



Independent coverage of composting, wood recycling and organics management



Composting News

October 2017

McEntee Media
Market Intelligence

Volume 26 Number 8



A look at electric horizontal grinders

By Ken McEntee

Part Two. This look at electric horizontal grinders is not intended to endorse or promote any particular product or manufacturer. Attempts were made to include input from all known North American manufacturers of horizontal grinders. Because of the length of this report, it is being published in two installments in Composting News. The first appeared in the September issue. The complete article is available for viewing online at www.compostingnews.com.

Increasing government regulations – particularly federal emission standards – and a lower operating cost compared to diesel powered machines, are driving demand for electric horizontal grinders, manufacturers say. Part one of this

(See *Electric Grinders*, page 9)

Wisconsin county may partner with farmers on manure composting

Dane County, Wisconsin announced the allocation of \$200,000 to study the feasibility of a community facility to which farmers could deliver manure to be composted. Dane County Executive Joe Parisi said such a project could help farmers reduce manure runoff into lakes and improve farm productivity.

“People have composted grass clippings leaves, and yard waste for years and now the science tells us composting manure creates a product that reduces runoff and carbon emissions while shrinking manure piles by 50 percent,” Parisi said. “Our farmers are our best partners in our community’s lake clean-up efforts. Working with them to set up this time-honored practice on a



Image: Dane County, Wisc.

to apply to the roof of any building constructed after January 1, 2018, that has more than 25,000 square feet and to the roof of any building to which an addition was made that increases the square footage of the building to more

(See *Farmers*, page 4)

Denver residents to vote on controversial green roofs measure



By Ken McEntee

Denver County, Colo. residents in November will vote on a citizen initiative that would require certain new buildings to include vegetation, or green roofs. Initiated Ordinance 300 was designed

to apply to the roof of any building constructed after January 1, 2018, that has more than 25,000 square feet and to the roof of any building to which an addition was made that increases the square footage of the building to more

(See *Green Roofs*, page 5)

Highlights

- n **From food scraps to natural gas**
- n **National compost prices**

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Food waste

From food scraps to natural gas

Three U.S. companies this month were recognized by a non-profit group for their efforts in converting food waste to natural gas. In commemoration of National Bioenergy Energy Day, which highlights the use of organic materials to generate energy, the non-profit Energy Vision recognized Ameresco, Quantum Biopower, and CCI Bioenergy for advancing renewable natural gas (RNG) made from organic waste.

The New York-based organization claims that uncollected organic wastes emit 25 times more greenhouse gases than the entire fossil natural gas industry. RNG is made from biogas emitted as food waste, wastewater,

agricultural manures and yard clippings decompose. It is then captured and refined into an ultra-low-emissions energy source.

In Southington, Conn., Quantum Biopower built the New York area's first food waste-to-energy facility. Quantum's facility consumes 40,000 of the 500,000 tons of food waste Connecticut generates annually, converting it via anaerobic digestion to 420,000 cubic feet of biogas.

RNG production capacity is ramping up elsewhere in the New York tri-state area, including at Brooklyn's Newtown Creek and Long Island's American Organic Energy. Regionally produced RNG could be used to fuel NYC municipal vehicles, improving New York's air quality while helping meet its GHG reduction goals, Energy Vision said.

In Arizona, Ameresco worked with Phoenix, Tempe, Mesa, Scottsdale and

(See Natural Gas, page 4)



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Food waste

Natural gas

From page 3

Glendale to develop, design, build, own and operate a wastewater treatment biogas facility to serve the region. Phoenix's 91st Ave Wastewater Treatment Plant will be the largest wastewater treatment biogas-to-RNG facility in the U.S., with enough RNG capacity to displace more than four million gallons of diesel annually, Energy Vision said.

In Ontario, CCI BioEnergy is piloting compact, innovative bioQUBE microdigesters that convert organic wastes into RNG and bio-fertilizer. Fitting inside a shipping container, they allow on-site processing of organic waste where it is produced, extending the availability of anaerobic digestion to individual sources, including Ontario's Algoma Orchards, the largest Canadian apple grower and processor

east of British Columbia.

"Since we began focusing attention on this, more than 40 plants have been built or converted to produce RNG, and more than 20,000 heavy-duty trucks are using it," said Joanna Underwood, chair of Energy Vision.

The organization was founded in 2007 to promote the use of clean renewable energy sources and petroleum-free fuels in the transportation sector.

Manure

Farmers

From page 1

bigger scale in the Mendota watershed is another innovative, effective approach at substantially decreasing algae growth in our lakes."

The county study would explore how many farmers could participate in a regional composting facility, who would operate and maintain such a facility and potential markets for the

compost that is produced. The county thinks such a facility would help farms of all sizes by reducing the amount of liquid manure spread on fields and by having access to composted manure that stays on the land better and has fewer pathogens.

Parts of Dane County are rich with phosphorus, but other parts of the region are not. The county said the composting process makes manure easier to truck and move, reducing overhead costs and making it more economically feasible to relocate phosphorus to places that need it.

"Farmers are helping lead the way toward our water quality goals in the Yahara Watershed," said Jeff Endres, chairman of Yahara Pride Farms, which has been working with University of Wisconsin agronomists to explore the benefits of composting manure. "Using composting technology to managing how nutrient-rich manure is applied to farm fields is a key component to achieving these goals."

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Dane County said the naturally occurring process of composting creates a byproduct that is easier to apply with a form of phosphorus more readily available for plants to consume, reducing the risk it remains in the soil and vulnerable to runoff.

“Agriculture supports our economy, families, communities, quality of life and is the best means of sustaining balanced land use in the fastest growing county in the state,” Parisi said. “As one of the top 25 agricultural producing counties in the entire country, our multi-generational family farms and the thousands of jobs they create and support are here to stay. Working with them to promote composting is our next opportunity to facilitate the kind of collaboration that has brought the progress and successes we’ve seen to date in our ongoing work to clean our lakes.”

Applications

Green Roofs

From page 1

than 25,000 square feet. Any building meeting those criteria would be required by the initiative to have a certain percentage of the available roof space covered by a green roof or by a combination of vegetation and solar panels, provided at least 30 percent is green roof and the roof retains at least the first quarter-inch of rainfall or half of the annual rainfall on the roof.

The requirements of the initiative would also apply to any roof replacements for buildings larger than 25,000 square feet. A separate requirement would be applied to industrial buildings.

A local group, Denver Green Roof Initiative, collected more than 8,000 signatures to get the issue on the November 7 ballot.

According to the group, Denver ranks third highest in the U.S. for “Urban Heat Island,” following Las Vegas and Albuquerque. An Urban Heat Island absorbs warmth from the sun and raises a city’s temperature much higher than surrounding areas.

Denver, for example, is nearly 5 degrees hotter than surrounding areas, the group said.

A green roof can reduce heat-flow through the roof by 70 to 90 percent in the summer and 10 to 30 percent in the winter, according to the National Research Council of Canada.

Green Roofs, the group said, also help to solve storm-water drainage issues in cities.

“In Denver, where intense heavy storms come out of nowhere, it is very important to have proper storm-water drainage,” the group said. “This is an ever increasing problem as the city continues to grow. These intense storms drop so much rain that the drains can’t handle it all and the streets become flooded. This polluted storm water runoff overflows into our lands, streams and rivers. Green roofs solve this problem as well. In fact, Green Roofs retain and release storm-water so well that it was named as a Best Management Practice for infiltrating and detaining runoff by the Urban Drainage and Flood Control District.

One of Denver’s sustainability goals for 2020 is to produce 20 percent of its food locally. Green Roofs can help contribute to that goal, the group said.

“Buildings are permitted to use the rooftop space for urban agriculture,” it said. “This allows for the building to rent out their rooftop space to urban farmers who can then supply their goods around the city.”

Green Roofs, the group admitted, cost \$15 more per square foot on average than a traditional black roof. Even though the extra cost would be offset in as soon as 6.2 years, most developers choose not to incorporate green roofs because they build the building then sell it and would not realize the energy and storm-water savings.

Under the initiative, each industrial building with at least 25,000 square feet or an addition to such an industrial building would have to have either 25,000 square feet of green roof or green roof covering 10 percent of available roof space, whichever is less.

Alternatively, the initiative would allow industrial buildings to fulfill the requirement with solar panels on 80 percent of available roof space and a system that collects and reuses the first quarter-inch of each rainfall or half of the annual rainfall.

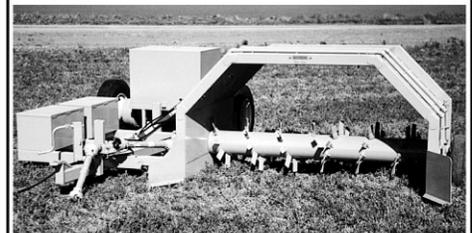
The initiative defines industrial buildings as any building used or intended exclusively for manufacturing, production or processing of goods; any warehouse used for storage of goods; self-storage buildings; distribution and truck centers; and buildings used for research and development in connection with manufacturing and production.

The initiative allows for building owners to buy their way out of the requirement.

During the permit process, an applicant for a building can request a full exemption from the requirement

(See Green Roofs, page 8)

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National Compost Prices

The prices listed below are intended to indicate the value of mature compost products sold by compost producers and retailers in noted regions. Prices listed are based on surveys and publicly posted prices.

Your input on published prices is encouraged. Contact Ken McEntee, editor, at (440) 238-6603. Fax: (440) 238-6712. EMail: ken@recycle.cc. Address: 9815 Hazelwood Avenue, Cleveland, OH 44149. Notes on listings.

- Each listing includes a high price obtained, a low price obtained and an average of all prices obtained within a particular market.

- Market areas: Thirteen market areas have been targeted to provide a cross section of compost product markets in

the U.S. Where regions are not identified by a specific city, "Chesapeake" refers to the region stretching between Norfolk, Va. to Baltimore, Md. "Texas" incorporates several major cities in the state. "Northwest" represents the Seattle and Portland, Ore areas. "SF-Bay" refers to the San Francisco Bay area. SoCal is Southern California, including the Los Angeles and San Diego areas. Denver includes Colorado, Wyoming and Montana.

- "Food waste" compost: This category refers to compost products that include food waste, regional specialties and other feedstocks not specifically covered in other categories.

- Manures: Chicken manures may include other poultry

manures, such as turkey and duck manure. Cow manures may include manures marketed as steer and dairy manure. Horse manure is included in this category as well.

- Absence of a regional listing within a given category indicates not enough information for a valid listing.

Additional data will be added as more information is obtained.

- Bulk retail prices do not include municipal operations that give compost away for free.

Bulk Retail (yard)

Yard waste compost	Average	High	Low
NE	\$ 32.55	\$ 77.00	\$ 17.50
Chesapeake	\$ 24.50	\$ 30.00	\$ 17.00
SE	\$ 21.88	\$ 29.95	\$ 16.00
Florida	\$ 16.42	\$ 26.00	\$ 10.50
Cleveland	\$ 19.90	\$ 28.00	\$ 12.50
Iowa	\$ 21.57	\$ 53.00	\$ 7.50
Minneapolis	\$ 17.09	\$ 28.00	\$ 8.00
Texas	\$ 29.71	\$ 40.00	\$ 15.00
Denver	\$ 20.31	\$ 31.00	\$ 12.00
Northwest	\$ 24.05	\$ 55.00	\$ 10.00
SF-Bay	\$ 21.92	\$ 30.00	\$ 10.00
SoCal	\$ 14.75	\$ 24.00	\$ 8.00

Food waste compost	Average	High	Low
NE	\$ 39.12	\$ 64.00	\$ 17.50
Chesapeake	\$ 23.00	\$ 30.00	\$ 15.00
SE	\$ 28.11	\$ 35.00	\$ 24.00
Florida	\$ 17.50	\$ 22.00	\$ 13.00
Iowa	\$ 25.00	\$ 65.00	\$ 15.00
Minneapolis	\$ 12.33	\$ 16.00	\$ 9.00
Texas	\$ 30.21	\$ 48.95	\$ 15.00
Denver	\$ 15.00	\$ 15.00	\$ 15.00
Northwest	\$ 20.55	\$ 30.00	\$ 15.00
SF-Bay	\$ 23.61	\$ 38.00	\$ 14.00
SoCal	\$ 30.50	\$ 45.00	\$ 16.00

Leaf humus	Average	High	Low
NE	\$ 24.98	\$ 30.00	\$ 19.95
Chesapeake	\$ 27.49	\$ 30.00	\$ 23.95
Cleveland	\$ 19.27	\$ 26.00	\$ 8.00

Composted biosolids	Average	High	Low
NE	\$ 30.00	\$ 40.00	\$ 20.00
Chesapeake	\$ 24.98	\$ 35.00	\$ 12.00
SE	\$ 12.14	\$ 28.00	\$ 4.00
Florida	\$ 13.14	\$ 22.00	\$ 8.00
Cleveland	\$ 24.77	\$ 30.00	\$ 19.50
Iowa	\$ 12.67	\$ 21.00	\$ 8.00
Texas	\$ 21.28	\$ 30.00	\$ 10.00
Denver	\$ 9.00	\$ 10.00	\$ 7.00
Northwest	\$ 17.91	\$ 26.00	\$ 7.00
SoCal	\$ 13.36	\$ 22.00	\$ 3.50

Composted chicken manure	Average	High	Low
NE	\$ 45.00	\$ 50.00	\$ 40.00
Chesapeake	\$ 25.00	\$ 25.00	\$ 25.00
SE	\$ 42.00	\$ 42.00	\$ 42.00
Minneapolis	\$ 17.00	\$ 17.00	\$ 17.00
Texas	\$ 37.23	\$ 47.50	\$ 26.95
Denver	\$ 25.65	\$ 28.00	\$ 24.00
SF-Bay	\$ 16.00	\$ 16.00	\$ 16.00
SoCal	\$ 44.00	\$ 75.00	\$ 27.00

Composted cow manure	Average	High	Low
NE	\$ 45.50	\$ 46.00	\$ 45.00
SE	\$ 31.33	\$ 45.00	\$ 12.00
Cleveland	\$ 24.00	\$ 24.00	\$ 24.00
Iowa	\$ 42.00	\$ 60.00	\$ 16.00
Minneapolis	\$ 29.33	\$ 32.00	\$ 26.00
Texas	\$ 29.33	\$ 47.50	\$ 15.00
Denver	\$ 21.71	\$ 30.00	\$ 12.00
Phoenix	\$ 20.00	\$ 20.00	\$ 20.00
Northwest	\$ 23.85	\$ 33.75	\$ 17.45

SF-Bay	\$ 26.00	\$ 26.00	\$ 26.00
SoCal	\$ 17.25	\$ 24.00	\$ 12.00

Wood waste mulch	Average	High	Low
NE	\$ 21.35	\$ 38.00	\$ 12.50
Chesapeake	\$ 21.13	\$ 28.00	\$ 12.00
SE	\$ 18.78	\$ 34.95	\$ 12.00
Florida	\$ 17.50	\$ 18.00	\$ 17.00
Cleveland	\$ 25.56	\$ 36.25	\$ 14.00
Iowa	\$ 32.50	\$ 40.00	\$ 25.00
Minneapolis	\$ 26.00	\$ 35.00	\$ 20.00
Texas	\$ 16.19	\$ 27.00	\$ 9.00
Denver	\$ 18.74	\$ 25.00	\$ 12.48
Phoenix	\$ 17.61	\$ 22.95	\$ 10.00
Northwest	\$ 19.00	\$ 35.00	\$ 7.50
SF-Bay	\$ 18.14	\$ 30.00	\$ 8.00
SoCal	\$ 20.50	\$ 50.00	\$ 6.00

Colored wood mulch	Average	High	Low
NE	\$ 28.00	\$ 28.00	\$ 28.00
Chesapeake	\$ 28.67	\$ 33.00	\$ 25.00
SE	\$ 27.13	\$ 42.00	\$ 15.00
Florida	\$ 20.33	\$ 22.00	\$ 19.00
Cleveland	\$ 24.87	\$ 28.99	\$ 21.95
Iowa	\$ 30.00	\$ 30.00	\$ 30.00
Minneapolis	\$ 36.80	\$ 49.00	\$ 30.00
Texas	\$ 26.08	\$ 32.50	\$ 18.00
Denver	\$ 33.28	\$ 33.28	\$ 33.28
Northwest	\$ 35.00	\$ 35.00	\$ 35.00
SF-Bay	\$ 34.00	\$ 36.00	\$ 28.00
SoCal	\$ 32.50	\$ 35.00	\$ 30.00

Bulk wholesale (yard)

Yard waste compost	Average	High	Low
NE	\$ 21.50	\$ 48.00	\$ 11.00
Chesapeake	\$ 13.39	\$ 16.00	\$ 8.00
SE	\$ 16.66	\$ 25.00	\$ 8.65
Florida	\$ 9.75	\$ 13.00	\$ 8.00
Cleveland	\$ 12.50	\$ 15.00	\$ 10.00
Iowa	\$ 14.00	\$ 19.00	\$ 8.00
Minneapolis	\$ 12.00	\$ 17.00	\$ 7.00
Texas	\$ 17.25	\$ 24.00	\$ 9.00
Denver	\$ 13.05	\$ 14.10	\$ 12.00
Northwest	\$ 14.79	\$ 35.00	\$ 7.50
SF-Bay	\$ 13.71	\$ 22.00	\$ 7.00
SoCal	\$ 7.33	\$ 10.00	\$ 6.00

Food waste compost	Average	High	Low
NE	\$ 25.79	\$ 48.00	\$ 11.00
Chesapeake	\$ 10.50	\$ 15.00	\$ 8.00
SE	\$ 20.65	\$ 30.00	\$ 15.00
Florida	\$ 10.50	\$ 13.00	\$ 8.00
Iowa	\$ 13.40	\$ 20.00	\$ 10.00
Minneapolis	\$ 12.00	\$ 12.00	\$ 12.00
Texas	\$ 17.50	\$ 24.00	\$ 8.50
Denver	\$ 11.33	\$ 15.00	\$ 7.00
Northwest	\$ 17.25	\$ 20.00	\$ 15.00
SF-Bay	\$ 12.67	\$ 26.00	\$ 5.00

Composted biosolids	Average	High	Low
NE	\$ 15.33	\$ 20.00	\$ 10.00
Chesapeake	\$ 9.31	\$ 15.00	\$ 5.00
SE	\$ 10.93	\$ 15.00	\$ 5.00
Florida	\$ 10.50	\$ 13.00	\$ 8.00
Texas	\$ 15.99	\$ 20.00	\$ 9.00

Denver	\$ 13.00	\$ 13.00	\$ 13.00
Northwest	\$ 16.75	\$ 21.00	\$ 12.00
SoCal	\$ 10.50	\$ 17.00	\$ 3.00

Composted cow manure	Average	High	Low
NE	\$ 36.00	\$ 36.00	\$ 36.00
SE	\$ 21.38	\$ 31.50	\$ 7.00
Iowa	\$ 35.00	\$ 35.00	\$ 35.00
Texas	\$ 25.00	\$ 25.00	\$ 25.00
Denver	\$ 12.05	\$ 14.10	\$ 10.00
Northwest	\$ 22.00	\$ 22.00	\$ 22.00
SF-Bay	\$ 34.25	\$ 34.50	\$ 34.00
SoCal	\$ 5.00	\$ 6.00	\$ 4.00

Wood waste mulch	Average	High	Low
NE	\$ 15.75	\$ 33.00	\$ 8.00
Chesapeake	\$ 15.80	\$ 17.00	\$ 13.00
SE	\$ 14.60	\$ 24.95	\$ 5.00
Florida	\$ 14.00	\$ 15.00	\$ 13.00
Iowa	\$ 30.00	\$ 40.00	\$ 20.00
Minneapolis	\$ 18.50	\$ 20.00	\$ 17.00
Texas	\$ 10.83	\$ 14.00	\$ 8.00
Denver	\$ 7.66	\$ 8.32	\$ 7.00
Northwest	\$ 15.00	\$ 15.00	\$ 15.00
SF-Bay	\$ 12.33	\$ 14.00	\$ 9.00
SoCal	\$ 9.25	\$ 15.00	\$ 5.00

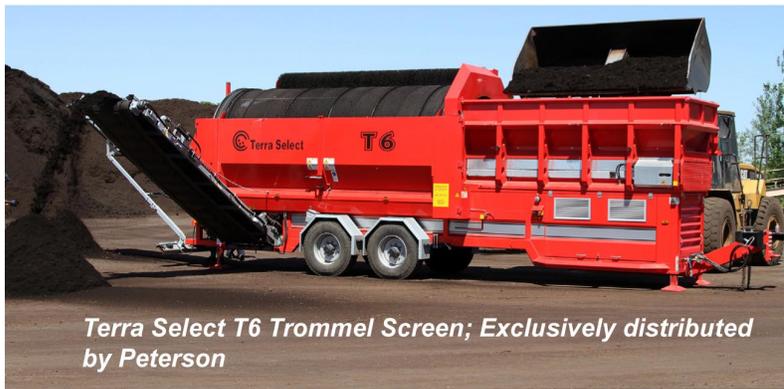
Colored wood mulch	Average	High	Low
NE	\$ 22.00	\$ 22.00	\$ 22.00
Chesapeake	\$ 20.50	\$ 22.00	\$ 19.00
SE	\$ 19.00	\$ 25.00	\$ 15.00
Florida	\$ 16.00	\$ 16.00	\$ 16.00
Iowa	\$ 25.00	\$ 25.00	\$ 25.00
Minneapolis	\$ 27.00	\$ 35.00	\$ 19.00
Texas	\$ 20.67	\$ 24.00	\$ 18.00
Denver	\$ 17.66	\$ 21.32	\$ 14.00
Northwest	\$ 22.00	\$ 22.00	\$ 22.00
SF-Bay	\$ 21.00	\$ 22.00	\$ 19.00
SoCal	\$ 22.50	\$ 25.00	\$ 20.00

Bag Retail

Compost (40# bag)	Average	High	Low
NE	\$ 6.87	\$ 8.00	\$ 4.50
Chesapeake	\$ 3.73	\$ 5.49	\$ 2.15
SE	\$ 4.00	\$ 4.00	\$ 4.00
Iowa	\$ 1.99	\$ 1.99	\$ 1.99
Cleveland	\$ 2.45	\$ 2.99	\$ 2.10
Iowa	\$ 3.12	\$ 7.99	\$ 1.50
Texas	\$ 4.25	\$ 6.99	\$ 1.99
Denver	\$ 3.59	\$ 4.75	\$ 1.73
Phoenix	\$ 4.71	\$ 5.99	\$ 2.77
Northwest	\$ 4.29	\$ 5.99	\$ 2.99
SoCal	\$ 5.39	\$ 6.25	\$ 3.90

Composted cow manure(40#bag)	Average	High	Low
NE	\$ 6.53	\$ 9.87	\$ 3.85
Chesapeake	\$ 5.97	\$ 7.95	\$ 3.99
SE	\$ 5.16	\$ 6.97	\$ 3.34
Florida	\$ 1.98	\$ 1.99	\$ 1.97
Cleveland	\$ 3.27	\$ 3.99	\$ 2.49
Iowa	\$ 2.18	\$ 2.49	\$ 1.75
Minneapolis	\$ 3.70	\$ 7.00	\$ 1.99
Texas	\$ 4.59	\$ 6.99	\$ 1.99
Phoenix	\$ 2.99	\$ 3.99	\$ 2.49
Northwest	\$ 3.99	\$ 3.99	\$ 3.99
SF-Bay	\$ 7.00	\$ 7.00	\$ 7.00

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Applications

Green Roofs

From page 8

or an adjusted requirement for a smaller portion of available roof space. If the request is granted by the Denver Community Planning and Development Department—governed by the Denver Planning Board—a cash payment would be made to offset any reduced green/solar roof space requirement equal to the estimated average cost of the construction required to meet the full requirements of the initiative.

The initiative includes a Green Roof Construction Standard section that defines the minimum requirements for a green roof. A green roof, as defined, is a roof system that includes a barrier against roots, a drainage system, a layer to filter water, a growing medium—such as soil—and plants. The Green Roof Construction Standard also

set out requirements for weight loads, roof slope angles, fire safety barriers between vegetation and certain combustible materials, and plant type requirements—excluding noxious plants.

Any application for a permit for a required green roof or green/solar roof must include a maintenance plan, including a plan for replanting, as necessary to continue to perform the functions required of the roof.

The initiative also would establish an advisory group consisting of a chair and 10 members appointed by the mayor to advise the Denver Planning Board and the city council on adjustments to the standards and requirements set out in the initiative.

The Denver Green Roof website lists a variety of organizational endorsements of Initiative 300, including the Denver Green Party.

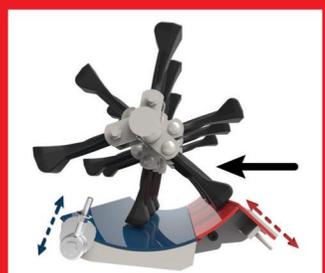
Opposing the initiative is Denver Mayor Michael B. Hancock a coalition of local business organizations called

the Citizens for a Responsible. Opponents said the initiative would drive up the costs of construction and maintenance, and ultimately the cost of housing. The initiative also would cost millions in taxpayer revenue to implement, which could be used for better purposes, opponents said.

“While green roofs support many sustainability objectives, Initiative 300 is not the right approach for Denver,” Hancock said. “By taking a mandate-only approach and eliminating the opportunity for options, the initiative would actually hinder efforts to pilot, promote, phase and incentivize green infrastructure, as is being done in many of our peer cities across the United States. We also are very concerned about cost increases to construct and maintain priority projects such as affordable housing, the legality of several parts of the ordinance, and conflicts with existing city building codes. We would have much preferred to see a



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collaborative approach, which has become the hallmark of how we solve problems here in Denver.”

Equipment focus

Electric grinders

From page 1

article covered manufacturers’ insights about the following topics:

- Ideal for stationary operations
- Cost savings
- Longer life
- Better performance?

Beefier machine

Engine comparisons aside, Tim Griffing, sales manager, stationary line, for Continental Biomass Inc. (CBI), of Newton, N.H., said because stationary electric grinders aren’t governed by Department of Transportation specifications like mobile units, the

machines can be configured to meet the needs of an operation. That means they can have larger hoppers and longer discharge conveyors.

Tim Wenger, vice president of CW Mill Equipment Co., Sabetha, Kan., echoed that.

“Because they aren’t restricted by road hauling regulations, stationary grinders can be built to larger capacities,” Wenger said. “When you install a 150,000 pound machine it’s going to last forever. When you take away the transportation aspects, it frees you up to build a grinder for more strength instead of transportation.”

John Snodgrass, who is in technical sales at West Salem Machinery, Salem, Ore., agreed.

“Grinders that are going over the road have some limits on things like width and weight,” Snodgrass said. “If you don’t have to take your grinder on the road, a stationery machine can be

much wider with a larger diameter rotor. You can get into tremendous capacities,”

Operating requirements

“Electric driven grinders can be used anywhere there is enough power to drive them,” Griffing said.

Manufacturers generally said minimum requirements generally include three-phase power with a minimum of 460-480 volts at 60 hertz. Having adequate electrical power at the installation site is important, and not always simple to achieve, some manufacturers noted.

“A lot of people assume that because they have a lot of power or voltage coming to their facility that they are set,” said Pat Crawford, vice president of products at Diamond Z Manufacturing, Caldwell, Idaho. “But

(See Electric Grinders, page 10)



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Equipment

Electric Grinders

From page 9

they may already be using most of their capacity. You can have three phase, 480-volt power available, but you also need to have sufficient amperage. Everybody has the voltage, but not everybody has the amperage.”

Required amperage, Crawford said depends on the horsepower of the motor.

“Lower horsepower machines don’t need that much amperage,” Crawford said. “But you have to consider that in-rush – what it takes to start the motor - can be eight times what it takes to operate the motor.”

Power to electric grinder motors is controlled using one of two types of controller: a soft starter or a variable frequency drive (VFD). A soft starter helps to protect a motor and connected equipment from damage by limiting

the in-rush of current, then gradually increasing the power until the motor reaches full speed. VFDs allow an operator to control the speed and power consumption of the motor.

“With soft start panels you tend to lose a little bit of power, but they are less expensive,” said Jay Van Roekel, strategic business unit manager at Vermeer Corp., Pella, Iowa. “If you’re regrinding it really doesn’t require the full horsepower anyway. It depends on the application. So soft-start is good for some jobs. If you’re doing more taxing work, you may want to look at the VFD panel. The VFD panel is something we believe is the secret to good productivity.”

Paul Clark, electric systems engineer at Peterson Pacific Corp., Eugene, Ore., said Peterson’s machines require between 1,000 and 2,500 amps depending on the size the motor.

“If you’re going to use an electric machine, you need to be sure that you have a power supply that can handle

it,” said Jason Morey, sales and marketing manager for Bandit Industries Inc., Remus, Mich. “If you don’t have a big enough power supply then there is going to be a problem running the machine.”

Wenger said power drops can damage motors.

“Most problems we’ve had with the electric tubs, particularly on starting, have been from power drops, especially in the summertime,” he said. “People generally say 460 volts is the requirement, but sometimes the voltage in that system can fall to 440. When voltage drops, amperage goes up and that can trip out the power. I tell people to have the utility top the power up into the 505-volt range to protect against drops in voltage, and that usually takes care of the problem. It’s not a big deal – they just adjust it at the transformer.”

Clark said Peterson recently had a customer who was experiencing low voltage.



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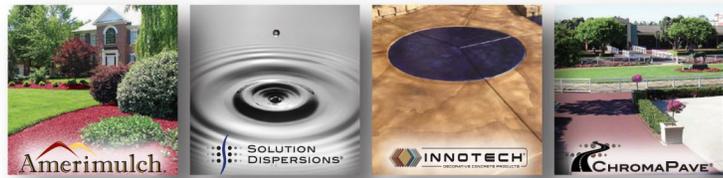
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“It looks like the power company didn’t plan fully for situation,” he said. “It causes the motors to work a little harder and they get hotter. The way you handle that is to work directly with your electric utility company and tell them what you are planning to do so they can plan accordingly.”

Michael Spreadbury, Peterson’s marketing manager, added, “That is a conversation you need to have very early on the purchasing process. You need to get the utility involved and you need to talk to your local electrical contractor.”

Having access to sufficient power, Spreadbury said, is not always a given.

“If the infrastructure isn’t there it isn’t going to happen,” he said. “A customer in the Midwest would die to have electric. But the power company just will not put in the infrastructure.”

According to Griffing, “One downfall of the electric driven grinders is having enough power available to your site. Not all sites are close enough for the

amperage required to operate large horsepower motors.”

Wenger agreed.

“Location and proximity to power is a consideration,” he said. “Some of these mulching operations can be in remote locations, so the ability to get adequate power can be a hindrance. It might cost a couple hundred thousand dollars to get lines run to you if you are a distance away.”

Market trends

“The shredder/grinder market has grown over the last couple of years and is forecasted to continue to grow,” said Todd Dunderdale, senior area sales manager for Komptech Americas, Westminster, Colo. “We have seen an increase in the number of stationary machines typically because larger facilities are now being planned because of industry consolidation.”

Tightened regulations in engine air emissions will increase the cost of diesel machines, making electric

motors more attractive for the appropriate applications, manufacturers agree.

“Due to emissions standards becoming more strict, electric drive is becoming more popular,” Griffing said.

“The increased costs for Tier 4 diesel powered machines will be substantial,” Crawford said. “I think you’ll see machines that are not Tier 4 Final on the market through the first quarter to the first half of next year, but we’re already seeing a pickup in demand for electrics.”

Peterson also expects stronger interest in electric machines.

“With onset of Tier 4 and the significant price increases that it is going to entail, we are going to see more and more applications where, of the machine does not have to move, we’re going to be quoting more electric machines,” Spreadbury said.

Wenger said sales and inquiries for

(See *Electric Grinders*, page 19)

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Equipment

Electric Grinders

From page 11

electric grinders increased a few years ago when diesel prices bumped upward.

“Now, with the changes in the emissions regulations, people are taking a closer look at electric power,” he said. “We make a lot of electric tub grinders, but any of our diesel horizontals can be made with an electric engine.”

According to Kollin Moore, electrical engineer with Morbark LLC, Winn, Mich., Morbark has seen the demand for electric grinders slowly increasing, especially during times when the price of oil has been elevated.

“Regulatory influences, whether they are about emissions, dust or noise, are definitely switching people over to the electrics,” Van Roekel said. “The bulk of Vermeer’s horizontal grinder sales are diesel powered, but electric machines have been reducing the gap over the past five years.”

Making it mobile?

New technology has made many electric products more mobile. Horizontal grinders are unlikely to be one of them, manufacturers agree.

“To make an electric machine mobile you would need a pretty big diesel generator, which isn’t cheap,” Van Roekel said. “You’re kind of defeating the purpose if you’re running a 1,000 horsepower generator and then you have to move the panel with it to control the motors. You’re still going to have the noise and air emissions from the generator.”

That, Wenger said, is one of the few downsides of an electric grinder.

“They are not mobile at all,” he said. “You would need a 2,000 horsepower generator to power up a 1,000 horsepower grinder. You’re better off just getting a 1,000 horsepower diesel engine. I had a customer who wanted to take an electric grinder from town to town to do custom grinding

and he pitched the towns to provide the electricity. That would have necessitated each town to set transformers of adequate size to power the machines. It wasn’t going to happen. The economics just aren’t there.”

Art de St. Aubin, president and CEO of Rotochopper Inc., St. Martin, Minn., said that portable configurations using quick-connects are available, but power availability is essential.

“The site must have adequate three phase power available,” he said.

Griffing said quick-connects at adequately powered sites allows an operator to move an electric to two or three different locations.

“It works great, but you need to have soft starts at each of the facilities,” he said.

Wenger added that one customer has two locations powered up on his site so he can move an electric tub grinder back and forth.

Snodgrass noted a similar situation.

“I have seen yards where they have a semi portable situation,” he said. “They will have a crude pad and the ability to get power to it so they can process X amount of tons and when they are finished they can pack it up. The control panel is a part of the unit, so they can pack it up and move it to another part of the yard. It isn’t something that you would run for a week – you probably would run it for a year at a site. But generally, if you are dragging a generator around you are defeating the purpose.”

Converting to electric

Wenger said converting an existing diesel powered horizontal grinder to electric is simple.

“We are quoting a project like that now,” Wenger said. “A customer in California has a diesel grinder and they were not able to get an air quality permit. Our quote is to pull off the 1,000 horsepower diesel engine and put on a 500 horsepower electric. It is a pretty simple conversion. It’s not a bad thing to do. When a diesel engine goes bad, instead of a new \$60,000

diesel engine you can put the money toward a conversion. It is probably going to cost you \$100,000 by the time you buy the motors and starters. But you’re going to make that up in lower operating costs.”

Griffingsaid diesel-to-electric conversions are becoming increasingly popular.

“We’re seeing more and more of it now, especially in California with the regulations getting stricter,” he said. “If you’re not going to be moving it you might as well convert it. To buy a new diesel engine or have one rebuilt, they’re about the same price to convert, so you’re better off going with the electric.”

What to consider

Before making the decision to install a horizontal grinder, you need to know your local codes, Van Roekel said.

“There will be some safety regulations,” he said. “If you are under a roof there will be some kind of rules to prevent an explosion or a fire problem. It is high voltage, so you need to lock-out-tag-out and other proper safety and maintenance practices. Don’t try to eliminate maintenance schedules. A 24/7 operation is not going to want to turn it off very often, but you still need to clean the machine and check the cutters and screens.”

Moore noted that local laws may have restrictions relative to operating hours and start up times.

Before purchasing an electric grinder, Wenger said, be sure to do your homework.

“Talk extensively with everyone involved, be it the contractor who is pouring the concrete where the electric machine is going to set or the local electric company,” he said. “Are there certain times that the grinder should not operate as to not interfere with electric power elsewhere else, and make sure all of the people involved in the preparation for the grinder are in contact. Communication is key.”



Compostables

Biodegradable plastics boost organic recycling, studies say

Biodegradable plastics offer innovative solutions to improve recycling quality by facilitating the means for more efficient separate waste collection, according to a recent study jointly released by Corepla, the Italian Consortium for Collecting, Recycling and Recovering Plastic Packaging, the Italian Composters Consortium (CIC) and Assobioplastiche, the Italian Bioplastic and Biodegradable and Compostable Material Association.

The study focused on the effects of biodegradable plastics on plastics recycling streams in Italy, where all single-use carrier bags have to be compostable according to the European standard EN 13432 since 2011.

Analyzing the quality of recycled plastics from 19 waste sorting and recycling facilities around the country, Corepla found that compostable plastics only made up 0.85 percent of the plastic input. Similar studies by the University of Wageningen show that there are no negative effects on the properties of recycled plastics containing starch film and PLA recyclates. Biodegradable plastics are designed to be treated in industrial composting plants. If they do enter mechanical recycling streams due to mishthrows, they can easily be sorted out by available sorting technologies such as NIR (near infrared), as recent tests by the German research institute Knoten Weimar show Corepla said.

Biodegradable and compostable plastics facilitate separate collection of bio-waste and help to divert organic waste from other recycling streams.

Organic recycling is a well-established industrial process ensuring the circular use for biodegradable plastics while creating a strong secondary raw material market and opportunity for renewable energy generation. Yet, the contamination of organic waste streams by mishthrows of non-compostable plastics is high and constitutes a real problem for composting facilities and negatively affects the quality of compost, Corepla and CIC said. The two organizations conducted tests in 27 composting plants in Italy and found that the contamination of organic waste by non-compostable plastics reaches up to 3.1 percent on average. The study also confirmed the complete biodegradation of compostable items such as bags and tableware and their ensured compatibility for industrial composting plants.



Compost Digest

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• **Metro Vancouver** is planning to re-evaluate the way it regulates composting facilities in the region, so that it can avoid the stinky situation it encountered with a Richmond composter last year. The regional district's Zero Waste Committee recently received a report on best-odor management practices at composting facilities. The report was commissioned after Metro, which regulates air quality, received hundreds of complaints about Harvest Power's composting and biofuel facility in east Richmond.

As a result of the complaints, Metro issued a number of non-compliance notifications and violation notices and several member municipalities redirected their organics to other facilities. Harvest has since decreased the amount and types of organic material it accepts, and made some physical changes to the facility.

When Metro's contract with Harvest Power expires in 2019, the region will

be putting out a new request for proposals.

The report outlines a number of best practices, including enclosing processing areas, treating odors from enclosures, prohibiting certain kinds of waste and meat products from facilities, making sure all areas that come into contact with organic waste are impermeable, developing an odor-management plan, implementing an odor-monitoring system and establishing public outreach and communication.

In March, Richmond issued a notice of default to Harvest, saying it had violated its service agreement to process organic waste. The city threatened to terminate the deal and send its waste elsewhere if the facility didn't deal with the odor problem. - *The Vancouver Sun*, vancouver.sun.com

• **Washington, D.C.** residents who purchase home composting systems would receive a \$75 rebate from the district government under a bill Council Member Mary Cheh (D-Ward 3) has proposed. The legislation seeks to incentivize home composting systems for residents as part of a local government effort to reduce food waste by as much as 80 percent.

D.C. residents currently have the option of joining a community compost network with 50 composting sites around the city or going to government-run sites in each ward where they can drop off their compost for free.

An April 2017 District of Columbia Compost Feasibility Study commissioned by the Department of Public Works found strong demand for a curbside collection program, as the city generates up to 234,000 tons a year in organic waste. A citywide, mandatory composting program could recover up to more than half of that number, the report suggests. Cheh said much of the 234,000 tons of waste comes from single-family homes. - *The Hoya*, www.thehoya.com

• After Hurricane Irma battered it,

Homestead, Fla.’s composting facility – which was expected to come back online by the end of August after a year-long pause in operations – has pushed back its reopening to early next year while repairs are made.

The composting facility, which turns the city’s biosolid waste into super-strength fertilizer, was initially shut down in April 2016 after the discovery of odor issues and improper procedures. After that, the facility ordered and installed nine specialized fans on March 31 to help dry the biosolids and also installed specialized scrubbers to ensure that air leaving the facility would be odorless.

As a result of the improvements, the plant began to test its first batches of biosolids during August to check for the quality of the fertilizer and planned to provide the South Dade Soil & Water Conservation District, which operates the facility, with samples of the biosolids during September.

However, after Hurricane Irma hit

Florida last month, all tests and operational activities within the facility came to a halt. The processing facility suffered enclosure damage after Irma’s winds ripped panels off the south side. - *Miami Today*, www.miamitodaynews.com

• The owner of Blessing Greenhouses and Compost will return to plead his case to amend or clarify three conditions placed on his application for approval to run his operation near **Milford, Del.**

Bruce Blessing wants county officials to consider amending a condition requiring a bond guaranteeing site cleanup and other conditions. In addition, Blessing is seeking amendments to hours when material can be accepted and a clarification on buffers the county is requiring. Among the long list of conditions, Blessing

faces a deadline to clean up a large outdoor pile of material that has accumulated for years. The condition was a result of concerns from nearby residents who have complained about odors. Once the large pile is removed from the site, the location can no longer be used to process or store material, according to the conditions. All composting must occur in new buildings to be constructed as Blessing upgrades the composting process on the parcel. The upgrades include seven new 11,000-square-foot covered buildings with 12-inch concrete floors capable of processing 4,000 cubic yards of compost at a time. - *Cape Gazette*, www.capegazette.com

• **Langley (B.C.)** Environmental Partners Society (LEPS) is taking their

(See Digest, page 22)



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Manure Link.com program to horse owners this month. Funded by the Investment Agriculture Foundation, supported by Agriculture Canada's Youth Green Jobs Initiative and a project of LEPS' Horse Manure Composting program, the British Columbia-wide project encourages horse owners to compost their manure by connecting gardeners and landscapers with a free source of organic fertilizer and providing local farmers and horse-owners with an outlet for excess composted manure.

A major feature of the program is online educational resources, available to help horse owners understand manure management and the manure composting process. The website offers a thorough guide to starting and maintaining a composting system, plus troubleshooting tips to refine current systems. It also has space for horse-owners to advertise their composted manure to gardeners. - *Langley Times*, www.langleytimes.com

• **The West Daviess County (Kent.)** Landfill is starting the first steps of a process to keep sludge from wastewater treatment out of landfills and turning it into something useful. Until a few weeks ago, the landfill had accepted biosolids from the Regional Water Resource Agency and placed it into the landfill with other waste.

Starting this month, the nitrogen-rich sludge will be applied by a specially designed spreader to 20-acre plots at the landfill seeded with winter wheat that will be turned into compost in the spring. The landfarming process keeps the sludge from taking up space in the landfill, which currently loads compost made from leaves and other debris at \$16 for a cubic yard.

The landfill has been developing the

program for the past year but just recently received a permit from the state to begin landfarming. - *Owensboro Messenger-Inquirer*, www.messenger-inquirer.com

• Clean wallboard will now be turned into compost. **Pictou County (N.S.)** Solid Waste has a special container in its construction and demolition site that will allow people to put clean wallboard in the designated area so that it can be later shredded and made part of compost on the site.

The site takes clean wallboard with no paint, screws or nails. It is sized with a shredder, then added to organic material. The wallboard will absorb a lot of the moisture in the organics and will be a good addition to the compost.

This is the third new program that Pictou County Solid Waste has recently started. It has allowed cat litter to be placed in compost bins and Styrofoam to be included in recycling. About 2,500 metric tonnes of clean wallboard are disposed of annually in Nova Scotia. - *The News*, www.ngnews.ca

The Solana Center for Environmental Innovation, in **Encinitas, Calif.**, has kicked off a pilot project in which it is asking the community to do one thing: bring us your scraps.

The call is part of a pilot community composting program in which the Solana Center will turn residential food scrap and "browns" from landscaping companies into compost that residents can then pick up for use.

Residents pay \$50 for the startup kit, which includes a five-gallon bucket and a bag of bokashi bran, which is used to ferment food scraps and break them down for composting use. Once the bucket is full, residents return it to the Solana Center, which takes the fermented food stuff and allows it to cure, and then distributes the finished compost to residents in exchange for their foodstuffs, and the cycle continues. Each drop off costs \$5.

The county's Department of Environmental Health Solid Waste Local Enforcement Agency approved

the pilot in September with limits of 100 cubic yards of food waste from single-day events in addition to the residential returns.

The processing of the food scrap and browns will take place on a 750-square-foot section of the Solana Center's property. - *The Coast News Group*, www.thecoastnews.com

• Despite a year of staff outreach and planning, the **St. Paul** City Council has voted against proposed rules that would restrict restaurants and retailers from offering non-compostable food takeout containers.

City staff and Ramsey County officials have been meeting with business owners and connecting them with vendors of compostable products for nearly 12 months, and some retailers have adopted the practices on their own. But the opposition was organized, and lobbyists for the retail, restaurant and packaging industries met with almost every council member over the past year to plead their case.

A public hearing drew a long line of industry officials, as well as at least one restaurant owner who had voluntarily made the switch to compostables. - *Pioneer Press*, www.twincities.com

• For the past three years, **Northborough, Mass.** town officials have been inundated with complaints about odors, noise, air quality, flies, animals and truck traffic caused by a local composting operation. The operation is permitted through the state Department of Agricultural Resources (DAR), with no provisions for local oversight. Now, the state legislature's Joint Committee on Environment, Natural Resources and Agriculture is looking at legislation that would regulate agricultural composting sites, as it does other types of composting. Nearly 50 Northborough residents showed support for the bill at a recent hearing, saying that living near a compost operation is a quality of life issue. - *MetroWest Daily News*, www.metrowestdailynews.com

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