

## **Chapter 11**

### **Teaching at UF**

Sometime in December 1978 when I was in the final stages of my Ph.D. it was rumored that Dr. Farber was going to get a very big contract from USAID to set up a center to teach alternative energy technologies to scientists and engineers from developing countries. This center was subsequently named Training in Alternative Energy Technologies (TAET).

An USAID team from Washington DC had visited our lab and the department in 1979 and was shown all the facilities. I was specially invited to meet them and discuss with them about the interdisciplinary seminars that I had set up. Apparently the team had some reservations about giving the center to UF since they felt that Dr. Farber would only stress the solar thermal aspects of alternative energy. Hence they were told that I would be one of the main instructors in the program and since I had set up these seminars, every aspect of renewable energy would be covered. In addition being from India I was supposed to have developing country perspective! These arguments and sales pitch by the University was probably bought by the team and we were informed sometime around June-end that we had a very strong possibility of getting the center. This was a \$ 2.5 million project for 5 years and in those times was one of the biggest single projects in Mechanical Engineering.

During the Carter Presidency, USAID felt the need for setting up in US such a center which would give hands-on training in renewable energies to top energy planners and government officials of developing countries. Apparently quite a few of the top universities like Cornell, Berkeley etc. were in competition to get this center. Hence it was a feather in Dr. Farber's cap to get it for UF.

So when the project was sanctioned in September 1979, Dr. Farber decided that I should be hired as one of the instructors in this center and hence I was taken on board. In a couple of months two more instructors were hired and hence we had a full team of 4 instructors (including Dr. Farber) and 4 office staff. It was also decided to shift TAET to an off campus facility called TREEO center. TREEO which was located almost 10 miles from the main UF campus was a brand new swanky facility for holding workshops, seminars and training courses.

One of the instructors hired was Inky Laketek. Inky had worked in NASA and was taken as a lab instructor. He was obese - weighing almost 325 pounds - and loved to eat. We had a couple of hilarious incidents in restaurants. One day we went to a Pizza Hut in Gainesville for lunch. Inky ordered a thick crust super medium-sized pizza. The waitress turned to me and asked me what I would like to drink! I told her that I had not even ordered yet. She was incredulous and said, "You mean to say that he is going to eat all that pizza himself"!

We must have sampled some of the best restaurants not only in Gainesville but in all other cities, wherever we took the TAET participants - courtesy Inky. Before visiting any city he would get the magazines of that city and studied very thoroughly its eating places. He could eat a huge steak within minutes!

In 1984 he visited us in Phaltan. We had just moved into our new house and there were hardly any places in town for a good meal. So the poor guy had to survive for a week on a strict vegetarian diet in our home. All his pants became loose! He wanted to see Phaltan so I got him a bicycle since I did not have a car in those days. He rode the bicycle all over the town. Those days there was a circus playing in town and according to Inky there were many more people who came to see him ride a bicycle than to see the circus! Besides when he came back, the bicycle was all bent out of shape because of his weight!

While in Phaltan he tasted Alphonso mangoes and loved them. So when he went back to US he took one dozen mangoes. Obviously at the customs in the New York airport he was stopped and told to destroy them. So he calmly sat on a bench and ate all one dozen mangoes! He was a real jolly fellow and unfortunately died of cancer in 1998.

Even before I was hired for TAET I was doing some teaching and used to enjoy it. I was a graduate assistant to Dr. Farber, so anytime he went out of town - which he did quite regularly – I used to teach most of his classes.

I guess students liked my teaching, because at one time they went to the Chairman of the Mechanical engineering department and requested him that I should teach a separate course on energy and one specially related to biomimicry. The Chairman told them "Anil is still a student, so how can he teach a separate course!" Nevertheless my occasional teaching must have made quite an impression on some of the students, because recently after almost 30

years I received an e-mail from one American student who after locating me thanked me and wrote how my teaching helped and inspired him!

Since I was put on the staff of UF, my visa status had to be changed from student (F-1) to either green card or H-1. I was opposed to the idea of getting a green card since I thought that once I got it I would never go back to India and thus I had a mental block against getting it. The UF administration was very surprised by my decision. Normally people were ready to give an arm or a leg to get a green card and here I was refusing it when I had an opportunity of getting it. But then I have always been a foolish and arrogant person!

Hence UF administration did the necessary paperwork for an H-1 visa rather than the Green Card. After that they arranged for my interview with the immigration official in Jacksonville to convert my student F-1 visa to H-1. I was also warned that the immigration officer at Jacksonville was a very obnoxious and rude person. So on the appointed day I took the bus from Gainesville and reached the immigration office for the afternoon interview.

As per his reputation the immigration officer, one Mr. Carlyle, was extremely rude and he started the interview with a nasty remark that the UF must have already started the process of getting a green card for me so applying for H-1 visa was just a ruse. I immediately told him "Mr. Carlyle, I have no desire to stay in this beautiful country of yours and before we start this interview I would like to inform you of a couple of things. Firstly my wife was a US citizen and she renounced it. If she does decide to take her citizenship back I will automatically become a US resident. Secondly I will be working in a USAID-sponsored project and have been told that if I need a green card then Washington will help me in getting it and thirdly if I wanted a green card in the first place then the University would have applied for it rather than for the H-1 visa. So now you can ask me all the questions you want".

He was quite taken aback by my remarks since in such circumstances the applicants are generally very polite, subservient and try to keep the immigration officer in good humor. Mr. Carlyle told me that in his long civil service he had not come across a person like me and for the next 45 minutes we had a very pleasant discussion on UF football! The next day the UF officials asked me what I had done to charm that character! Apparently they had contacted him and he spoke in glowing terms about me. I was immediately given an H-1 visa. Just before I finally left for India in 1981 I again called Mr. Carlyle and informed him about my exact date of departure to

India. He was quite apologetic about the interview exchange and said that US would be better off by having people like me stay there!

Before the TAET project which started officially in September 1979, I was hired as a postdoc in the department. Thus four to five months from the time of my Ph.D. defense to the start of my TAET assignment were hectic months which included quite a bit of traveling, setting up the solar house at UF and starting the dew condensation experiment.

So in the summer break of 1979 I took my father-in-law, who was visiting us, to Fort Collins, Colorado for a conference. We drove from Gainesville all the way to Denver and back in almost 10 days. On one of the days I drove nearly 1000 miles! Driving in US was a very pleasurable experience and with very low gasoline prices it was also very economical. In those days, one could hire a medium-sized car with unlimited mileage for \$ 25-30/day.

During this trip I also visited in Golden, Colorado the Solar Energy Research Institute (SERI) as it was called in those days. The name was later changed to National Renewable Energy Laboratory (NREL) and nowadays one has to get a special permission to visit the lab. In those days it was very easy to visit most of the national labs and discuss with various scientists about their energy projects. There were hardly any restrictions on visitors which unfortunately came later during the Reagan era.

I visited the thermal sciences section of SERI and since the lab had just started in late 1977 they were also scouting for staff. Thus after a tour of the lab, the concerned scientist took me to the deputy director. We chatted for quite some time and suddenly he offered me a job at SERI. In that short time somehow he took a liking for me and even showed me my parking space in the parking lot! I politely declined the offer telling him that I was going to teach in the newly formed TAET center at UF and then go back to India in a couple of years. The SERI deputy director was sorry to hear about my plans and told me that a research position at SERI was any day better than teaching at TAET! "If any time you feel suffocated at UF, call me and we will take you in SERI", he said.

In fact during that trip I was also offered a teaching position at the Colorado State University in Fort Collins to work with Dr. Lof, another solar energy pioneer. Getting my Ph.D. under Dr. Farber was also a plus point in all these job offers. The best part was that they came without my

asking. In fact just after I had finished my Ph.D., I was also offered a good position in the world famous Bell Labs, since one of the senior managers at the labs had some time back done his Ph.D. in Mechanical Engineering from UF. In those days getting a job after Ph.D. in renewable energy area was quite easy and I am sure I could have gotten a good teaching position in any university if I had chosen to do so.

However, I was quite certain of going back to India and felt that TAET experience of teaching scientists and engineers from developing countries would be the best “post-doc” for me.

Since we were getting the TAET center, we decided to consolidate at one place all the solar energy equipment and projects that were scattered all over UF campus. It was also felt that with this big grant the solar energy work at UF will expand further and hence we decided to set up a Solar Energy park. A 23-acre facility was provided by UF just off campus to house it. Consequently, I and one of the graduate students in our solar group were given the task of setting up a solar house and equipment in this park.

Thus we set up a solar house which was heated and cooled by solar energy and also laid a fairly large-sized concrete slab to display other solar energy equipment. The solar house was originally set up by Dr. Farber in Gainesville in the early 1970s and was the first house in US to be completely air conditioned by solar energy. It was located in a part of Gainesville close to a major road and when the road was converted to a 4-lane highway, the house was shifted to Energy Park. Because of its importance it was declared a National landmark building in 2003 by the American Society of Mechanical Engineers (ASME).

So both I and the graduate student laid fifty feet by thirty feet concrete slab for displaying the solar equipment. Besides we set up the solar collectors on the roof of the solar house, welded all the pipes and did all the plumbing for solar heating and cooling. This exercise took nearly 2 months. I learnt a great deal about using earthmoving equipment for laying the concrete, welding copper tubing (welded about 1500 joints) and the general hardware of plumbing and solar systems. This hands-on work experience was a tradition in our lab and one of the main reasons for my coming to UF. Unfortunately this type of training is getting scarcer and nowadays most of the engineering graduate students simply graduate without ever dirtying their hands. In fact all my Ph.D. experiments were designed and fabricated by me and other graduate students in our lab used to do the same for their experiments.

This practical training not only helped me to teach the TAET participants about hardware but also helped me in setting up my lab when I came back to Phaltan in Maharashtra. It was as if I was being prepared for my return to rural India.

During this time a funny incident took place. A three member high-powered Chinese delegation came to see our Solar Energy Lab. Most of the time when foreign delegations came to visit our lab, Dr. Farber used to ask me to show them around. Since our lab was world famous, lots of foreign delegations came to visit and I was always glad to take them around. Dr. Farber somehow never felt happy in meeting the Asian delegations!

The head of the Chinese delegation was one Mr. Wu who was also a politburo member of the Chinese Communist Party. He spoke good English and told me that he had done his Masters in Mechanical Engineering from California Institute of Technology (Caltech) in 1949. The other two solar energy researchers feigned ignorance of any English though in a slip up later on, they were also observed to speak good English. In fact I found all of them quite devious.

The day they arrived at our lab was the same day when US and China established embassies in their respective capitals and so there was quite a few photo-ops on the campus.

Initially Mr. Wu was quite reserved since he did not expect an Indian to show him around but very soon warmed up to me when I told him about my father's very indirect connection with Mao and Zou Enlai !

One of the persons in jail with my father during the 1942 freedom struggle was Dr. Madan Atal. He was the uncle of Pandit Jawaharlal Nehru, India's first Prime Minister. Dr. Atal became very fond of my father and as he was an excellent cook he also taught my father to cook some well-known Kashmiri dishes.

During Mao's long march in the 1930s, Dr. Atal had visited China and had given medical treatment to both Mao and Zou Enlai when they were critically ill, for which they became eternally grateful to him. He therefore became their very close personal friend. I was told that there was a bust of Dr. Atal in Tiananmen Square in Beijing. I still remember that in early 1960s when the relations between India and China deteriorated, as a last resort Prime Minister Nehru

sent Dr. Atal to plead with Mao and Zou Enlai. Dr. Atal was treated very well but both of them were unmoved. In fact when he came back to Lucknow after this trip he gave my father a small packet of green tea that Mao had given him as a present!

As Mr. Wu became friendlier towards me, he started telling me how Chinese remained backward in technology because of the “Gang of Four” alluding to the four leaders (including Mao’s wife) who had plotted against Deng Xiaoping. This reference to Gang of Four became a constant refrain of Mr. Wu’s during the day. I tried telling him that he was nearly 10,000 miles away from China and so did not have to parrot the official line about Gang of Four! But I guess the remnants of the communist rule were still very much in existence and so everybody in the delegation was spying on each other! What also surprised me most was that though Mr. Wu was a politburo member and hence must have been close to Mao and the Chinese leadership, he had suddenly changed his colors after the change of guard and was spouting Mr. Deng’s new party mantra of economic liberalization.

As I was showing them around our lab, I saw from the corner of my eye that one of them was pocketing a small piece of insulation used in solar collectors. So I took a 1 sq. ft. panel of the insulation and gave it to them telling them that it was a present from the UF solar lab! All of them became extremely red in face and mumbled an apology. That is when the other two also spoke excellent English!

I again saw Mr. Wu during the International Solar Energy Society (ISES) conference in Atlanta in June 1979. By this time the Americans were falling all over themselves to curry favors from the Chinese, since China was the flavor of the month. So there was a special session in ISES to hear Mr. Wu give a talk on the Chinese efforts in solar energy research. He read his speech and refused to answer any questions citing difficulty in spoken English! I knew very well that he spoke excellent English and was capable of answering any question.

After his talk was the lunch break and since so many people were crowding around him I decided to see him later on. After an hour I suddenly saw him - the politburo member of the Communist Party of China - carrying in one hand a McDonald’s hamburger and in another a can of coke, the two ultimate symbols of capitalist society! What an irony and what a sight it was! This irony was not lost on Mr. Wu either because when I wanted to photograph him he became

red in face and vehemently opposed it. I wondered what Mao must be thinking in his grave about his loyal cadre member!

From September 1979 to January 1980 we had to develop the course material for TAET and also set up the lab and experiments. The onus of doing all this mostly fell on me partly because a substantial part of TAET program was based on imparting instruction by external lecturers - a majority of whom I already knew and when invited they readily agreed to come. Quite a few of these lecturers were distinguished UF professors that I used to invite for the multidisciplinary seminars. Besides I was also in tune with Dr. Farber's philosophy and hence knew what teaching material to develop.

Aside from writing the course program and preparing the timetable I also used to spend almost 8-10 hours per day on the phone ordering equipment for our lab and discussing with, requesting and cajoling energy experts from all over US to come and lecture to our participants. It was not very difficult in those times to get these experts to come and lecture since I knew most of them and also our solar energy program was very well-known. Also we gave them to and fro air fare, plus an honorarium of \$ 200/lecture and an overnight hotel accommodation. Thus we were able to get some of the world renowned experts to lecture in the TAET program and these lectures – an extension of my department's multidisciplinary seminars, were always rated as the most popular aspect of our course.

We also set up a first class renewable energy lab within a short period of 4 months and after spending close to \$ 400,000. That is when I realized the power of things happening in US where with sufficient money one could buy almost any equipment and set up facilities in a very short time. I had never done anything like this in India and so could not compare at that time, but later on when I came back to India in 1981 I realized how difficult it was to get any decent equipment. Even if one could get it, it took an inordinately long time for its delivery.

I also believed that the success of TAET would largely depend on the selection of the participants. Though USAID would pressurize us sometimes in taking some of the participants because of political reasons, we developed application forms on the lines of applications for graduate students applying to any good US university. Thus not only did they have to send their detailed biodata, but also had to enclose a statement of purpose on why this course would be

important to them and also three letters of recommendation from professional people. This application format more or less got us good participants.

Quite a number of participants which we got were very senior government officials from 40 odd developing countries and some of them were even advisors to their Presidents or Prime Ministers. Hence they complained about filling out such applications but we stuck to our guns and thus got a good number of participants who could understand and digest the heavy dosages of course work that we dished out to them.

Since we expected them to work with their hands quite a number of them revolted (especially the ones from African countries), since they were big bosses in their own countries and not used to doing such work! Some of them bitterly complained both to Dr. Farber and to USAID that they were not college students or technicians to be told to weld solar collectors! Nevertheless majority of times the very same participants were thankful to us near the end of the course for this hands-on opportunity and told us that they had much better understanding of renewable energy after the course and so could make an objective and proper choice for their country.

Teaching in TAET was a very rewarding but at the same time a very frustrating experience. It was rewarding from the point of view of getting satisfaction of imparting education to elite of developing countries so that they became better informed and could make better choices regarding renewables. Also I made many new friends in these countries. Later on whenever I visited some of those countries I was treated with great respect and showered with their hospitality. Some of these friendships have continued till today. I also learnt first hand the problems of energy in most of these developing countries and this knowledge came very handy when I set up my own energy work in rural India. Besides, the interactions I had with other renewable energy experts who came to lecture at TAET were really very educational.

The experience was also sometimes frustrating because in every batch (each batch consisted of about 30-35 participants and the session lasted for 4 months) there were quite a few participants who had a very bad attitude and they were least interested in learning anything. They just wanted to come to US and enjoy good life and quite a few of them tried to remain in US to do their graduate studies. And why not since everything was paid for them!

To my knowledge this was the only training program in US at that time which paid the air fare of all the participants from their country to Gainesville, put them in very comfortable hotel rooms with a kitchenette and also paid each a small stipend for 4 months to take care of their food! I do not think any such program which gave a paid holiday to foreigners existed even later on! After a couple of years USAID became wiser and stopped paying the air fare altogether.

The participants with a wrong attitude or the bad apples, as I used to call them, vitiated the atmosphere and created problems for other participants. Unfortunately the hotel in which we used to house them in Gainesville was opposite a bar. Thus many a times these participants, who were important people in their own countries, with some of them having white diplomatic passports, got into trouble after drinking in that bar. One day early in the morning we received a phone call from the Gainesville Police that they had one of our participants in the lockup since he created a scene in the bar and was also groping the bar girls ! We quietly got him released before the press got a whiff because he was an advisor to the President of one of the African countries!

In fact I found out that quite a few of the participants behaved in an extremely shameful manner unbecoming of the high positions that they held. Quite a number of times our office secretaries complained that some of them even groped them during the class sessions as if their white passport gave them a license to do so!

Another frustration I had was that I got completely cut off from the campus since my office in TREEO center was 10 miles away and during the sessions I spent almost 12 hours a day in TAET starting at 7 a.m. in the morning. Thus the intellectual environment of the University life ended completely for me and I felt that as very suffocating. It became very difficult therefore to have any discussion with the peers or the equals or to attend seminars or visit the library. Besides I could hardly do any research since most of my time went in teaching and supervising the participants. Thus the choice before me was to either get a University or research appointment in US or go back to India. Since I had already decided to go back, I had told Dr. Farber that I would not be staying beyond June 1981.

After the first session there was an evaluation of the program by USAID. The main person- Mr. Alan Jacobs, who was a very senior bureaucrat in Washington and who also used to sit on President Carter's Security Council came to see the progress and discuss the program with us.

He was accompanied by Mr. Bill Eilers, the Director of Energy Office in USAID. During the meeting, any time Jacobs or Eilers asked a question, I answered it because the whole program was designed by me. Mr. Jacobs was quite annoyed by that because I was not the director of the center. In any case he realized my contribution to the program and I think he appreciated it also. In fact the staff at TAET used to joke that not a blade of grass moved without Anil's permission! The evaluation team was also unhappy by the fact that I would be leaving by June 1981, since almost all the participants gave a glowing report about my teaching and interactions with them.

It was really sad that TAET program at UF was terminated in 1984 because of university politics and infighting for the resources. Some *avatars* of this program mushroomed later on both in US and Europe but the depth and scope of TAET was never duplicated anywhere. I am very proud to have been associated with such a pioneering program.