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# Ecolibrium

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# THE DISTINGUISHED CAMEL DRIVER

Murray Mason, L.AIRAH, explains how his load-estimation software came to earn its curious name, and the possibility of transitioning his business.



Murray Mason, L.AIRAH

**Ecolibrium:** When did you decide you wanted to be an engineer, and how did you get to where you are today?

**Murray Mason:** I became an engineer by default because like most kids my age, I didn't know what I wanted to be. My father, a draftsman at EMF Trading, a company that made arc welding machines, was not extremely well off, and could not afford to send me to university. However, he managed to obtain a cadetship for me with the Commonwealth Department of Works, the federal government construction authority. On successfully completing my degree, I was then under contract with the department and started my career as a building services engineer.

I stayed working with the department as a building services engineer for 22 years, working on the design and construction of projects such as Tullamarine Airport, HMAS Cerberus and Telstra's Electronic Telephone Exchanges.

In 1978 I got involved in technical computing and worked with Tom Hamilton (who now works under contract to ACADS-BSG) on the development of CAMEL, DONKEY and other departmental programs. In 1980 I transferred to ACADS Pty Ltd and worked there until this day on setting up the suite of building services programs that ACADS-BSG maintains.

**Eco:** How would you characterise your approach to work? What are the fundamentals to your philosophy and process?

**MM:** I am a person who is dedicated to the work that I do, while at the same time being very mindful of my health and fitness. Particularly with the development of computer programs, if there is something for which a method of analysis is not documented, I willingly accept the challenge to find a solution. In some instances, such as modelling VRF systems or desiccant pre-conditioners for example, this can take up to 18 months of hard work to come up with a successful solution.

**Eco:** Do you have a checklist you always follow at the start of a project?

**MM:** We keep a running list of suggestions for updates to each of our programs, which are accumulated from user comments we receive from hotline calls, attendees at our workshops and from industry conventions, seminars, etc., such as ARBS.

**Eco:** Do you still work on projects, and if not, do you miss this type of work?

**MM:** We do not work on actual projects directly but are regularly asked for advice or assistance on the use and application of our programs for particular projects. Because of this close relationship with users and the numerous "engineering" discussions we have with users – we receive about four hotline queries a day – this can be more interesting and challenging than working on projects.

What a lot of people don't realise is that writing and providing support on engineering software is much more about solving engineering problems than programming.

**Eco:** Are you open to new ideas, or are the old ways the best ways?

**MM:** We are always open to new ideas and our main focus is on keeping our software up-to-date. Much of our work entails keeping up with new systems such as VRF systems and pre-conditioners, and finding ways to model them.

We rarely regard the "old" way as being the "best" way. It is more a matter of improving the "old" method where possible and striking a balance between accuracy and cost.

**Eco:** How did we come to develop CAMEL and what is its status today?

**MM:** The development of an Air Conditioning Load Estimation Program for the department started back in the 1970s when it was decided to automate air conditioning load-estimation procedures. In those early days, air conditioning load estimation was carried out by hand using the "Carrier Air Conditioning" load-estimation forms employing numerous assumptions necessitating sizeable safety factors.

The Carrier forms only calculated loads at a given hour of the day. This necessitated filling in a load chart and calculating loads for every hour of every month or at least at 9am, noon and 3pm for possibly three months of the year in the hope that you would find the time of the peak load.

The very first version of the Load Estimation program was written on a ticker-tape machine. In the next version use was made of punch cards, where punch-card operators would type in coded inscriptions on a series of cards that were then fed into a mainframe computer. Our biggest fear was a call from the Operator – "Mr Mason, can you come down and sort the punch cards for that job of yours. I am very sorry but I dropped them and now they are scattered across the floor."

Then in 1979, the government decided to move its head office from Melbourne to Canberra. The majority of staff in the Technical Computing section of the Department opted not to move to Canberra, and this section was disbanded.

The director of engineering, Frank Wickham, decided that because all the department's mechanical engineering design programs had been developed in-house using Commonwealth (tax payer) money, they should all be made available to the general public. ACADS (the Association of Computer Aided Design of Structures)



In the 1970s, the Load Estimation program was written on a ticker-tape machine.

as it was then known, was selected to be the vehicle for this.

With the help of Tom Hamilton, I was given the task of implementing this.

Trevor Kingston then joined ACADS and the Building Services team soon started acquiring other programs that were needed, including BEAVER (Building Energy Simulation), HYENA (Sprinkler Design), PYTHON (CFD Analysis) and others.

The development of CAMEL then followed the following lines:

- 1989 – A PC version was developed
- 1991 – The first data-entry program (CAMLIN) for CAMEL was developed
- 1995 – A full Windows version of CAMEL was developed.

And the big question on everyone's lips – Where did the name CAMEL come from? Well during the development of CAMEL, the boss of the technical computing section (a civil engineer) said to me "This air conditioning load-estimation program that you guys look after, can't you give it a simpler name, such as CAMEL for example?"

"What a great idea", we replied. "A perfect acronym – Carrier Air conditioning Method for Estimating Loads" – and so the start of all the animal names for the programs.

**Eco:** How many people use CAMEL? How do the other programs such as HYENA, DONKEY KOALA, PYTHON fit in?

**MM:** There are just over 360 companies using CAMEL and paying maintenance. This represents around 2,000 users.



Murray Mason is a coach for Rostrum Australia.



Mason worked on the design and construction of projects such as Tullamarine Airport.

**HYENA** – HYdraulic ENALysis of sprinkler systems.

**DONKEY** – Ductwork Design and acoustics

**KOALA** – Cut-down version of CAMEL for simple jobs

**PYTHON** – closed circuit PYping systems design

**Eco:** Whom do you admire and why? Did you have a mentor? Do you gain any satisfaction out of mentoring others?

**MM:** I have great admiration for Syd Berglund, my first boss in the department, who sat me down one day and showed me how to do a manual load calculation. I also admire Frank Wickham, the chief mechanical engineer in the head office of the department, for his ability to solve problems and handle difficult situations. He also was of considerable assistance with my involvement and postgraduate training in acoustics and other specialised areas of building services design and construction.

I gain a lot of satisfaction from mentoring others both within the workplace and outside. Trevor and I continually run

workshops on all our programs and the hotline is also a form of mentoring.

I have been a netball and basketball coach for many years and get a lot of enjoyment from this. I am also a registered coach for Rostrum Australia, a national organisation that improves its members public speaking abilities.

**Eco:** What advice do you have for emerging engineers who wish to follow in your path?

**MM:** My advice to any emerging engineer who wishes to follow in my path is to be prepared to work long and hard hours, and take every opportunity to learn about new and unusual systems. To learn about all aspects of building services design and broaden your outlook whenever the opportunity arises. I was fortunate to have people who were willing to teach me all aspects of building services.

When working on the design of the services for Tullamarine Airport, I was working for Frank Wickham, and he instructed me to read up on high-temperature hot water systems – which was being proposed for use at Tullamarine. This was even though I was in hospital with a torn cartilage.

**Eco: What is the most important lesson you have learned throughout your working life?**

**MM:** The most important thing that I have learned throughout my working life is that, with the development of programs for the design of building services, the design of building services systems (as distinct from their components) almost exclusively involves estimates and educated guesses. It is not and never will be an exact science.

In the words of Aristotle (330BC):  
"It is the mark of an instructed mind to rest satisfied with the degree of precision which the nature of a subject admits, and not to seek exactness when only an approximation of the truth is possible."

**Eco: What is the future of ACADS-BSG?**

**MM:** Both Trevor and I are heading toward retirement, so we are looking to engage an additional engineer to keep things rolling along, or even move the business to new owners. Either way

it is important to us to keep the continuity of support for our over 700 clients.

**Eco: What does AIRAH membership mean to you?**

**MM:** AIRAH membership provides an avenue for obtaining comments on the work we do in developing our programs and in keeping up with the latest products on the market. It also brings people of a like mind together in a friendly and learned way. One man can do so much on his own, but a team of people can achieve much more, and an institute such as AIRAH can achieve much, much more by bringing together people of like mind.

**Eco: Describe yourself. What are your defining characteristics?**

**MM:** My defining characteristics are, a high level of respect for other people, patience, dedication to achieving goals.

**Eco: If I wasn't an engineer, I'd be a . . .**

**MM:** If I wasn't an engineer I would like to have been a marine biologist.

**Eco: Do you have hobbies or diversions?**

**MM:** I have always played a lot of sport, including football, tennis, basketball, underwater diving, table tennis.

**Eco: My most valued possession is . . .**

**MM:** My most valued possession is my family and friends.

**Eco: Tell us something about yourself others might not know**

**MM:** I am a coach and training officer for Rostrum. I played AFL for Essendon thirds and seconds. I was in the Victorian skin diving team. I recently played for Australia in the FIMBA (Federation of International Masters Basketball Associations) in Europe.

**Eco: In five years I'd like to be . . .**

**MM:** In five years I would like to have retired gracefully. ■

Enquiries about acquiring CAMEL and other ACADS-BSG software can be directed to Murray Mason via [murray.mason4@bigpond.com](mailto:murray.mason4@bigpond.com)

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