



Solid Waste Processing



INCOMING CHAIR'S MESSAGE

Nathiel G. Egosi, P.E.

In order to better understand the development of current trends in municipal solid waste (MSW) management, it is worthwhile to briefly review the cost components of the total picture involved in handling the waste stream. Basically, three major cost components compose the total cost:

$$\begin{aligned} &\text{Collection costs} + \text{Processing costs} \\ &+ \text{Residue disposal costs} \\ &= \text{Total costs} \end{aligned}$$

This simple formula was not always true when landfills were plentiful and in close proximity to waste generators. At that time, there were no processing costs since both collection costs, which includes transportation, and disposal fees were low. Waste generators had little or no participation in the system other than to put it out at the curb and watch it disappear. However, as tipping fees increased at landfills and travel distances became longer, numerous schemes appeared for intermediate processing in order to reduce the quantities of solid waste being delivered to these landfills. A short history of intermediate processing is instructive.

Processing trends in recent times

The first of the modern trends in processing was ordinary waste incinerators which, over time, evolved into mass-burn facilities recovering energy in some form. A contemporaneous trend was to upgrade the waste-to-energy concept to refuse-derived fuel (RDF) facilities, thereby increasing recovery efficiencies. All these facilities over the past few years have politically fallen out of favor for several reasons, primarily due to perceived concerns for the environment and the cost of constructing or retrofitting them to meet more stringent federal air emission standards.

The ASME Solid Waste Processing Division was in the forefront of these

waste-to-energy efforts developing many of the standards, advancing the engineering profession and the skills of plant operators. Today these plants operate safely and efficiently throughout the world however their growth as a method of choice for solid waste management has waned.

In the late 1980s, recycling emerged as a favored waste management concept since it not only reduced the quantities going to landfills but also reduced the drain on virgin materials and was very popular. A key ingredient was the need to involve the generator (i.e. the public), as this was the prime way to keep the cost of processing down. Early materials recovery facilities (MRFs) were very unsophisticated in design and very labor intensive. Waste generators voluntarily separated a few recyclables by type of material, and they were collected as separate waste streams or dropped off at central collection centers. As recycling continued to grow in popularity, higher goals and mandated compliance were instituted. More and more materials were targeted for recovery. While drop-off centers still are prevalent and many separate collection programs still exist, these efforts caused enormously large increases in collection costs. These increases spurred the development of more sophisticated MRF designs and more highly mechanized processing systems capable of handling mixed streams. In 1989, the emergence of the two-stream MRF involving a process line for fiber and another for commingled containers became a reality. This permitted collectors to pick up only two source-separated streams in addition to the remaining waste stream.

Integration of collection and processing

After 10 years of developing technologies to efficiently process and manage commingled containers and mixed papers, the

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Sherman "Pat" Patton, *Editor*

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solid waste industry is now forging ahead with advanced technologies to further reduce the cost of residential curbside recycling programs. Now, in beginning of this decade, we see the rapid trend of combining the recycling streams of fiber and containers into a "Single Stream" collection program. With over 9,000 municipal curbside recycling programs now in place in the U.S., the focus is on methods to reduce collection costs. This next generation of single-stream MRFs have raised to the next level of complexity their mechanization.

In the most recent trends, we also see developments toward greater use of the waste stream, beyond the traditional recovery of glass, metals, fiber and plastics, to further reduce waste transportation and disposal costs. But, again, this trend is somewhat affected by the cost of collecting numerous different streams of materials. The bottom line to all of this is that a balance must be struck among the three cost components so that the sum total is as low as possible while ensuring safe environmental practices. Looking at

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NEW EXECUTIVE COMMITTEE MEMBERS APPOINTED

The SWPD is pleased to add four new distinguished members to the Executive Committee.

Leonard Grillo is Principal of Grillo Engineering Company in Hollis, NH, which he founded in 1986. Len has over 25 years of experience in the solid waste processing industry. He has been responsible for work in all aspects of the industry, including project planning, conceptual design and vendor design review, RFP preparation and proposal evaluation, expert testimony, vendor evaluation and selection, project development and contract negotiation, feasibility studies for financing, operating and maintenance manuals, construction monitoring, and performance testing. His special expertise is in performance testing, where he tested 26 waste-to-energy facilities for 16 clients incorporating 11 different solid waste processing technologies. He is a charter member of ASME PTC 34, Waste Combustors with Energy Recovery, and has been a member of ASME for over 20 years. He has chaired numerous committees of the ASME SWPD, including past Chairman (1991 - 1992). He received his BS and ME degrees in Environmental Engineering from Rensselaer Polytechnic Institute, and is a registered PE in five states.

George "Bill" Meckert attended M.I.T., where he received a BS in Chemical Engineering. He was CEO of a family concrete products and building materials company for 15 years in suburban Philadelphia and sold the company to a larger firm. In 1973, Bill became involved in waste processing in the food and animal processing industry in Phoenix, AZ. From there, became project manager on the first commercial anaerobic digestion plant in Guyton, OK producing methane gas, animal feed and fertilizer from animal and food wastes. Subsequently, he managed a number of solid waste projects involving several innovative technologies. This

included serving as site manager for National Ecology Company during the installation of the solid waste processing system at the Palm Beach County Waste-to-Energy facility in West Palm Beach and owner's engineer on the installation of a 3,000 TPH coal processing line for Shell Mining Co. in Gillette, WY. He has worked as project engineer and manager on numerous projects with RRT Design & Construction from 1992 to 1998. Most recently, he was put in charge of the design, construction and start-up of six crumb rubber facilities utilizing recycled tires as a feedstock.

Peter A. Napoli began his career with Dravo Corporation, now Metso Minerals, as an Assistant Project Manager, Construction Superintendent and Start-Up Engineer. In 1980 he became Proposals Manager for Stock Equipment Company in Cleveland, OH before moving into sales as a Manufacturer's Representative, Regional and National Sales Manager for A, B&G Associates, Vibra-Screw, Eastern Packaging, Matcon and the former Beaumont Birch Co. He currently is the Sales Manager of Martin Sprocket & Gear's Engineered Projects Group located in Media, PA. A 1974 graduate of Point Park College, Pittsburgh, PA, with a BS in Industrial Engineering, Mr. Napoli, and his wife of 19 years, Sharon W., reside in Glen Mills, a suburb of Philadelphia. He is also active in the Media Rotary Club and Civil War Preservation Trust.

Sherman "Pat" Patton is employed as a Senior Project Specialist with Malcolm Pirnie, Inc. in the Tampa, Florida office. In this capacity Mr. Patton performs operations and maintenance oversight activities for six waste-to-energy facilities in Florida on behalf of municipal clients. Mr. Patton has over 30 years of Solid Waste experience in both the public and private sectors. Mr.



Patton started in the Waste to Energy field with Nashville Thermal as a plant operator for over five years. He has held the positions of maintenance manager, operations manager,

plant manager, start-up engineer, project engineer, and project manager at waste-to-energy facilities such as Waukesha, WI, Gallatin, TN, Tampa McKay Bay, and facilities in Germany, Holland, and Singapore. Mr. Patton has administered a diverse range of programs related to municipal solid waste management, paint waste recycling, and refinery-sludge and soil remediation. Mr. Patton has been a member of the ASME for 15 years and is an ASME QRO. ♦

ASME Fellow

Anthony Licata



The Fellow Grade is the highest elected grade of membership within ASME, the attainment of which recognizes exceptional engineering achievements and contributions to the engineering profession.

This year, Anthony Licata joined the ranks of this distinguished group of ASME members. Anthony Licata is one of the true pioneers of air pollution measurement and control. His work as an air pollution regulator predated the Clean Air Act by a decade. As Chairman of the ASME Air Pollution Control and Solid Waste Processing Divisions he assured the ASME was a major partner with the EPA and industry. During the 1980's Mr. Licata Chaired the ASME Dioxin Committee mobilizing many people and resources to solve the combustion dioxin problem. Anthony Licata's dedicated service to the ASME has been unmatched by all but a few. ♦

RESEARCH NEWS By Floyd Hasseleris

The ASME Research Committee on Municipal and Industrial Waste, under the ASME Center for Research and Technology Development, serves as the research arm for the Solid Waste Processing Division. In the past, many research projects have been carried out, assisting the processing of both municipal and industrial waste, particularly in relation to the development of USEPA regulations. A proposed research project is the combustion of carpets in cement kilns. Research papers are listed on the ASME web site for the RCIMW (<http://www.asme.org/research/imw/index.html>).

Robert Hall, Director of the EPA Research Center at Research Triangle Park, a past President of the Air and Waste Management Association, and a long-time active member of the RCIMW, has been elected to chair the RCIMW. We look forward to his leadership! ♦

Incoming

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it from the generator's perspective, collection costs are held down by single-pickup routing. Transportation costs are minimized by proper siting of processing facilities. Disposal costs are held down by reducing the amount of residues going to landfills. This brings us to the mechanical processing component – the component that can allow these other costs to continue under control.

Mechanical processing

The development of the MRF has been the leading approach to processing recyclable materials and many other waste materials. State recycling laws have mandated that upwards of 50 percent of the waste stream must be diverted from landfills, and whole new industries have developed to capitalize on the availability of the recovered materials. Engineers and facility operators have learned and developed various technologies and approaches of how to cost effectively separate and market mixed papers comprising of cardboard, chipboard, magazines, office paper and of course newspapers. Similarly the mixture of containers at a MRF not include glass, HDPE, PET, aluminum and ferrous containers but also gable top containers, aseptic cartons, aluminum alloy products (e.g. pipe plates, foils), textiles, polystyrene foam plastics, bulky metals (e.g., aluminum chairs, cooking hardware) and mixed plastics (non-PET and non-HDPE).

Many of the experiments and research done in the 70's and 80's with RDF and other waste processing has been the forerunner of the basic techniques used at MRFs today. The level of sophistication has greatly evolved and the variances are significant. In United States there are over 500 MRFs and each facility is equipped with dozens and dozens of conveyors of all types, balers, shredders, screens, crushers, magnets, eddy current separators, air classifiers, etc. It is a credit to the mechanical engineering profession to have successfully answered the need of our society by developing sophisticated, safe and efficient methods for waste processing.

Broadening ASME's Solid Waste Processing Division

The ASME Solid Waste Processing Division recognizes the need to serve the engineers, operators, managers and manufacturers of all the equipment and processes typically found in a MRF and the downstream value-adding technologies. Our industry's sophistication in United States has been noted world-wide for its technical innovations and methods for waste processing. Many of our division's members routinely export their equipment

and know-how to Europe, Asia, Canada and the rest of the world. With the continued growth of advanced mechanical processing through sound engineering principles applied to the waste-processing field, our profession has grown. My appointment this year as Chair of our division is further evidence of our efforts to broaden our "customer base". In recent years many of our members were "lost" to other industries due to the decline in the waste-to-energy market. Others were lost simply because they pursued other areas of waste processing and our division did not serve their needs. I am an example of that. In the earlier part of my career I worked in the waste-to-energy field and participated with our division. As my interest shifted away from WTE to recycling and advanced material handling technologies I found our division was too narrow for my interests. Hundreds of engineers like myself work in the waste-processing field. We seek the kind of camaraderie and professional development ASME can provide. There is no alternative venue. None was created while the recycling industry grew. My interest to become active again with ASME, and now as incoming chair, is to seek the goal of capturing the interests of those engineers that have been "lost" and our new engineers that have entered the industry over the past decade. We can accomplish this by broadening our division's focus and services to include pro-

grams that cover all areas of the solid waste-processing field.

Summer Program 2003

To kick-off this year's pursuit of "broadening", we have put together a most interesting summer meeting program for this August. I hope as many of you can come. We will have a technical presentation of cryogenic rubber processing for recycling old tires and a proprietary technology developed for converting waste-to-ethanol. Also we will have a presentation on composting technologies, medical waste treatment systems and much more. I look forward to seeing you there. ♦

John Austin, Thank You

We have all benefited from John Austin's excellent work and dedication for advancing our division. As outgoing Chair, we all thank you for your countless hours of work in guiding our division. He has been instrumental in its continued development and its continued development and its transition with increased membership and diversification. John's efforts are greatly appreciated and we are very thankful he is continuing to stay active with developing our summer programs as well as coordinating the technical papers of NAWTEC. ♦

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ASME CITES ACHIEVERS IN THE SOLID WASTE INDUSTRY

At the ASME Honors Luncheon on April 28 at the 2003 North American Waste-to-Energy Conference in Tampa, Florida, the Solid Waste Processing Division presented the following awards recognizing outstanding individual and organizational technical contributions to the profession. ♦

SWPD Medal of Achievement

Steve Passage

The SWPD Medal of Achievement was awarded to Steve Passage, P.E., president and chief executive officer of Montenay Power Corporation.

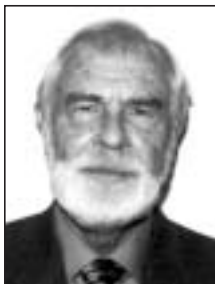


Passage was selected for his outstanding achievement in the field of solid waste processing and for leading Montenay Power to become one of North America's foremost companies in the waste-to-energy industry.

Established in 1980, the SWPD Medal of Achievement recognizes distinguished and continued contributions over a substantial period of time to the advancement of solid waste processing technology. ♦

SWPD Distinguished Service Award

Wolfram G. Schuetzenduebel



For his many years of service to both the solid waste industry and to ASME, Dr. Wolfram G. Schuetzenduebel, P.E., received the SWPD

Distinguished Service Award.

Schuetzenduebel has made numerous contributions to the design and operations of waste-to-energy technology and has published numerous technical articles on the topic. He is a longtime member of ASME, an ASME Fellow and co-founder of the ASME Nuclear Heat Exchanger Committee, among leadership positions in the Society.

Established in 1990, the SWPD Distinguished Service Award recognizes outstanding service to the division through leadership or contributions over a period of at least ten years. ♦

SWPD Facility Recognition Awards

The Division also presented three operations with the SWPD Facility Recognition Award, established in 1994, for contributions to solid waste processing for both combustion and material recovery. The selection of each facility was based on its success in reaching goals, innovation and technical contributions or solid waste processing, environmental performance, health and safety records, facility economics, and their role in integrating waste management. The winners were:

McKay Bay Refuse-to-Energy Facility, owned by the City of Tampa, Fla., and operated by Wheelabrator McKay Bay, Inc. (Category: Large Combustion Facility). McKay Bay processes up to 1,000 Tons per day of municipal solid waste.

City of Tampa team, from left to right: Lori Hernandez, Executive Aide to R. Michael Salmon; Nancy McCann, Urban Environmental Coordinator City of Tampa; Greig Grotecloss, Engineer City of Tampa; R. Michael Salmon, Deputy Chief Administrative Officer, City of Tampa; Caroline Klos, Deputy Director Solid Waste, City of Tampa. Not shown, Tony McBride, Director Solid Waste, City of Tampa.



McKay Bay Wheelabrator team, from left to right: Tom Koepl, Controller; Mark Schwartz, Plant Manager; Howard McKnight, Operations Manager; Mark Santella, General Manager Wheelabrator North Florida; Thomas White, Regional Engineer; Terry Harrison, Maintenance Manager.



Walingford Resource Recovery Facility,

owned by the Connecticut Resource Recovery Authority and operated by Covanta Energy Corporation (Category: Small Combustion Facility). The facility processes 420 tons per day of solid waste, which generates 11 megawatts of renewable energy.

Miami-Dade Resource Recovery Facility, owned by Miami-Dade Department of Solid Waste Management and operated by Montenay Power Corp. (Category: Material Recovery Facility). The largest and most comprehensive waste-to-energy facility in the world, it processes more than 1.2 million tons of garbage and trash per year. ♦



QRO COMMITTEE NEWS By John Norton

Two new members were added to the ASME QRO Committee: Ted Williams, a NY State Regulator, and Nick Dmytryszyn, the engineering advisor to the Staten Island Borough President. This helps to round out the various mandatory categories which constitute this Committee that sets the standards by which Waste-to-Energy Plant Operators are certified. The categories are: Designer/Constructor (3), Employee/Union (1), General Interest (3), Insurance (1), Manufacturer (1), Owner/Operator (3), and Regulatory (2) for a total of 15. The figures in parenthesis indicate the current number of members in each category.

Members of the QRO Committee have been meeting twice per year in New York City to consider matters relevant to the operator certification process. Recent activities have included adding new questions to the QRO bank of certified questions, reorganizing committee by laws (part of the ASME-wide effort) and considering the testing and re-certification requirements for operators at plants with changing technology. The committee is also giving serious consideration to having regular testing in the Western US, maybe every other year, at least. The problem is that while there are certified operator positions in the West, by far the most plants are located in the Eastern US.

The Committee is undertaking a QRO Standard Rewrite to incorporate all the many procedural guidelines that the Committee has had to adopt over the years to effectively administer the program. Existing operator certificate holders should not be concerned; no major changes are anticipated. Their current status and renewal dates should remain unchanged.

Possibilities under consideration include: the expansion of the standard to include a new certification for plants that only incinerate without energy recovery. Their operating requirements are largely the same, just no boilers or turbines. Another possibility is the optional certification of lower levels of waste combustion plant operator. The current QRO certification is for the person "in

responsible charge" of the whole plant operation. It may be useful to have lower levels of certification for those entry level operators in the industry that hope to follow "stepping stones" to these presently certified top levels of responsibility.

Plant operators certified by the current QRO process for Waste to Energy plant operation are recognized as being so knowledgeable and well trained in plant operations that they are being recruited by other operations like fossil fired co-genera-

tors. Thus, the need for new QRO certified operators continues, despite the recent lull in new plant construction.

Anyone interested in being a member of this QRO Certification Committee should e-mail me at jnortons@aol.com or call (937) 223-5848. Also, new test questions, with citations of authority (i.e., textbooks, peer-reviewed papers, etc.) should be faxed to Gus Miller, FAX (516) 471-7807. ♦

12th Annual North American Waste-to-Energy Conference (NAWTEC 12)

Marriott Savannah Riverfront — Savannah, GA—May 17-19, 2004

Conference Announcement & Call For Papers

Abstracts are solicited on a variety of topics. Don't miss this unique opportunity to reach the LARGEST specialty group of Waste-to-Energy professionals in North America!

- Innovative WTE Research & Emerging Combustion Technologies
- Streamlining Plant Operations
- Public Relations—Communicating WTE Benefits to the Naysayers
- WTE and Recycling: A Compatibility Success
- Marketing WTE as Renewable Power
- Energy Legislation & The Politics of Waste-to-Energy
- Retrofits, Plant Upgrades, & Maintenance Issues
- Air Emissions & Controls (e.g., mercury and dioxin)
- Ash Recycling and Reuse
- Creative Financing & Revenue Generation
- Health & Safety Issues
- U.S. & International Facility Case Studies

SUBMITTAL GUIDELINES: Preference will be given to papers that address (1) actual plant operations and experience highlighting problems and solutions; (2) new technologies being implemented or tested; (3) innovative management practices; and (4) applied research. Only one presenter per paper is permitted, unless otherwise arranged. Speakers will be notified regarding acceptance/non-acceptance of submittals.

Abstracts should not more than 500 words and should include the topic description, a summary of the data to be presented, and identification of key conclusions. All abstracts and papers submitted must be original in nature, not having been presented or published elsewhere. Please include contact information on the abstract and all transmittal materials, as well as a biography of the presenter highlighting career and presentation experience.

Presented By:



Owens Thomas House—Savannah, GA

ABSTRACT DEADLINE

SEPTEMBER 11, 2003

Abstracts Should be Sent To:

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Sponsored by Solid Waste Processing Division and Environmental Engineering Division

August 18-20, 2003

At The Historic Goodwin Hotel, Hartford, Connecticut

Featured Session Topics:

Clean Air Technologies & Methods • Processing Challenging Wastes • Waste and Recycling Technologies
Environmental Communications for Facility Managers • Measuring Waste Combustor Performance
(Including a Panel Discussion on a draft of Performance Test Code 34 for Municipal Waste Combustors
with Energy Recovery, which ASME is releasing for industry review)

PLUS:

Exciting Tours - Facilities of the Connecticut Resource Recovery Authority
Mid-Connecticut Refuse Derived Fuel Power Plant.

Great food, plenty of refreshments and networking opportunities!

In addition, there will be
Joint Meeting of EED and SWPD Executive Committees

ASME PTC 34 Committee Meeting - This Performance Test Code Committee is now releasing a draft code for industry review.
Prospective new members are welcomed. The meeting will continue through Thursday, August 21.

What A Deal: ASME Members \$140
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For Most Updated Program and Registration Information, Visit

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