilator, and I was part of the clinical team moving the patient and the equipment from the Intensive Care Unit to the operating theatre. It felt really good to be part of a multidisciplinary team that achieved a successful outcome for the patient."

Would you recommend a career in Engineering?

"I would certainly recommend a career in engineering. I have found working in the biomedical engineering stream very satisfying. When you work in a hospital, you feel part of not just an engineering team but also part of a clinical team (including doctors, nurses, radiographers etc). As a member of this multidisciplinary team it is

Irish engineers and technicians (continued)

very rewarding to see how the skills you use in managing and maintaining medical equipment as well as training staff in its use, affect the patient's welfare. My role in the hospital is not only in repairing equipment but more so in equipment management. This requires managing the complete equipment life cycle, with involvement in identifying the clinical needs, justification, equipment specifications, equipment purchase, acceptance testing, user training, maintenance, safety testing, repair and decommissioning."

Mechanical Engineering

Brid Mullany

Age: 28

Job Title: Marie Curie Research Fellow

Employer: Zeiss AG, Germany



"Although I always enjoyed mathematics and physics at school, engineering was never something that I gave much consideration to until I was on a work experience placement in a hospital. Originally, I had considered a career in the medical field. However, during the work placement I found that I was more interested in the equipment, how it worked and what it did than what was wrong with the patients! From then on I started to consider engineering as a valid career choice. The rest, as they say, is history."

"My PhD., which I undertook in the Mechanical Engineering Department at UCD, was in the area of silicon dioxide polishing, a field of interest to the semiconductor manufacturing industry. During the course of the PhD., I got to travel to conferences in both America and Europe. Additionally, I was also lucky enough to spend a year working in America doing experimental work for my final thesis. With the PhD, I was able to get a two year post-doctoral Marie Curie Research Fellowship with Carl Zeiss in Germany. Carl Zeiss makes optics and lenses for everything including normal everyday eyeglasses, microscopes, binoculars, medical equipment, large telescopes and the focusing arrays for lithography machines. My job at the moment involves improving the polishing and fine-grinding processes. It is interesting as there is always something new to learn, new people to talk to, and I get to use some of the most accurate measurement machines in the world. Some of the machines I use can measure surface roughness values of less than a nanometre, i.e. 10^{-9} metres or in other words one thousandth of a micrometre!."

Would you recommend a career in engineering?

"Yes I would recommend engineering as a career. Engineering provides great opportunities, not only with respect to what type of job you get but also with respect to what country you can work in afterwards. Even if you never work as an engineer, after completing your degree you will find that the problem-solving skills and reasoning ability that you acquired along the way will stand to you no matter what career path you take. Engineering is a strong basic degree that will not leave you short of options when you finish college."

Irish engineers and technicians (continued)

Aeronautical Engineering

Fiona Mc Allister

Age: 25

Job Title: Business support manager

Employer: FLS Aerospace (Irl.) Ltd.



Fiona studied aeronautical engineering at the University of Limerick and currently works for FLS, formerly TEAM Aer Lingus, where she is now in the Aircraft Overhaul Department. "The main thing I do is solve problems, and manage and develop support functions. It's like a pitstop; an aircraft comes in and, essentially, I ensure that the aircraft maintenance engineers and their supervisors have everything they need, from manpower to tooling. Therefore, a great deal of what I do is project management. The terrific thing about FLS is that there are a lot of different areas for graduate engineers to work in such as aeronautical engineering, materials, component overhaul, line maintenance and so on."

One of the high points of her career was the takeover of TEAM Aer Lingus by FLS Aerospace. Fiona was deeply involved in the post-merger integration process during which time she worked with two different sets of consultants. "I learnt a lot about project management," she says.

Would you recommend a career in engineering?

"I would certainly recommend a career in engineering. I remember in college people had a set idea about what job they would have when they finished, but it doesn't have to be like that. Engineering, in fact, offers exciting opportunities in areas not traditionally associated with the profession. It gives you the opportunity to travel the world, explore different opportunities. For me, my engineering degree has been a stepping stone. It has given me a problem-solving mindset, which is required in every job. I'm not in a typical engineering role at the moment but I can fall back on it. And it is easier to move from engineering to business than the other way round."

Building Services Engineering

Michelle Perry

Age: 23

Job Title: Project manager

Employer: J.V. Tierney & Co.



Michelle studied at Institute of Technology, Tallaght, where she did a Diploma in Mechanical Engineering. "During Transition Year in school I began to think about a career and what subjects I would need for college. I attended the 'NOW' programme in DIT, Bolton Street which was designed to give new opportunities to women. This ten-week course gave a brief introduction to many disciplines of engineering. Then I took part in a four-day workshop in DCU, which covered electronics and telecommunications. After that I was fairly hooked on the idea."

Irish engineers and technicians (continued)

Michelle went to an all-girls school which did not offer physics, chemistry or higher level mathematics as Leaving Certificate subjects. "After a lot of hard work we got together a group of ten people and were given a chemistry class. However, honours maths was definitely not an option. This placed a huge restriction on the colleges that I could apply for. Thankfully, it was not a requirement at the Institute of Technology, Tallaght. I hope to go back and finish my course when the college introduces the Degree in Mechanical Engineering."

After leaving college, she joined the engineering consultancy J.V. Tierney & Co. Since joining this company she has worked on projects such as St Vincent's Hospital (Elm Park), Microsoft (Sandyford Industrial Estate), the Gaiety Cinema Extension (Sligo), Portlaoise Fire Station as well as several shopping centres and apartment blocks. "The capacity of input varies from job to job. For example, when working on hospitals we tend to work in large teams and share the responsibility, whereas on most of the other jobs I would be the person in charge and manage the project from start to finish with one or two junior designers/CAD people."

Would you recommend a career in engineering?

"I would definitely recommend engineering. It's not an easy career but it is very rewarding. You get great satisfaction seeing the finished product of something you've worked on. If you are the type of person who likes a challenge, you can go to the ends of the earth with this as a career. But also for those who get bored easily, most projects last one to two years and you move on to something new. You are constantly meeting new people and new concepts."

Food Engineering

Ryan Byrne

Age: 24

Job Title: Junior project engineer

Employer: Project Management Limited



With the Leaving Certificate looming and a blank CAO form in front of him, Ryan Byrne wasn't quite sure what he wanted to do with his life. "I chose engineering because it was a useful qualification no matter what I wanted to do. I felt that even with a Bachelor of Engineering I could still get a job in a bank if I wanted." He studied agricultural and food engineering in UCD as "it seemed a niche discipline in a growing market sector."

Ryan now works in the food division of Project Management Limited. "The range of projects we do varies enormously from greenfield sites to masterplan studies, which enable a company to see what they can do in a coming year. I am part of a project team and I would be assigned to specific tasks." Although most of Ryan's work is office-based there is some site work involved and not all of it is local.

"I see myself in my career as being able to travel and do a wide range of jobs with a wide range of companies. If you look at accountants they will probably be doing the same thing throughout their careers, while I will be doing something different. That's why I'd recommend a career in engineering."

Irish engineers and technicians (continued)

Would you recommend a career in Engineering?

"If people are interested in engineering, they shouldn't just listen to what the colleges say. Find some past pupils from your school who are engineers and talk to them. When you are choosing your subjects for Leaving Certificate, mathematics and at least one science subject are a must. But don't restrict yourself. Include another subject like business just in case you change your mind."

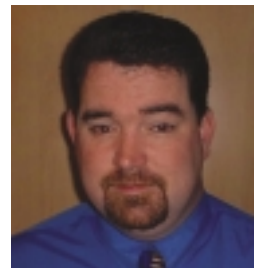
Manufacturing Engineering

Aidan Smith

Age: 32

Job Title: Plant manager

Employer: Jamestown Cladding & Profiling Ltd.



Aidan Smith studied engineering at the Dublin Institute of Technology in Bolton Street. He was attracted to the diversity of the discipline: "Engineers build and manufacture everything from roads to semi-conductors, from contact lenses to container cranes, and that's only in Ireland!"

He is currently working as plant manager in Jamestown Cladding & Profiling Ltd, a subsidiary of SN Financial Services Ltd. "We are involved in the production of steel profiles for the manufacturing and construction industry in Ireland and the UK. I am responsible for the plant and equipment, production, safety, quality and CAD office, machine and general operators. It's a hands-on role which gives me valuable experience in many areas of management and engineering."

Would you recommend a career in engineering?

"Engineering as a career is definitely worth considering as there are so many possibilities even in each discipline. Having qualified as a production engineer, I have gone from quality manager to safety manager to production manager to plant manager in different companies. Engineering gives you technical ability, but, more importantly, it gives you a methodology for thinking and working logically. This means engineering becomes one of the most flexible qualifications in terms of employment and career opportunities."

Software Engineering

Margaret Kennedy

Age: 31

Job Title: Project manager

Employer: Marrakech



Margaret Kennedy studied electronic engineering at University College Galway. "I felt engineering would give me that solid foundation which would enable me later on to

Irish engineers and technicians (continued)

choose a career that I would really enjoy, while at the same time enabling me to continue studying the core subjects that I was interested in at the time.

"The Web is where it is at in software these days. I am working in the area of e-commerce in a company called Marrakech, having spent a number of years working in Visio in business/technical graphics. Marrakech is a small company, so in two years I have played a number of roles. As a result I have gained immense experience in the whole area of e-commerce and the development of e-commerce applications. Engineering is a qualification that travels very well and is really about being able to apply knowledge and experience to solve different problems in innovative ways. Since I left university, my engineering degree has definitely served me well and enabled me to do just that!

"Both my previous and current jobs have been in the area of software engineering – which is essentially a young, dynamic and lively industry. It's a relaxed, friendly, informal culture, and although the work can be tough sometimes, it's very rewarding both from a personal achievement and remuneration perspective. The good thing about it is it is not remotely static. There are always new challenges and new opportunities."

Would you recommend a career in Engineering?

"Yes. I have to say that I have never regretted studying engineering. I have ended up working in the area of software development, which I thoroughly enjoy. Engineering gave me the basis to move into different areas – it gave me options and has given me the confidence to pursue different roles and to look for different and innovative ways of solving business and technical problems. I would really recommend engineering to students when making their choices for courses – it's a subject area that is in no way limiting and opens doors to many opportunities."

Engineering Profiles

High profile contemporary engineers

John McGowan – Vice-President, Intel

John McGowan studied engineering in University College Galway and graduated in 1970. He received a masters degree in structural dynamics from Trinity College, Dublin in 1974. After holding a number of positions in different companies he became a director of the engineering consulting firm Jacobs International. Having supervised the design and construction of Fabrication plant 10 (Fab 10) for Intel in Leixlip, he joined Intel in 1993 as a projects group manager responsible for manufacturing, tool installation and qualifications.



From 1994 to 1998 he was General Site Service Manager for the Ireland campus. He then transferred to Fab 15 in Oregon. Returning to Ireland he became General Manager of Intel Ireland Ltd, based in Leixlip, and was elevated to a Vice-President of Intel's Technology and Manufacturing Group in 2000.

In 2001 he was appointed VP and Director, Corporate Services. He is jointly responsible for facilities management, utility and manufacturing support, safety, security, and real estate and construction services for all Intel worldwide operations, covering Intel facilities and investments from China through Europe to the US.

McGowan is a Fellow of the Institution of Engineers of Ireland, and a member of the Institute of Directors. The Association of Consulting Engineers of Ireland honoured him with the Engineer of the Year Award in 2000. He was elected as a Vice President of the Institution of Engineer of Ireland in 2004.

He summarises his experiences of engineering as follows: *"Engineering has always been a stimulating career for me, with lots of variety, opportunities, fun and personal satisfaction. I have worked all around the world, but my engineering training has always given me a solid basis for all of my business dealings and for delivering on challenges."*

Jane Grimson – Vice-Provost, University of Dublin Trinity College

Professor Jane Grimson was the first woman to graduate in engineering from Trinity College Dublin in 1970, following which she obtained her Masters and Doctorate in Computer Science from the Universities of Toronto and Edinburgh, respectively. She joined the Department of Computer Science in Trinity College Dublin as a lecturer in 1980 where she now holds a Personal Chair. She was Dean of the Faculty of Engineering and Systems Sciences from 1996 to 1999. She was appointed Vice-Provost of TCD in 2001. She has published widely on distributed database systems and on the application of information and communications technology to health.



High profile contemporary engineers (continued)

Professor Grimson is a Chartered Engineer and a Fellow of the British Computer Society, the Irish Computer Society, the Institution of Engineers of Ireland, the Irish Academy of Engineering and the Royal Academy of Medicine in Ireland. She holds senior positions on a variety of science, engineering and technology committees both in Ireland and internationally. She was President of the Institution of Engineers of Ireland 1999/2000 and the Irish Academy of Engineering in 2002/2003.

Padraig McManus – Chief Executive, Electricity Supply Board (ESB)

ESB Chief Executive Padraig McManus is an electrical engineer and holds a Bachelor of Engineering degree from UCD. He is a Fellow of the Institution of Engineers and a Fellow of the Institute of Electrical Engineers. Mr McManus took over the position of ESB Chief Executive in July 2002.



He joined the ESB in 1973 and worked in the networks area in distribution department. In 1975/76, he spent a year with a German cable manufacturer, Kabelmetal, returning to Ireland to work in the ESB networks division.

He worked in Saudi Arabia from 1981 to 1983 on a project involving the electrification of the western suburbs of Riyadh. In 1986 he commenced work on the management of the refurbishment of the electricity system in Ghana, a World Bank project with bilateral funding from France and Austria. He spent four years in Ghana 1987-1990 rebuilding the power system.

Following this, he worked on several ESB International projects including the refurbishment of the power system in Cambodia and the management of Sierra Leone's electricity utility, the National Power Authority. He developed an efficiency and operational programme for the National Power Corporation in the Phillipines.

During the mid 1990s, he gained further experience as a senior manager in ESB's training department, and was one of the management team involved in developing the major change agreement, the Cost and Competitiveness Review (CCR), which was delivered during the late 1990s. He was appointed Managing Director, ESB International in 1997 and Commercial Director of ESB in 2001, a position he held until his appointment as ESB Chief Executive.

Liam O'Mahony – Chief Executive, Cement Roadstone Holdings, CRH plc

Liam O'Mahony is Chief Executive of CRH plc, the international building materials group, headquartered in Ireland with operations in twenty four countries on three continents. Liam has an honours degree in Civil Engineering (University College Cork), and a Masters in Business Administration (Trinity College Dublin). He is a Barrister-at-Law (Kings Inns, Dublin) where he was awarded the John Brooke Scholarship as first-placed graduate.



He worked in design and project management in Ireland and the UK before joining CRH in 1971 as a Development Manager. Having worked in the Middle East and Africa and managed a number of CRH's Irish and US companies, in 1989 Liam became Chief

High profile contemporary engineers (continued)

Operating Officer of Oldcastle Inc, the holding company for CRH's North American operations. Appointed Managing Director, Republic of Ireland and UK Group companies in 1991, he joined the CRH Board of Directors in 1992. He returned to the US as Chief Executive of Oldcastle in 1994 and was appointed to his current position as Chief Executive of the CRH Group in 2000.

Frank O'Regan – Vice-President, Bausch & Lomb

Frank O'Regan was born in Youghal, Co Cork. He is a civil engineering graduate of University College Cork. He began his career with Simon Eurolift in Cork, manufacturers of fire-fighting equipment, where he worked in areas such as regulatory affairs, technical management and design. After seven years with the company, he left to acquire an MBA at INSEAD, in Fontainebleau, France. He then worked in a senior operations management position in United Technologies in Swindon, UK; as managing director of Glen Moulinex, a domestic appliance manufacturer, in Thurles, Co Tipperary; and as General Manager of Lake Region Manufacturing's operations in New Ross, Co Wexford. In 1998 he took up the position of General Manager of Bausch & Lomb's lens plant in Waterford, the largest in the world, in 1998. In January 2001 he was appointed Vice-President with responsibility for lens manufacturing at six sites in Europe with over 3,000 employees.



On the subject of engineering as a career he says: "I believe that engineering training provides a professional background that enables an individual to pursue a specialised career, or branch into management positions. With the ever-increasing technical improvements in all aspects of industry, this is a trend which will inevitably increase. Indeed, in the case of my own company, Bausch & Lomb, the Chairman and CEO, Mr Ron Zarrella, is an engineer by training."

David J. O'Reilly – Chairman of the Board and Chief Executive Officer of ChevronTexaco Corporation

Born in Dublin in 1947, O'Reilly earned his bachelor's degree in chemical engineering from University College Dublin in 1968. Upon graduation, he began his career with Chevron Research Co. as a process engineer. After serving in positions of increasing responsibility, he was named general manager of Chevron's refinery at El Segundo, California, in 1986. In 1989, he was elected senior vice-president and chief operating officer of Chevron Chemical Co. In 1991, O'Reilly was elected a vice-president of Chevron Corporation, responsible for strategic planning and co-ordination of the company's quality improvement activities. Following his appointment as president of Chevron Products Co. in 1994, O'Reilly assumed responsibility for the company's US refining and marketing operations. In November 1998, he was elected as one of the company's two vice-chairmen with responsibility for Chevron's worldwide exploration, production and corporate human resources, before becoming chairman of the board and chief executive officer of Chevron Corp. in 2000. He assumed his current position upon the formation of ChevronTexaco Corp. in October 2001.



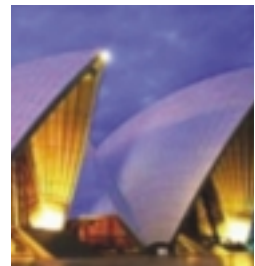
High profile contemporary engineers (continued)

Peter Rice – structural engineer with Ove Arup & Partners

Dundalk native Peter Rice was perhaps one of the most influential structural engineer of the 20th century. The hundreds of buildings he worked on included such masterpieces as the Sydney Opera House, the Centre Pompidou in Paris, the Menil museum in Houston and Lloyd's of London. He died aged 57 in 1992.

Having graduated in civil engineering from Queen's University, Belfast, Rice worked for his entire career with Ove Arup & Partners, the London-based engineering firm. Later in his career, he formed associations with Renzo Piano and then with RFR, where he consulted on many unique glazed structures such as the roofs of the latest addition to Charles de Gaulle Airport in Paris and Chur bus/rail station in Switzerland.

Rice was a strong believer in what he called "the natural engineer". He believed that engineering was both a science and an art, and was very interested in promoting the creative side of the discipline. In Rice's words "what is needed is just courage, care, and attention to detail, and above all belief."



Steve Wozniak – Co-founder of Apple Computer, Inc.

Apple Computer, Inc. was founded in 1976 with the Apple I computer. Wozniak's Apple II personal computer – introduced in 1977 and featuring a central processing unit (CPU), keyboard, floppy disk drive, and a \$1,300 price tag – helped launch the PC industry. In 1980, just a little more than four years after being founded, Apple went public. Wozniak left Apple in 1981 and went back to Berkeley and finished his degree in electrical engineering/computer science. Since then, he has been involved in various business and philanthropic ventures, focusing primarily on computer capabilities in schools, including an initiative in 1990 to place computers in schools in the former Soviet Union.

