

UNIVERSITY OF MAURITIUS

#

GRADUATION CEREMONY 2017

TUESDAY 11 APRIL 2017 AT 2.00 P.M.

GRADUATION CEREMONY FOR

FACULTY OF ENGINEERING

CENTRE FOR INNOVATIVE AND LIFELONG LEARNING

&

UoM TRUST

Speech by Mr Iswarduth Pokhun

Chancellor, Dr Louis Jean Claude Autrey, CSK

Honourable Minister of Education and Human Resources ,Tertiary Education and Scientific Research, Mrs Leela Devi Dookun -Luchoomun (if present)

Pro-Chancellor, Mr Preaduth Chitamun, CSK

Vice-Chancellor Professor Dhanjay Jhurry, CSK

Members of the Congregation

Distinguished academics

Distinguished guests

Graduands

Ladies and Gentlemen

First of all I would like to thank the University of Mauritius for inviting me as their Guest speaker for the Graduation Ceremony of the Faculty of Engineering, Centre for Innovative and Lifelong Learning & UoM Trust.

It is indeed a pleasure and an honour for me to address the new graduands on this very special occasion.

Dear Graduands

Since you are from the Faculty of Engineering, let me tell you that, in my personal opinion, Engineers are very special persons. You know why – because the work of engineers is to make life easy for everybody. Do you know that the word *engineer* is derived from two [Latin](#) words *ingeniare* meaning to contrive, to devise and *ingenium* meaning cleverness.

By definition a professional engineer is competent to apply scientific method and outlook to analyse and solve engineering problems. A good engineer must have original thought and judgement.

It is important that you keep up to the expectation and give pride to the profession of engineering. You should contribute to the development of engineering science and their subsequent applications to human and business needs and quality of life.

Dear Graduands

Today's event is very important and exciting for you. It is a milestone in your life. You have achieved something in that you have successfully completed your course of studies in your respective fields and will be awarded a degree or diploma today.

Ladies and Gentlemen,

I am myself an engineer. I graduated more than 30 years ago and I can tell you that this graduation is not an end goal in itself; it is instead a part of the larger journey of life. It is indeed the start of a new career where you will have to face challenges, there will sometimes be messy, confusing, and downright terrifying situations. However, I am sure that, the skills and knowledge you have acquired at the University of Mauritius, together with your hard work, your experience gained and your innovative ideas, such situation will only bring you a rich experience, satisfaction, and ultimately deeply rewarding opportunities.

Now I would like to share with you some of my own experience during my career.

I joined the aviation sector as an aeronautical radio operator in 1980 before becoming an engineer. In those days, my duty was to communicate i.e. to send and receive aeronautical messages with other airports including Australia, South Africa, India, Madagascar, Reunion and Cocos Islands. You know, at that time, messages were sent and received using Morse code. The mode of

transmission was short wave amplitude modulation which in our jargon we refer to HF (High Frequency). Those of you who are radio amateur will appreciate that HF has a lot of shortcomings. Inherently it is very noisy and there are fading of the signals. Similarly long distance communication with aircraft was made on HF which also suffered noise and frequent fading. This is just to tell you how poor the quality of long distance communication was in the aviation industry. The life of an aeronautical radio operator or an Air Traffic Controller was not at all easy in those days. Believe me, it was stressful.

Thanks to the ingenious work of engineers, modern technology has made life easier for Air Traffic Control staff. The Morse was subsequently replaced by Telex and the mode of communication was satellite. So we got rid of the inherent noise and fading of the HF system – no more stress to listen to poor voice communication. Today all our communication with other airports which we call Ground to Ground Communication are based on satellite communication be it nearby airports like Rodrigues or Reunion. The aeronautical radio operator only have to watch the incoming messages in a computer screen and send outgoing messages through a keyboard. With time there has been further improvement, engineers have developed a system to automate the process. This not only made life even easier but eliminated any possible human error.

Ladies and Gentleman,

Every Contracting State of the International Civil Aviation Organisation is allocated an airspace within which the responsibility to control air traffic rest with the Contracting State. Mauritius has been allocated a very vast area in the Indian Ocean – approximately 9 million square kilometres which in our jargon is known as the Flight Information Region.

When I joined the Department of Civil Aviation, we did not have the necessary resources and equipment to provide air traffic control in the whole Flight Information Region. We were controlling traffic within a radius of 150 nautical miles around Plaisance airport because that was within the range of VHF (Very High Frequency) Communication. The airspace beyond 150 nautical miles was then declared as uncontrolled airspace and we were only providing flight information to pilots. This situation was acceptable in the 1980's when the traffic density was low.

In the 1990's we engineers at the Department of Civil Aviation decided to take a challenge to convert the whole of our Flight Information Region (i.e. 9 million square kilometres of oceanic airspace) into controlled airspace for improved safety of passengers flying in our airspace. We started working on a project which finally materialised in the year 2000.

We constructed an Area Control Centre which was (at that time) and is still equipped with modern technology and tools that allows our Air Traffic Controllers to perform their Air Traffic Control duties in a very effective and efficient manner.

In the past there was a requirement for a pilot to maintain voice communication with Air Traffic Control at all times. In our case, with such a vast oceanic airspace, this has always been a challenge. In some cases we had to initiate procedures which we do when an aircraft goes missing because no communication could be established after several attempts.

If I tell you that, today an aircraft that is adequately equipped can fly safely across our airspace without any voice contact between the pilot and the Air Traffic Control, you will wonder how is that possible. It is because the computer on board the aircraft that talks to the computer on ground – communication between the aircraft and Air Traffic Control do exist. It is in fact a direct data link communication between the controller and pilot which is done without human intervention.

This is just one example of the great work done by engineers.

Earlier in my speech, I mentioned that the range of VHF communication is limited to approximately 150 nautical miles. Today we have extended our VHF coverage to more than 600 nautical miles. This has been possible thanks to good engineering design. We have installed VHF transmitters and receivers at Rodrigues, Agalega and St Brandon which are all linked to the Area Control Centre at Plaisance via satellite – all these stations are unmanned and operate on solar energy. Believe me, when the systems became operational in 2003, pilots were amazed because we had not only improved our VHF communication system but also our HF communication where the inherent noise was considerably reduced, we had implemented the direct Controller Pilot Data Link Communication as well as a satellite based surveillance system.

What a relief for Air Traffic Controllers and especially Pilots who now had the confidence that they are flying in a safe airspace.

Ladies and Gentlemen,

It is with much pride that I can confirm that with the contribution of our engineers, Mauritius is among those countries with the best means of Air to Ground communication system. This makes the airspace over Mauritius among the safest in the world and definitely the safest in Africa.

What I just mentioned are just a few of the improvements that we brought. There are many more in terms of equipment performance and reliability.

Now the vision of the Government is to position Mauritius as the regional platform for trade, investment and services to do business in Africa. One of the objective to achieve this vision is to develop Mauritius into an aviation hub. In the aviation we have already embarked on several projects.

We are redesigning our airspace whereby we are moving towards a performance based navigation system which will improve the safety and efficiency of aircraft operations in the air. This will result in fuel efficiency which will further result in less carbon dioxide emission in the atmosphere thus contributing towards a clean environment. Furthermore we are going to construct a new Control Tower which will be equipped with State-of-the-Art technology equipment. It will be an icon at the airport and most probably the highest building in Mauritius. At a height of above 70 metres above ground level, Air Traffic Controllers will have a better vision of the movement area. Again we are aiming at increased safety and security of aircraft operations – this time on ground.

Other areas of improvement over the years are in the aircraft technology itself. We are referring here to the technological advances in terms of structural integrity of the airframe of the aircraft and improved engine performance - from the standard Turbo Jet engines to the high bypass turbo fan engines which has an overall improvement on fuel efficiency of around 14 %, due to innovative design principle.

The use of new composite materials for certain parts of the fuselage and the cabin interior has further reduce fuel consumption to around 30% in the latest technology aircraft such as the Boeing 787 Dream liners and the Airbus A350.

Ladies and Gentlemen,

Even though the aviation industry contribute to only 3% of carbon emission in the world, the International Civil Aviation Organisation has taken a commitment to reduce by 0.5 % the global emission by the year 2050.

The above evolution in the aircraft technology has been the result of the hard work of engineers. Further improvement is much awaited in the coming years with the use of ceramic base blades in aircraft engines to further improve the fuel efficiency. Research and trials are also ongoing for the use of bio-fuel to reduce pollution of the atmosphere caused by aircraft engine emission.

Dear graduands,

Along with development, there has been an impact on the natural ecosystem and therefore the health of our planet. It is now time to make sustainable developments. The whole world will rely on you, young graduates to ensure that future developments do not adversely impact the global system and in particular should not cause depletion of the natural resources.

As I said at the start of my speech, this graduation ceremony is not an end in itself. You have many challenges waiting for you and I have absolutely no doubt that the days you spent at the University of Mauritius will make you a valuable person to transform the world for the better.

I will end by congratulating all of you for your successful journey and I wish you all the best in your endeavours.

Thank you.