

**Dr. Domhnaill Hernon (Ph.D.)**

**DEPT. HEAD  
EFFICIENT ENERGY TRANSFER DEPT,  
BELL LABS RESEARCH,  
ALCATEL-LUCENT  
DUBLIN, IRELAND**



<http://www.alcatel-lucent.com/bell-labs>

#### **Education and Training**

- B. Eng. (Hons) Aeronautical Eng, University of Limerick, Ireland, 2003
- Ph.D., University of Limerick, 2007
- MBA. Dublin City University, 2013-present

#### **Current Position**

<b>Title</b>	<b>Dates</b>	<b>Employer</b>
Dept Head	Jan 2013 - present	Bell Labs, Alcatel-Lucent, Dublin, Ireland

#### **Previous Positions**

<b>Title</b>	<b>Dates</b>	<b>Employer</b>
Technical Manager	Dec 2010 - Jan 2013	Bell Labs, Alcatel-Lucent, Dublin, Ireland
Member of Technical Staff (Research)	Nov 2006 - present Dec 2010	Bell Labs, Alcatel-Lucent, Dublin, Ireland

#### **"Home" Town(s)/County(s)**

Gurteen in south Co. Sligo. Gurteen is well known for its strong ties to traditional music. Sligo has a strong history in the arts and also George Stokes (of the Navier-Stokes equations and much more) was born in Sligo!

I have fond memories of Limerick. I spent 7 years there and met many great people. Any chance I get I travel back to Limerick.

**Please describe your current job**

I am currently the Department Head for the Efficient Energy Transfer ( $\eta$ ET) department at Bell Labs in Ireland. The department focuses on Thermal Management, Energy Harvesting and Energy Storage. Bell Labs is the research arm of Alcatel-Lucent, a global telecommunications equipment and service provider and leader in Green ICT.

I manage a team of 16 people across multiple disciplines. My role involves: 1) Developing the environment to enable a high-impact team across multiple projects and skill sets; 2) Defining the research strategy for product and long-term science impact; 3) Identifying and establishing key collaborations to accelerate technology development and transfer; 4) Disseminating our research internally to executive level management and externally to our funding agencies and customers; and 5) Commercializing our research assets both internally and externally.

The most interesting aspect of my job is that I can work on many different areas ranging from air to liquid cooling on all scales, energy harvesting using vibrations and solar, and energy storage. Thermal management can be employed in varied fields because nearly all hardware technology generates heat and therefore requires cooling for reliability and efficiency reasons. For example, Thermal Management is employed on the Space Shuttle when it re-enters the atmosphere, thermal management is employed in air conditioning units that keep the inside of buildings cool/warm, and thermal management is employed on Formula 1 cars where immense heat is generated in the engines.

My undergraduate degree was in Aeronautical Engineering with my focus on fluid mechanics and my PhD was on experimental fluid dynamics - when I joined Bell Labs I was asked to take that background experience and apply it to a completely new field to me called Thermal Management. This is a common situation that you will find yourself in during the development of your career, where you take knowledge and experience gained in one technical area and apply it successfully in another technical area.

**Please describe your career path since graduating with your B.Eng. Aeronautical Eng.**

I obtained a PhD in Experimental Fluid Mechanics because that is an area that always interested me since I was a young teenager but I also knew I wanted to learn more about this field after completing some basic fluid dynamics courses during my undergraduate program.

In the final year of my PhD I was asked to interview with Bell Labs which is the research arm of Alcatel-Lucent. Fortunately, I was offered the job. The position is in the Thermal Management Research Group - Thermal Management was previously not my area of expertise; however, my deep understanding of fluid dynamics obtained during my PhD studies allowed me to apply this knowledge to the cooling of electronics devices. This is a good example of how one can easily move from one area of expertise into another by using the basic skills learned in a strong discipline such as Aeronautical Engineering.

Following my initial role as a post doctoral researcher I was promoted to a full member of technical staff after 1.5 years. A couple of years later I was promoted to a Technical Manager and then 1.5 years ago I was promoted to Department Head.

**What made you decide to study Aeronautical Engineering at UL?**

I wanted to understand how airplanes fly and UL has the strongest engineering school in the country as well as being only one of two Aeronautical study programs on the island of Ireland.

**Are you glad you did?**

Yes - as I mentioned before, UL has the strongest engineering school in the country and my education at UL allowed me to work for one of the most prestigious research organisations in the world in a different field to the one I initially studied.

I met great friends at UL and I will always think back on those times very fondly.

**What did you most enjoy about studying at UL - academically, and also non-academically?**

I enjoyed the fluid dynamics courses such as boundary layer theory and I also enjoyed the lab and computer training.

I really enjoyed doing a PhD...I loved sitting down at the wind tunnel for hours taking measurements and I even more so loved analysing the data I collected to see if I could come up with something new that had not been seen before in the literature. Sad as that may sound to some people I really enjoyed the whole experience!

I met many of my best friends in college and even to this day, no matter where in the world they are currently working, we meet up regularly.

**Where did you do your COOP?**

I did my COOP at Shannon Aerospace based in Shannon Airport in Co. Clare. I worked in the Product Engineering department designing new tooling solutions and I also worked on servicing the lifting equipment. The role was not research focused but it did provide me with a great insight on where I wanted to develop my career.

**What advice would you give school-goers considering choosing Aeronautical Engineering?**

My advice is that it is a great course that will allow you to break into many different fields in the future, from project management, research, operations, lecturing, patent attorney etc.

However, you will enjoy the course the most if there are aspects within the course that really interest you. If you are interested in some areas then doing the course for 4 years will not be like attending school but will be something fun and stimulating. For example, in my case I was very interested in fluid dynamics and I learned so much about this during my time at college. To this day I am still applying the basic knowledge I learned from college.

**What advice would you give future graduates of Aeronautical Engineering?**

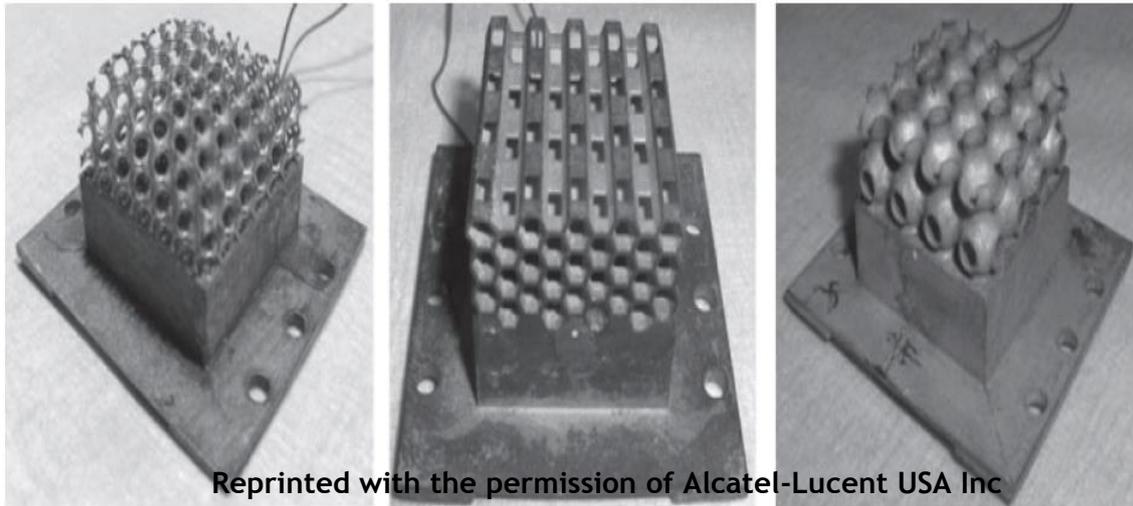
As above, ensure that you are interested in some aspects of the course whether it is mechanics of solids or fluid dynamics. If you are interested then college will be interesting and fun and you will do well.

If you are not sure that Aeronautical Engineering is for you then think about what you would like to work at, e.g. are you interested in Formula 1, space flight, how fighter jets fly or thermal management. The skills you learn in Aeronautical Engineering can be applied to the above short list and many other disciplines. Therefore, the Aeronautical Engineering undergraduate degree can provide a gateway into many different and truly interesting things.

*Graduate Profile, Aeronautical Engineering, University of Limerick, Ireland*  
**DOMHNAILL HERNON**

The picture below shows three examples of new heat sink designs  
I co-invented called 3D Heat Sinks.

See Hernon, D., "Enhanced Energy Efficiency and Reliability of  
Telecommunication Equipment with the Introduction of Novel Air Cooled  
Thermal Architectures", Bell Labs Technical Journal, Aug. 2010  
for more information.



(a) Fin foam heat sink (FFHS)

(b) Honeycomb heat sink (HCHS)

(c) Schwartz heat sink

In December 2013 I was awarded the "Young Leader of the Year" Award at the  
Irish Lab Awards.

