

Leanne M. Methe, P.E Jack H. Neelis, II, P.E Robert C. Olivier, A.I. Stephen E. Prados, F B. Bradford Rogers, J

Iliam F. Ri Wayne D. Talley, P.E. Ronald J. Villere

the top of the plasma arc reactor while all the inorganic compounds are liquefied and appear as molten slag in the bottom of the reactor. From this point, the syngas is cooled and cleaned and used as fuel for specially designed combined cycle gas turbines to generate electricity, and the molten slag is quenched with water to recover solid metals and a vitrified glass product which can be utilized as building materials. A portion of the power generated by the plant is used to run the plasma arc reactor, allowing for the commercial sale of the balance of the production. As with conventional waste-to-energy power

plants, part of the overall benefit from this proposed project is the elimination of significant tonnages of waste which would otherwise be sent to area landfills.

ALTERNATE/RENEWABLE ENERGY

Small scale, remote power systems have been utilized in specific instances by NELSON for many years. One such application at an un-manned offshore production platform involved a hybrid solar photovoltaic system and a wind-powered turbine in order to charge batteries supplying the electricity needed. Since the platform did not require personnel for normal operation, the power requirements for navigation aids, lighting, instrumentation and telemetering of production data to shore were small enough that the hybrid system could provide all power needed.

An interesting assignment came from an alternative energy venture involving a solar thermal collector system spawned by research conducted by the National Renewable Energy Laboratory (NREL) of the U.S. Department of Energy. Our client in that case was taking their system from the research and development stage to full scale commercial operation, and investors required a third party evaluation of the viability of the technology and the budget and schedule to implement the plan.

Over a period of weeks of interviews with the client, the technology team, industry experts in the field and financial institutions involved, our engineers and project managers scrutinized and commented on the plan's strengths, weaknesses and areas available for increasing the confidence in



FIGURE 2

success for the venture. This 'third party'

evaluation allowed our client to conclude

negotiations and proceed with the first of

what may become multiple solar thermal

generation plants. An interesting aspect of

this project was that the solar collectors

were simple parabolic mirrors using pro-

prietary material that concentrates the heat

into thermal fluid (Figure 2). The thermal

fluid then produces steam for use in a con-

ventional steam-powered generator.

Unlike photovoltaic cells, which convert

sunlight to electricity, the thermal solar

system simply concentrates sunlight to

IEEE / PCIC Appointment

Mike Harbison, P.E.

P.E., our Houston office Electrical and Instrumentaion Manager and Vice

President with NELSON, was appointed to

the position of Secretary of the Production Subcommittee of the IEEE Industrial

Application Society's Petroleum and

Chemical Industry Committee (PCIC).

His appointment will take effect immedi-

ately after the 2008 IEEE IAS PCIC

Technical Conference in Cincinnati this

September. The appointment is a six year

forum for the exchange of electrical appli-

cations technology, development of stan-

dards, and the opportunity for technical

The PCIC provides a premier

A graduate of Louisiana State

commitment.

and professional growth.

Recently, Michael D. Harbison,

capture the heat available.

2nd Quarter 2008

Top 500 Design Firm Based on revenue for design services performed in 2007.

NELSON ranked 188 in **Engineering News** Record's Top 500 Design Firms for 2008

Nelson Joins the Excitement at the Houston Rodeo and Livestock Show



NELSON donated a calf to the 2008 Houston Rodeo and Livestock Show calf scramble. David Stewart along with his wife Susan represented Nelson at the calf scramble in March. Morgan Wagner pictured with the Stewarts captured the calf donated by the company.

Nelson Supports Children's Hospital of New Orleans

For fifteen years, NELSON and its employees have participated in the Children's Hospital Annual Volleyball Tournament at Coconut Beach in New Orleans. The tournament is held at the end of May in conjunction with the hospital's annual Children's Miracle Network Telethon. Nelson sponsored two teams consisting of employees and their family members.

The sun and sand were hot, but that did not stop our teams from enjoying the red beans and rice, jambalaya, sandwiches, ice cream and refreshments. Though neither team made it to the play-

offs or broke any records, they had lots of check for \$1,626.00, surpassing last year's fun playing in the sand for the benefit of the children in our community who Louviere, Senior Engineer in our Business depend on Children's Hospital.





Ben Louviere presents Roop Raj, Anchorman with WDSU Channel 6 in New Orleans with the check from the employee bake sales

Prior to participation in the tournament, NELSON employees put together a four day bake sale to raise money in addition to the Company's team sponsorship. Employees volunteered to bake cookies, cakes, brownies and even beef jerky for the fundraiser while others purchased the goodies. NELSON matched all the funds the employees received from the bake sale and presented Children's with a

bake sale total of \$1,026.00. Ben Development department, along with the NELSON team members, presented the check on behalf of NELSON and its employees to Children's Hospital and WDSU Channel 6 during their live telethon coverage of the Vollevball Tournament.

NELSON and its employees are happy to have participated and contributed to the \$25,000 raised at the tournament for this great cause.

l to r: Martin Patterson, Patrice Lawson, Kim Leaumont-Children's Hospital Representative, Tad Duhe, Holly Beaulieau, Robert Griffin, Rick Lawson, Thi Dao, Ben Louviere, Angela Calico, Leanne Methe, Angela Fehn, Jason Ortis, Mark Benigno and Debbie Benigno.



Left to right, W. S. Nelson, D. L. Morris, E. A. Dockstader, Bres Eustis, and T. H. Zumwalt at Garden Island Bay

A Picture From Our Past

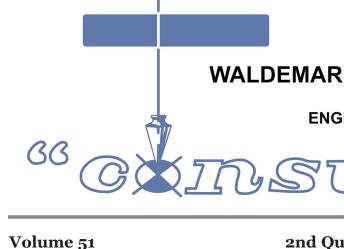
Waldemar S. Nelson and Company has participated in infrastructure development throughout its history. Some of our projects have been so remote and groundbreaking that there was no established transportation to the jobsite before we got there. In cases like this, providing access to the site became part of the work. We would design boat docks, seaplane ramps, helicopter landing pads, roads, or whatever means were needed to get people and materials to the area.

The attached photo from 1954 shows a group of Nelson and client personnel ready to embark on a Grumman amphibian "flying boat" that was used to reach the remote installations of Freeport Sulphur Company in the Louisiana coastal marshes. Our founder Waldemar Nelson is standing at left, and to his left are D.L. Morris of Freeport, E.A. Dockstader, Bres Eustis (founder of Eustis Engineering), and T.H. Zumwalt of Freeport. The group was traveling to the Garden Island Bay sulphur mine, a Frasch process facility in the delta of the Mississippi River. The area could only be reached by boat or air, and the soft deltaic soils presented some very interesting foundation design challenges to our structural department.

RETURN SERVICE REQUESTED

NEW ORLEANS, LA 70130 1200 ST. CHARLES AVENUE





High Energy Costs Create New Assignments for NELSON By: Charles W. Nelson, P.E.

The high cost of crude oil and natural gas have a direct impact L on our lives, our budgets and our government's focus at the local, state and federal level. As a company servicing major and minor operators in the energy business, as well as industrial and commercial clients, the high energy costs also have affected NELSON's day-to-day assignments. For those companies benefiting from the higher commodity prices, projects have become justified which were marginal one or two years ago. For companies and communities paying the price for energy in many forms - refined petroleum products and fuels, natural gas, electricity – the extra costs being incurred have justified additional efforts at conservation and curtailed consumption. Likewise, the escalation of pricing for traditional energy has encouraged some to consider alternative or non-conventional energy production. On both sides of the energy equation, supply and utilization, NELSON has been able to respond to clients' needs to react and adjust in this changeable market. Below are a few examples of current activities for our company.

Applying an old adage that the cheap-

est unit of energy is the one you don't use,

NELSON has incorporated many energy

efficient devices in industrial and commer-

cial applications, including our own com-

pany - owned real estate. When replacing

aged HVAC equipment in recent years, we

selected a high-efficiency, high speed

CONSERVATION

rotary screw compressor for our chilled water system. This compact 200 ton unit proved to have a less than 3 year payback based upon energy savings. For building heat, we replaced two steam boilers with a 4 mm btu hot water system, realizing a 2 year pay-back due to energy savings. Energy costs for lighting were lowered by 55% through replacement of old light fixtures with new, single electronic ballast fluorescent fixtures throughout the office complex.

Another project combined conservation and recycling to respond to market conditions facing the region surrounding New Orleans. For a client receiving and transshipping municipal and industrial solid waste, NELSON identified and ranked various sites for a new facility, and is assisting in obtaining necessary permits and zoning compliance. The end result will allow this client to recover value from the waste streams via recycling and also to provide combustible residuals from the waste stream for use by others as boile fuel. The projected market in the southeastern Louisiana area justified the expansion of this operator

WASTE TO ENERGY

Another recent project stimulated by the nation's reaction to high energy costs has been assistance provided to a new venture planning to use municipal and industrial solid waste (MSW) for power generation. Certain commercial operations converting waste to energy have been built for

Permit No. 650

New Orleans, La. **JOATZOG .2.U DTS TASA9**

WALDEMAR S. NELSON AND COMPANY

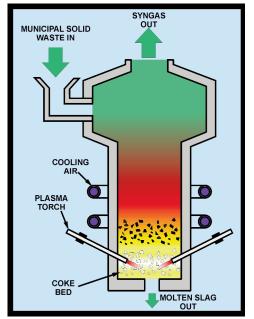
INCORPORATED

ENGINEERS AND ARCHITECTS

CXINSULICEINC ??®

2nd Quarter 2008

many decades in the United States, and perhaps even more in Europe. An inherent issue with conventional waste-to-energy plants is the need for high, steady temperatures for full combustion of the fuel and the need for sophisticated flue gas treatment to remove pollutants from the exhaust stack gasses. A new use for existing proven technology now employs a high temperature plasma arc reactor to gasify municipal solid waste into a syngas fuel at 8000 degrees F. (Fig. 1, below) The result-



ing syngas consists mainly of hydrogen, carbon monoxide and nitrogen which can be cleaned using conventional gas scrubbing technology. All organic compounds in the MSW are converted to syngas and exit