THE CONSULTANT

The Newsletter of the IEEE Consultants Network of Long Island

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Chairman's Corner — *John Dunn, President, Ambertec, Inc.*

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It is with great regret that we take note of the passing of our good friend and mentor, Ed Dowdell.

Ed was not an official LICN member, but he was very much a part of the group.

He presented lectures and ran demonstrations for us and in so doing, always took each of us to the limits of our intellectual capacities. One never failed to come out the better for having heard him and we will all sorely miss that.

In one-on-one discussions with Ed, you always felt at ease and it was as if you were in the presence of a bipedal treasure trove of knowledge and anecdotes.

It will always be a pleasure to remember Ed as a giver. He always gave us his very best.

Betty's IBM Thinkpad ___*Dick LaRosa*

Ed Dowdell kept demonstrating programs on the used laptop that he bought from Glenn. Betty, my wife, wanted a laptop, and Tiger Direct was selling "refurbished" IBM Thinkpads, and Ed had made it look so easy, so she ordered from Tiger Direct. Big mistake. Tiger ain't Glenn.

Her Thinkpad seemed to work when it arrived, but then it didn't. After several unsuccessful attempts to make it go, she called Ed up and went to see him. It worked just fine for him, but when she got it home the magic was gone.

The magic. Ed was so kind and gentle, so was the rest of his family, that it took the edge off being gypped by Tiger Direct.

Next stop: Glenn. He ran it for a week and concluded that there was probably a crack in the mother board. Wouldn't pay to spend any more time or money on it. So she gave it to Ed, and now his son, Brian, will have to throw it out. At the wake Brian said they had a lot of stuff like that to get rid of.

Ed was so devastated when his wife died that you wanted to give him a hug. Betty did. He needed it.

Meetings

November 2006

There were no nominations from the floor. The slate of officers nominated for 2007 is:

Chairman - John Dunn
First Vice Chairman - Jerry Brown
Second Vice Chairman - Sam Sadinsky
Treasurer - David Rost
Secretary - Dick LaRosa

We will vote at the December meeting.

December 2006

7:00 PM, Wednesday, December 6, the first Wednesday of the month.
Briarcliffe College, 1055 Stewart Avenue, Bethpage, NY
See website for directions: www.consult-li.com

Topic: A Brief Historical Perspective on Our Profession.
Speaker: Mr. Jerry Brown, Essex Systems, Huntington, NY.

Light refreshments will be served. Admission is free (no charge), and no pre-registration is required. For more information, contact Chairman John Dunn at (516)378-2149 or e-mail ambertec@ieee.org.

Other Meetings

Consult the Events Calendars on the Section website: www.ieee.li and the LICN site: www.consult-li.com.

Edward F. Dowdell, Jr.

We are saddened by the loss of our friend, Ed Dowdell, who passed away on November 19. Ed taught us many things about computers, consulting, negotiating, management, politics, family, and life.

One very useful bit of advice was on setting a price for a job. You might be able to do a lot better than basing a price on time and materials. He gave an example where he already knew the solution to the client's problem, so he quoted a fixed price, which I might be

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able to find in my notes from 10 years ago, but I think it was $2000. The client was more than willing to pay that much for a solution to his problem, and Ed was able to brag about being paid several thousand dollars per hour.

The general idea on getting the best price is to ask yourself, "Why do they want me to do this work? Why don't they do it themselves? Can somebody else do it? If not, then why not? What is it worth to them?" What they may be willing to pay might be a lot more than the price that you might arrive at by just asking what would compensate you for your work.

The idea can be twisted around to fit quite different situations. For example, "Why do they want to get rid of me? Why do I make them uncomfortable? What's it worth to them to have me go away happy?" This approach can be very empowering. You just have to be a little creative. And have good teachers. Thanks, Ed.

Ocean-Powered Pump for Sea-Surface Cooling

Dr. Richard LaRosa, sealevelcontrol.com

Pumping plants have been described in previous issues of the newsletter. After receiving some help from the Space Alliance Technology Outreach Program (SATOP), it became apparent that the efficiency of the pumping plant was compromised by copying the designs of ocean-powered plants that were intended to export electric power. The sole export of the pumping plant described here is cold seawater enriched with nutrients and dissolved oxygen, and the design has been optimized for this purpose. All electrical power produced is used by the pumps and other on-board systems. The pumping plant brings 5 °C water up from 1000 m depth at the rate of 10 cubic meters per second and distributes it to cool the sea surface and the overlying atmosphere.

Solar energy stored in the top layer of the ocean drives a heat engine using ocean thermal energy conversion (OTEC) technology. Warm surface water is pumped through an evaporator heat exchanger to vaporize the ammonia that drives a turbine. Cold water from the deep ocean is pumped through a heat exchanger to condense the ammonia vapor exhausted from the turbine. The turbine drives an alternator that supplies electric power to the pump motors, power electronics, and auxiliary devices. No other energy source is required, except for initial start-up.

Despite more than 100 years of development, there are no operational OTEC plants. Perhaps this is because they were intended to export electric power or some useful substance other than cold seawater, and the designers minimized the fraction of the turbine output used to operate the water pumps and other "parasitic" components of the plant. The resulting large temperature change of the small quantity of water going through the heat exchangers resulted in reduced engine efficiency. The pumping plants described in previous newsletters and the 2006 LISAT conference suffered from this limitation.

In the present design, all of the turbine output power is used to operate the pumping plant and all of the cold water is pumped through the condenser heat exchanger, resulting in greater thermodynamic efficiency of the heat engine and smaller heat exchangers. For a surface temperature of 27 °C the ocean surface is cooled at the rate of 946 MW. A turbine isentropic efficiency of 84 % yields a shaft output of 1.82 MW. The pumps require 1.28 MW of this shaft power, leaving 540 kW of shaft power to run the power electronics, controls, and other auxiliary equipment. Tube-in-shell heat exchangers were assumed. Stacked-plate heat exchangers may be able to reduce the water-ammonia temperature differential and further improve the efficiency of the thermal cycle.

The pumping plants are massive and expensive and it would take 100,000 of them to lower the surface temperature of the Gulf of Mexico Loop Current by 3 °C in the absence of heat exchange between the atmosphere and the water surface. This would reduce the intensity of hurricanes in the Gulf and would help to offset the excess of incoming solar energy compared to the outgoing infrared radiation from Earth to Space. Do these benefits justify the development, production, and deployment cost of a fleet of these pumping stations? The answer to that question depends on how serious a threat to human survival we perceive global warming to be, and how much we can expect from other proposed solutions.

The author believes that the threat is serious and other proposed solutions are inadequate. However, cost reductions and more high-value applications must be found before people will be willing to develop the present pumping

stations. Fisheries can use the up-welled nutrients, dissolved oxygen can combat hypoxia in ocean dead zones, and the cooling can help with algal blooms, red tides, and coral bleaching. However, these needy ocean areas are close to shore and the pumping stations must be located in water at least 1000 m deep. The pumping plants cool the overlying atmosphere because of the heat exchange between the atmosphere and the ocean surface. If the wind direction is favorable, the cooled atmosphere might be able to cool the water in a hypoxic zone or in a coral-bleaching region that is a considerable distance from the pumping plant. However, transporting nutrients and dissolved oxygen from the pumping plants to distant distressed regions is an unsolved problem.