

SEPTEMBER/OCTOBER 2019

Biomass Magazine's

# Pellet Mill MAGAZINE

## Operation Optimization

Vendors Talk Emission Control,  
Problem-Solving and Saving Money

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**PLUS:**

Navigating the  
Permitting Process

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**Anna Simet**

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## At Your Service

We've all heard the aphorism that pellet product is an art. What I haven't heard so much but found to be true is that facility problem-solving is, too.

As time goes on, it is becoming more and more evident that cookie-cutter approaches to pellet facilities just don't work. Not only because every particular location is different—the site in general, climate, fiber characteristics, etc.—but also because regulations vary, particularly when it comes to air permits. Oftentimes, when a plant is experiencing a major issue with a particular piece of equipment, it's a recurring problem that results in down time and lost money, leaving the producer wondering if it's an issue they're permanently stuck with. Most of the time, it requires a customized solution.

Enter companies like Nestec Inc. and Oxidizers Inc., companies I chatted with about their background and experience. There were many common threads in the conversations, one being that the people on their teams have worked with wood-using companies for decades and witnessed firsthand the evolution of facility design and technology. That includes what works and what doesn't, the sensitivities around each project variation, and the list goes on. Their passion for helping pellet producers permanently fix problems—and of course, prevent them, if involved early on—is evident. In our page-12 spotlight feature, "Expertise via Experience," we dig a little into the emission issues that seems to be surfacing at some of our U.S. facilities, and how these companies can help.

On this topic, we are pleased to include our page-24 contribution, "Strategically Navigating Air Permitting Challenges," by ALL4 LLC's Chuck Doyno. In the piece, Doyno discusses avoiding PSD permitting, stressing the importance of positioning facilities for the future early on. Writes Doyno, "Give your facility more operational freedom and lessen the chance that you will need to revisit air permitting in a few years to alter your production limitation... there is an argument to be made that a strategic air permitting approach may compress the length of time it takes to get an air permit and potentially provide an economic advantage with future facility growth."

The final story I'll mention is Senior Editor Ron Kotrba's page-18 feature, "Loading Up and—Waitin'?" As thorough as Kotrba is, I'll summarize in a nutshell—some truck drivers are finding themselves completing fewer runs due to mandatory downtime required by newer federal regulations, meticulously tracked by electronic logging devices. As fiber hauling is a big part of the pellet production process, there have been some implications, and resulting frustration, to manufacturers either not able to get their fiber when they need it, or having to shell out more money to compete for trucks.

While navigating permitting processes and meeting regulatory and emission requirements can be difficult and daunting, it's evident that the expertise—and experience—needed to position producers for long-term success is out there, and eager to assist.

A handwritten signature in black ink that reads "Anna Simet".

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## Bringing the Heat to Capitol Hill

BY TIM PORTZ

The Pellet Fuels Institute board of directors will soon convene in Washington, D.C., for its fall meeting. The decision to meet on Capitol Hill was a strategic one, made earlier this summer at our annual conference as we discussed and debated the relative value of keeping a close eye on federal policy, as well as opportunities and threats to our business that hinge on decisions made in the beltway. For our members, it has often felt like market-boosting legislation moves forward at a snail's pace, while poorly conceived regulatory burdens can appear quite suddenly. As frustrating as this is, we all agreed that a day spent darkening the doors of our elected representatives to educate them about our businesses, the value we add to the greater forest products industry, and the contribution the industry makes to rural economies was perhaps overdue. Our fall meeting provides a great opportunity to do so. We have largely viewed these visits as an educational tour, helping the representatives unfamiliar with our industry make more sense of who we are and what we do. Since that decision was made, however, the policy landscape has become more dynamic, and we may very well find ourselves asking for support for specific pieces of legislation that have a chance of being in play while we are in town.

Recently, an opportunity to move the Biomass Thermal Utilization Act has presented itself via a clean energy tax package being developed in both the Senate and the House. There are existing investment and production tax credits for technologies like wind, solar and biodiesel that have expired and need some resolution even if they are to enjoy just a one-year extension. These extenders packages present a potential vehicle to reintroduce the BTU Act, or the provisions contained therein. The current thinking is that these extenders packages have bipartisan support, and as a result, stand a decent chance of getting to a vote. For this reason, biomass heating advocates are keen to get the BTU Act in front of the committees responsible for developing these packages. In the House, this work is being done by the Ways and Means Committee, and our outreach work will be focused on the majority (Democratic) members. If an extenders package is going to get done and emerge for a vote, I'm told it will likely all come together in advance of our visits in late October. We'll

engage in targeted outreach with the Ways and Means Committee before our visits, but if an extenders package isn't finished by late October, we'll add this to a list of talking points.

Another piece of legislation that will figure into our discussions on Capitol Hill is the Wood Heater Emissions Reduction Act. The bill, reintroduced in late July by U.S. Sens. Tom Carper, D-Delaware, and Lisa Murkowski, R-Alaska, seeks to replicate the success of the Diesel Emissions Reduction Act in home heating by annually allocating \$75 million for the replacement of old wood stoves with cleaner-burning models, including pellet appliances. This commonsense bill has the support of the Hearth, Patio & Barbecue Association, American Lung Association and Northeast States for Coordinated Air Use Management. If passed, the U.S. EPA would work with states and tribal authorities to build programs to incent people to engage with stove change-out programs. Fully funded, the program could generate 50,000 \$1,500 grants annually. If passed, our work would turn to ensuring that the clean-burning attributes of wood pellet appliances were well-understood by state air regulators, as a reading of the bill itself suggests that state agencies will be tasked with designing and deploying change-out programs. Those familiar with change-out programs know that often, rebate and grant levels vary between fuel types, and it's vital that pellet appliances enjoy parity with other fuel types in any program.

While opinions vary within our membership as to our ability to move the needle in Washington, D.C., our board is excited about the opportunity to educate our elected policymakers about our industry. How the timing of our visit works out with regard to these and other legislative opportunities remains to be seen, but we'll prepare as though we've got an opportunity to finally get some of these long-sought-after, market-expanding policies across the goal line.

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## Common Causes of Off-Spec Product

BY CHRIS WIBERG

Whether you're producing wood pellets for domestic heating markets, export heating markets or overseas power companies, you're likely manufacturing with the intent of hitting certain quality criteria. Monitored parameters often include moisture, ash and calorific value, as well as potentially numerous chemical and physical properties. If all goes as planned, final product verification testing confirms that your product is in spec and life is good. But what happens if your product doesn't hit the intended specifications? Failure to hit the intended quality criteria can result in a variety of issues ranging from unhappy customers to product rejection. When test parameters fall out of spec, it usually results in a significant investigation to identify the source of the problem and bring the product back to spec. Over the years, I have been involved in seemingly countless off-spec product investigations and thought a good topic for this column would be to share what we have found to be common causes of off-spec product.

I'll start with moisture content (MC). For most certification schemes and contracts, the requirement for moisture is high enough that wood pellet producers rarely fail the actual MC criteria. However, MC affects several other parameters—most notably, calorific value, bulk density and durability. Most problems occur when moisture gets too high, but other problems can occur if moisture is too low. The best approach is to identify a MC that works for your production situation, and then try to stay as close to that MC as possible (plus or minus 1 percent from your target generally means you have a good level of control). It is also important to identify a not-to-exceed upper limit for your MC. This is often driven by a minimum calorific value requirement or possibly a minimum bulk density requirement. If you have a minimum calorific value limit and some historical data on your product, you can calculate the upper limit of moisture that would put you below the calorific value limit.

Ash content is probably the next biggest driver of off-spec product. Ash limits are often very low, so if the process and materials aren't kept clean, it is very likely you will fail your ash limit directly. Even if you have a little breathing room with your ash limit, you may find that small increases in ash can result in other issues such as clinkers in a pellet stove or slag in a boiler. When all is clean, most woody biomass materials will perform well. For softwoods, the baseline ash content is around 0.2–0.3%, and for hardwoods, it is around 0.4–0.5%. As your ash content increases above these values,

it indicates you are getting dirt or contaminants into your system, which can cause a problem. If you see ash content above what is expected, then it is advisable to investigate the reason, even if you are still within your ash limit, as it could result in other downstream problems. One specific situation last winter was that fiber was harder to come by for many wood pellet producers. As a result, it became tempting for producers to accept higher-ash materials that would not typically be used. We saw several ash exceedances directly related to a tough fiber supply.

Next is chlorine. Pretty much all the certification schemes and export contracts have limits on chlorine content due to its corrosive nature in combustion systems. Chlorine limits are generally around 200 or 300 ppm (0.02–0.03%). The baseline level of chlorine in most wood fiber is around 50 ppm (0.005%), with little chance of exceeding any limits. Imagine the surprise of a wood pellet producer that receives a test report showing high chlorine when they have made no changes to the fiber supply. As for some examples of how chlorine can find a way your fiber, the biggest problem we come across is salt used to melt ice on roads in the winter. Plows and other snow removal machinery spread various mixtures of sand and salt on roadways to melt snow and ice. As it melts, the cars (and logging trucks) driving on it cause it to become an airborne spray that covers your windshield, as well as your load of logs (or any other uncovered wood materials you may be carrying). Even for closed trucks, the snow that accumulates in the wheel wells and truck body can fall off when on a dump pad, causing a large slug of chlorine contamination into the fiber.

Another situation involved truck drivers that were applying salt to the bed of their truck before filling it with fiber, based on the theory that salt will keep the wet chips from freezing to the bed of the truck. Other sources of chlorine have included sea sprays in coastal regions, using residues from sea water-soaked logs, and in some regions, there are material types that simply contain higher levels of chlorine.

There are many more stories related to numerous other properties, but due to space constraints, I will revisit this topic in a future column.

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## Scientific Case for Wood Bioenergy Grows Stronger

BY SETH GINTHER

The verdict is in—again: Climate change mitigation cannot be achieved without wood bioenergy and sustainable forest management. This is according to the latest report on Climate Change and Land from the Intergovernmental Panel on Climate Change. The report unambiguously calls for “sustainable management of global land resources, including promoting forest management that is aimed at storing carbon while yielding timber, fiber and bioenergy.”

The truth is, the IPCC has long supported the role that bioenergy can play in climate change, both as a low-carbon source of power and heat, but also as a contributor to afforestation, reforestation and conservation. The latest report goes a step further and doubles down on this idea, stating that bioenergy is a critical and necessary component to mitigating climate change and to keeping global warming below 1.5 degrees Celsius (C).

The 2019 report states, “All assessed models and pathways that limit warming to 1.5 degrees or well below 2 degrees require land-based mitigation and land-use change, with most including different combinations of reforestation, afforestation, reduced deforestation, and bioenergy.” These are all areas where the wood bioenergy sector can make positive contributions.

The report further indicates that not only do we need bioenergy, we will need “substantial deployment of bioenergy technologies” to achieve our climate goals. One of those technologies is carbon capture technology with bioenergy (BECCS), deemed a critical component to making significant reductions to carbon emissions. The report supports the biogenic carbon cycle and acknowledges that negative carbon emissions can be achieved by adding carbon capture and storage systems to bioenergy facilities.

With such wide-ranging support from the IPCC for sustainable forestry and bioenergy, it’s hard to understand why many environmental groups continue to attack our industry. Claims that wood bioenergy destroys forests and pumps more carbon into the atmosphere than the coal it displaces persist. This report makes abundantly clear just how out of step these environmental NGOs are with the scientific consensus on wood bioenergy.

The climate issue is rife with disagreement and controversy. Nevertheless, there is near-universal agreement that we should let science dictate policy and guide our debates. It is unfortunate that despite the availability of internationally agreed-upon findings on wood biomass, many ENGOs try to promote their own “science” instead, which lacks seriousness and credibility.

For example, photo collages of clearcutting are branded as reports, and try to pass as evidence the forest is being destroyed. Never mind the fact that forest inventories have doubled since the 1950s and continue to rise. “Research” is produced based on assumptions that rarely occur on the ground—that an entire plot of forest is harvested solely for bioenergy. In reality, wood bioenergy only accounts for about 3 percent of the entire annual harvest in the U.S. Southeast.

Thankfully, we have the IPCC to offer reliable scientific information. Formed more than 30 years ago by the United Nations, it was created as an autonomous body charged with producing reports and providing recommendations based on the latest research from leading scientists. Today, the IPCC is widely viewed as the world’s preeminent authority on climate science.

The latest IPCC report took two years to produce, and represents the consensus of over 100 scientists who studied more than 7,000 research papers. The findings remain consistent with previous IPCC reports in supporting sustainable forestry and wood bioenergy as necessary tools for climate mitigation.

The verdict is in—again—and the consensus on wood bioenergy is even stronger. It’s time to move forward with climate solutions recommended by the world’s foremost experts.

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## Run-to-Failure vs. Periodical Service

BY HOLGER STREETZ

There are diverging opinions when it comes to original equipment manufacturer (OEM) service. The two extremes for operating pelleting equipment are spending money on OEM post-commissioning service and regular maintenance by third parties, or running the equipment to failure. This column compares both scenarios based on real-world examples.

Any fully commissioned, operating pellet plant needs regular maintenance and service. Most companies follow a shutdown procedure to periodically replace wear parts, deal with small or major repairs of equipment and inspect weak spots. Often, the plant's own staff is accompanied by third parties in order to get as many tasks done as possible within the available time. This does not protect from premature failure of equipment, but it helps predict and schedule a planned replacement, rather than sudden and expensive shutdown. However, there are still plants that operate a run-to-failure approach. The reasons reach from ignorance to financial notch.

Post-commissioning service, depending on the brand and pellet mill type, includes periodical change of seals, gear oil, filters and other wear parts. Additionally, the downtime is used to inspect the condition of main bearings, the alignment of shafts and the condition of other critical components for unusual wear and correct alignment.

For example, the total repair costs for having three pellet mills running totalizes to some 105,000 euros (\$116,500) plus another 130,000 euros of investment bottleneck to get back to an optimum operation with scheduled downtimes. The cost comparison for serviced versus run-to-failure operation is based on the assumption that each pellet mill produces four tons per hour at a sales price of 180 (\$198) euros per ton of wood pellets (for the residential heating market).

Annual Cost Per Pellet Mill	Run-to-Failure Plant (Euros)	Periodically Serviced Plant (Euros)
Service expenses, including parts	-	2,500
Repair costs for unexpected breakdowns	11,200	250
Opportunity costs of shutdown per hour	720.00	720
Hours of shutdown	240	12
Cost of loss production	172,800	8,640
<b>Total costs</b>	<b>184,000</b>	<b>11,390</b>
In seven years	1,288,000	79,730

The 240 hours of shutdown are a soft assumption, taking into account that some spare parts take weeks for delivery. The comparison shows that not servicing a pellet mill for years leads to four times higher repair costs. The costs of loss production reach factor 20 and account for the lion's share of total costs.

The table compares a run-to-failure operated wood pellet plant versus a periodically serviced wood pellet plant. These figures show the annual cost per pellet mill and do not include the one pellet mill down for seven years, but assumes the numbers per pellet mill.

In seven years, the run-to-failure operated plant is 1.2 million euros short compared to an annually serviced plant, not taking into account that one press is not working at all. With only two of three mills working for seven years, the loss in revenue adds up to some 5 million-plus euros. This example shows that even in times during which funds are low, it's a bad choice to save on service and maintenance, because it destroys the foundation of production, and thus, turnover. Not only does the run-to-failure approach lack inspections for wear parts that are not easily accessible, but it also increases the risk of sudden breakdowns with long waits for spare parts.

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# Business Briefs

PEOPLE, PRODUCTS & PARTNERSHIPS

## EIA releases monthly densified fuel report

The U.S. Energy Information Administration recently released data showing U.S. manufacturers produced approximately 790,000 tons of densified biomass fuel in May, with sales reaching 620,000 tons.

The data was released as part of the August edition of the EIA's Monthly Densified Biomass Fuel Report, which includes data for April. The EIA collected data from 84 operating manufacturers with a collective production capacity of 11.88 million tons per year and the equivalent of 2,219 full-time employees. Inventories of premium/standard wood pellets increased to 185,326 tons in May, up from 121,127 tons in April. Inventories of utility pellets also increased, from 334,837 tons in April to 418,265 tons in May.

## Andritz appoints new CFO

Andritz AG CFO Mark von Laer will leave the company at the end of 2019. The supervisory board has appointed Norbert Nettesheim as his successor, effective Dec. 1.

Nettesheim has a degree in business administration from the University of Cologne. He has extensive experience in project business and spent the greater part of his career in managerial positions with increasing responsibility at the Voith Group, including the position of commercial director in various group companies, most recently head

of group controlling, accounting and investments at Voith GmbH & Co. KGaA.

## CPM announces CEO transition

CPM Holdings Inc. has announced a transition in executive leadership. Ted Waitman, CPM president and CEO, retired July 1 after more than 40 years with the company. Jeff Drees, who previously served as president and officer for Herff Jones, has been named CPM's new CEO.

Waitman joined CPM in 1978. Before taking the helm as CEO, he served in a variety of roles, including manufacturing engineer, plant manager, worldwide manufacturing manager and general manager. This background in sales, engineering, manufacturing and general management allowed Waitman to transition CPM from a pellet mill equipment company to the aligned process and systems company it is today.

Drees was chosen after a rigorous selection process, and his demonstrated leadership success at multiple organizations set him apart. Prior to Herff Jones, he served as president and officer of Flowserve's industrial product division, where he drove growth and business investment. He spent 12 years at Schneider Electric, working his way up to



Waitman

Drees

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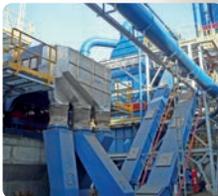
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president of the U.S. organization. Additionally, Drees has experience at Caterpillar Inc. and Honeywell Inc., and served six years in the U.S. Air Force.

To assist with the transition, Waitman will continue serving CPM in an advisory capacity through December 2020.

### **Enviva to develop new deep-water terminal, make plant modifications**

In August, Enviva Holdings LP announced plans to build and operate a deep-water marine terminal at the Port of Pascagoula, Mississippi, as the company has exercised an option with the Jackson County Port Authority to lease property in the Bayou Casotte Harbor.

The Pascagoula terminal will be designed to handle approximately 3 million metric tons of wood pellets annually. It will be capable of receiving product by rail, barge and truck with 90,000 metric tons of on-site storage capacity, and will support Panamax-sized vessels. The facility will utilize state-of-the-art handling equipment and storage infrastructure designed to maintain product quality and safety.

The company plans to invest more than \$60 million in the Pascagoula terminal, which is expected to be complete during the second half of 2020.

Enviva also issued a statement expressing appreciation to the Virginia Department of Environmental Quality for hosting a community

meeting in advance of a public hearing scheduled for September to share information with local residents about Enviva's request to voluntarily increase air quality controls at its Southampton facility in Franklin, Virginia.

In consultation with the Virginia DEQ, Enviva has requested modifications to the air permit for the Southampton plant that will allow the company to install additional air emission control equipment, increase the permitted production volume and increase the permitted percentage of softwood.

### **US pellet exports reach 450,000 tons in July**

The U.S. exported 451,299.1 tons of wood pellets in July, according to data published in early September by the USDA Foreign Agricultural Service. Exports were down when compared to the 694,515.3 tons exported in June and 476,634.8 tons in July 2018.

The U.S. exported wood pellets to approximately 18 countries in July. The U.K. was the top destination with 421,599.4 tons, followed by the French West Indies with 21,814.4 tons, Canada with 3,692.9 tons, Italy with 1,641.5 tons, and the Netherlands with 1,628.2 tons. The value of wood pellet exports reached \$58.54 million in July, down from \$88.139 million in June and \$66.03 million in July. For the first seven months of the year, the U.S. exported 3.62 million tons of wood pellets at a value of \$496.04 million, compared to 3.17 million tons at a value of \$432.56 million for the same period of 2018.

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# EXPERTISE *via* EXPERIENCE

From emissions to moisture to presses, *Pellet Mill Magazine* discusses problem-solving, technology and innovation with polished product and service providers.

BY ANNA SIMET

## Process Prowess

Nestec Inc. President Jim Nester and others at the company have been involved in the wood industry since the early 1990s. Prior to founding Nestec in 1999, the team was involved in pilot testing on wood dryers to determine emissions profiles and how installed equipment was affected, experience that would prove highly valuable when the U.S. wood pellet industry became active. “From that work, we developed a very good understanding of the importance of upstream particulate control ahead of the RTOs (regenerative thermal oxidizers), especially on wood dryers,” Nester says. “Rotary-type dryers are also used in the pellet industry. Understanding the data and how oxidizers are affected allowed for us to quickly modify and properly size and design the equipment to effectively handle all emission sources at the pellet mills, including dryer emissions using a WESP (wet electrostatic precipitator), as well as the type of ceramic heat recovery media and velocities through it. Then, we were able to share with potential customers the expected maintenance related to the WESP and the RTO.”

Another component to that previous experience was use of catalysts in regenerative oxidizers. Nestec was involved in one of the first major emissions projects in the U.S. pellet industry, at Waycross-based Georgia Biomass, according to Nester. “We installed two large regenerative catalytic units on the pellet coolers and hammer mills,” he says. “This equipment has been installed since 2013 with the same initial bed of catalysts, so they’ve saved significantly related to operating costs when compared to a traditional RTO. We also developed a unique process ducting design to minimize particulate drop-out and reduce fire risk, including installation of fire detection and suppression systems in the ductwork. All the controls that relate to monitoring and reacting to those systems are something with which we have a lot of experience.”

In the midst of increased scrutiny by NGOs, regulators and the public, some plants are finding themselves in the unforeseen position of being unable to meet their state permit emission levels, and are having to backtrack—that’s where Nestec’s experience comes into play. “We have a very good handle on this and

how to help them quickly get back into compliance,” Nester says.

And in the case of those currently being built, getting Nestec involved early on can prevent future problems. “If we’re involved when the permits are being put together, we can provide good data, process flow drawings of similar equipment—we give that full-service engineering support throughout the project.”

On recent innovations, Nester says Nestec has a patent-pending electric actuator design for the main poppet valve system, and most recently successfully designed their standard valve system to replace rotary valve systems that are failing as a result of particulate buildup. “We’re hearing from plants shutting down or tripping out on alarms because of the rotary valves sticking an excessive amount of times a year after they’ve been in for two or three years, getting gummed up with particulate,” he says. “We have a solution to fix, upgrade and eliminate these nuisance shut downs.”



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NESTEC is presently providing air emission control systems for pellet plants in Alabama, Georgia, and two new systems for plants in Louisiana and Mississippi. Several alternatives with associated benefits were offered for two plants. Both selected NESTEC’s unique total system approach which is **saving each plant more than \$800,000** in capital expense as well as still providing a reduction in operating cost.

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## Diverse Problem-Solving

In the emissions abatement industry for nearly 30 years, Keith Lambert cofounded Oxidizers Inc. in 2013, a company providing service and preventative maintenance, repair and rebuild of thermal oxidizers—and that’s any oxidizer, emphasizes Lambert. “We aren’t OEM-specific—we work on everything, in industries with diverse process streams, so we are familiar with what solutions work best,” he says. “Our diverse portfolio of clients are largely ones who keep experiencing the same problems and keep getting the same answers, so we come in as a third party and figure out exactly what’s going on, and provide solutions to resolve their problems. We offer free online inspections, which is invaluable to begin the diagnosis process.”

As regulations continue to tighten, Oxidizers’ bread and butter is specialized solutions for each customer’s unique process challenge. “In this space, there are issues ranging from chemical and alkali attack, to particulate—a

big problem—and of course, general wear and tear,” Lambert says. “Though some OEMs sell specialized systems in particular industry sectors, oftentimes, they sell prepackaged systems regardless of the industry, and that can be problematic. There’s no one-size-fits-all solution to solve every process problem, as it will be different from one customer to another. Facilities have to look at their particular process, and from that vantage point, work in concert with a service provider to determine the best solution, taking into consideration equipment design, feedstock and production rates. In the end, it’s imperative that the backend abatement doesn’t become an anchor to the frontend production. For OEMs, this presents a challenge, making sure that you’re actually designing for the process, rather than your stock design.

Oxidizers has stepped into the arena of system design and supply, a new addition to its offerings. “We built our company in such a way where we flipped the typical model, sales followed by service, to starting on the service side rebuilding a range of systems, and then backed into the OEM side. Having this knowl-

edge set is imperative to the proper design of systems.”

Getting involved in a project early on allows us to determine the need for proper upstream technology if required, Keith points out. “Understanding the physical and chemical parameters associated with the process you have—what type of particulate, alkali attack, silicas, everything plays a role in what hits the RTO and determines the life, or limited life, of the RTO, which should last 25 to 30 years.”

So often, Lambert adds, customers feel isolated and alone, getting the same answers for repeat failures. “I’ve sat in meetings with customers who look like they are in despair. They are in a situation where their abatement equipment is sucking the life out of them and they don’t know what to do. Our goal at Oxidizers is to break through the monotony and frustration that comes from encountering the same issue time and time again, by diagnosing and coming up with customized solutions to help our customers move forward, and experience longevity with their RTOs.”



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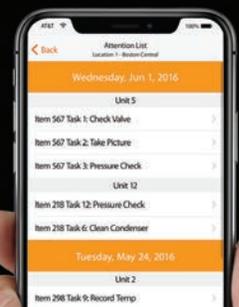
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## Managing Moisture

In 2003, John Fordham and two fellow engineers got together to start MoistTech in Sarasota, Florida, where they decided to take near-infrared (NIR) technology to the next level. “Recognizing such products already exist, our goal was to create not just another NIR moisture gauge, but to analyze the deficiencies of existing gauges and incorporate customer feedback and new technology available together with our extensive knowledge into a superior sensor design,” says MoistTech President Adrian Fordham.

Today, MoistTech manufactures noncontact online sensors able to perform hundreds of measurements per second for thousands of applications. “Most other methods are in contact with the product, which causes the sensors to wear out,” Fordham explains. “Each sensor is customized to the application.”

When it comes to the wood industry, manufacturing wood pellets requires the refining, drying and blending of wood waste prior

to entering the pellet press. For a consistent and on-spec product, feedstock quality, moisture content and consistency matters. “By integrating MoistTech’s IR3000 into the process, users can monitor 100 percent of their product quality, instantly and consistently,” Fordham explains, which often results in significant energy savings in cases that overdrying has been an issue.

Most chip purchasers weigh wet chips but pay chip suppliers based on dry chips delivered, Fordham continues, and to calculate the bone-dry tonnage delivered, a representative chip moisture content is applied to the wet weight of chips delivered to the mill. “MoistTech sensors can be installed at just about every location of incoming material feed—it’s not limited to truck dumpers, stackers and reclaimers,” he says. “Incoming wood from yard storage can vary largely based on the supplier, weather and season to name a few, so installing the IR3000 above the conveyed material, plant controls can monitor this moisture content instantly and accurately.”

Measuring and controlling moisture can also reduce higher transportation costs due to shipping excess water, and can prevent products from freezing during shipping and transportation. “Testing moisture content throughout the process also provides manufacturers cost savings in energy and fuel costs, as well as having less product waste,” Fordham says. “With continuous NIR online moisture testing, manufacturers can monitor moisture levels to precisely control their dryers to optimize the production process with minimum energy requirements. Reduce downtime, start-up time and waste and energy costs by monitoring the moisture levels at every stage of the process.”

Unlike other instrumentation of this type, some of the unique features of the IR3000—also ideal for installations on chain and screw conveyors—include that it can monitor product even with small gaps in product flow, and is unaffected by ambient light without impacting the accuracy. Fordham adds, “Anywhere that moisture plays a vital role, our sensors can be used.”



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## Pellet Mill Master

For the better part of a decade, LM Machinery and Equipment LLC has been serving North American pellet mills—to date, nearly two dozen in the U.S. alone. The company serves as the exclusive North American distributor of La Meccanica s.r.l. di Reffo's industrial machinery and equipment, a company founded in 1961 in Cittadella, Italy. The family-owned company is dedicated to producing technologically advanced, robust equipment of the highest standards, explains LM Machinery and Equipment President Wladimiro Labeikovsky, providing pellets mills for wood, plastic, animal feed, fertilizer and biomass processing.

But LM's presence in the wood pellet industry extends beyond its role as an equipment distributor, with a service center in Jacksonville, Florida, that provides on-call service and repair—including refurbishment of dies with state-of-the-art CNC (computer numerical control) machines—not only to its own pellet mills, but also every other major brand of pellet mill, as well as dies, rollers and spare parts.

"In addition, along with La Meccanica's team, we provide hammer mills, pellet coolers, screens—entire pellet product plant proposals from design, engineering or re-engineering, and construction," Labeikovsky says.

On what LM commonly sees as problematic in the pellet plant operations, Wladimiro says it's the effects of using low-quality fiber. "The quality of fiber has a big impact on the lifespan of consumable parts like dies and roller shells," he says. "They may not have any other options, but poor-quality fuel is a big reason for early failure, and some people complain about the equipment, not realizing that it's the fiber they're using. The fiber quality affects ash content, and ashes are very abrasive."

The company prides itself on customer training, equipping them with the capabilities to properly, efficiently and safely operate equipment. This strategy includes assistance in testing and start-up of equipment, as well as additional periodical refresher courses on-site



or in LM's service center. "We will drop in every so often to see how equipment is performing and being operated," he says.

Wladimiro stands by LM Machinery's commitment to serve customers in a reliable, timely manner and get them what they need as soon as possible, always putting their interests first. "One thing I will tell our customers in the wood pellet industry is that we're in it for the long haul—we're here to stay."



# la meccanica



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# LOADED UP AND—WAITIN'?

Instead of truckin', some drivers find themselves involuntarily sitting idle due to mandatory downtime required by federal "hours of service" regulations, meticulously tracked by electronic logging devices, but the Trump administration is proposing to ease up on the rules.

BY RON KOTRBA

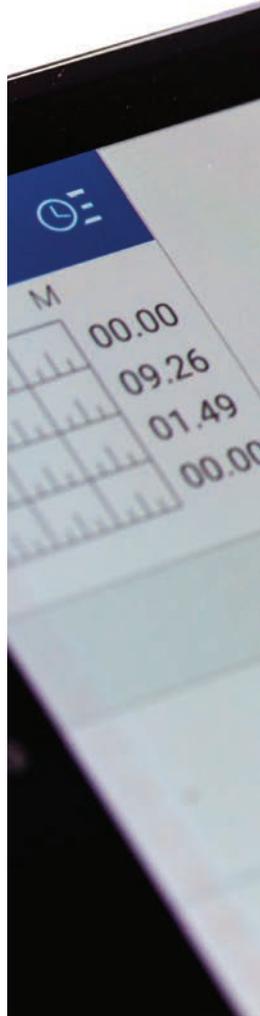
Most people would agree that safe roads, satisfied truck-drivers and efficient commerce are desirable, but balancing these seemingly universal values on a spectrum somewhere between lawless exploitation and burdensome overregulation is not easy. The first hours of service (HOS) regulations were enforced by the U.S. federal government in 1938. HOS rules are intended to protect commercial motor vehicle drivers from fatigue, as well as the general public from the obvious dangers of a tired driver hauling 80,000 pounds at high speeds. Today, HOS regulations are implemented, enforced and overseen by the Federal Motor Carrier Safety Administration, a division of the U.S. Department of Transportation. HOS regulations cover areas such as maximum driving time in a given period, on- and off-duty requirements, duty cycles, weekly maximums, break requirements and more.

Over the years, the HOS rules have evolved as a result of a growing economy, changing driving conditions and influence from special interest lobbyists. The most recent HOS rule changes went into effect in 2012 and, for some provisions, 2013. While there are slight differences in the regulations for passenger- and property-carrying drivers, the latter includes:

- An 11-hour driving limit: Drivers may drive a maximum of 11 hours after 10 consecutive hours off duty.
- A 14-hour limit: Drivers may not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period.
- Rest breaks: Drivers may drive only if eight hours or less have passed since the end of the driver's last off-duty or sleeper berth period of at least 30 minutes. This does not apply to drivers using short-haul exceptions. Mandatory "in attendance" time may be included in the break if no other duties are performed.
- 60/70-hour limit: Drivers may not drive after 60/70 hours on duty in seven/eight consecutive days. A driver may restart a seven/eight consecutive-day period after taking 34 or more consecutive hours off duty. At the time of passage (see below), this included two periods from 1 a.m. to 5 a.m. home terminal time, and may only be used once per week, or 168 hours, measured from the beginning of the previous restart.
- Sleeper berth provision: Drivers using the sleeper berth provision must take at least eight consecutive hours in the sleeper berth, plus a separate two consecutive hours either in the sleeper berth, off duty, or any combination of the two.

In December 2014, an appropriations bill signed into law suspended enforcement of the 34-hour restart pending results of a study, which ultimately restored the rule and its enforcement. However, the requirement for two off-duty periods of 1:00 a.m. to 5:00 a.m. in section 395.3(c) of the FMCSA's HOS rules are no longer enforced, nor is the once-per-week limit on use of the restart in 395.3(d).

"The hours-of-service regulations were put into place decades ago and have changed over the course of the past few decades in response to increased fatigue-related accidents," Sam Loesche, a legislative representative for the International Brotherhood of Teamsters, tells *Pellet Mill Magazine*. The Teamsters is a labor union serving truck-drivers and many other occupations. "It's a concrete national rule that dictates how long drivers can work each day, because fatigue is problematic—it's the leading cause of any accident, whether it involves four-wheel cars or tractor trailers," he says. "The federal government worked with us and others to dictate how long drivers can work each day and each week. Over a decade or





two, these rules played out through courts, internal rulemaking in DOT, and through congressional action. Unfortunately, that is when we saw changes in the opposite direction of safety, when special interests tapped Congress to make changes to things like the 1 a.m. to 5 a.m. rest period. Twice a week, drivers had to sleep during the nighttime. It's important for circadian rhythm to get back on their natural clock. Those rules were rescinded by congressional decree, and we've been in a standstill for the past five years with what the HOS regulations are."

Bob DeLullo has been in the trucking business since 1990. He started DeLullo Trucking Corp. in St. Marys, Pennsylvania, as a buy-sell operation that contracts with sawmills on residuals and resells the material to various markets. In the mid-2000s, DeLullo launched Woodbed Corp., a process-

ing yard where DeLullo and his team can grind, screen and chip wood to add value to the material the company hauls. DeLullo Trucking services the Pittsford, New York-based Biomaxx Inc. by selling the wood pellet producer feedstock and transporting pellets from the plant. DeLullo says some of the HOS regulations are impeding commerce.

"The government is getting in the way of the free market," DeLullo says. "By all means, we adhere to the regulations and promote safety, and we understand the role insurance plays. And if your biological clock tells you you're tired, then get off the road. But for government to tell you to take a break, it's absurd. It gets in the way of what we're trying to do. I respect the law and law enforcement officers, but I can't understand how we got in the situation where, all of a sudden, the cops, with their badges and

guns, are looking for guys with lunch buckets trying to earn an honest living."

In December 2017, FMCSA began requiring truckdrivers to log their hours of service in electronic logging devices (ELDs) instead of paper logbooks. ELDs greatly reduce human error and the opportunity for drivers to "fudge the numbers" on their records-of-duty service (RODS) logs. An ELD synchronizes with a vehicle's engine to automatically record a driver's off-duty and on-duty times, and securely transfers HOS data to safety officials. While ELDs were required as of December 2017, those who have been using automatic onboard recording devices (AOBRDs)—essentially earlier models of ELDs that display less information—have until Dec. 16, 2019, to move their systems over to ELDs.

Loesche says ELDs help bring the trucking industry into the 21st Century.

## « Transportation

“ELDs are more secure, impossible to cheat on, and help transform the industry to be much more law-abiding and above the fold,” he says. DeLullo, however, sees this differently. “It gives them an avenue for a ‘gotcha’-type method,” he says. “It’s just another avenue to pinch you. It involves a fine, but most importantly what it involves is the company’s CSA score.” CSA stands for compliance, safety and accountability. CSA scores are the primary means by which the FMCSA identifies high-risk motor carriers and are compiled using data gathered from roadside inspections, crash reports, investigation results and registration details. “We work hard to have a perfect score,” DeLullo says, adding that if state troopers plug into the ELD and find violations—no matter how minor—this could jeopardize the driver’s career, the company’s reputation and more. “The next thing you know, you can find yourself in court at a jury trial where they throw these things at us,” DeLullo says. “To the layman juror who knows nothing about trucking, we’re dead in the water over incidental [nonsense]. This all can certainly work against you as a trucking company and a driver. By the way, I’m not against ELDs for over-the-road (OTR) truckdrivers. I am, however, against the idea of putting them in trucks delivering bread across town.”

As with most regulations, there are exceptions to the ELD and HOS rules. The ELD rule applies to those who are required to keep RODS under the HOS regulations. Drivers who use the time card exception and don’t keep paper RODS are not required to use ELDs. Drivers that keep RODS no more than eight days during any 30-day period; “driveaway-towaway” drivers, or those transporting a vehicle for sale, lease or repair, provided the vehicle driven is part of the shipment or the vehicle being transported is a motorhome or recreational vehicle trailer; and drivers of vehicles made before 2000 may keep paper RODS.

HOS exemptions include haulers of agricultural commodities during planting and harvesting times “as determined by the state” within a 150 air-mile radius from the source of the commodities. The exception also applies to transporting farm supplies for agricultural purposes. Once a driver goes beyond the 150 air-mile radius, however, the HOS regulations apply and, thus, an ELD must be used—unless they are exempt from the ELD rule. Time spent within the 150 air-mile radius does not count toward daily and weekly limits though. If ag haulers do not operate outside of the 150 air-mile radius for more than eight days during any 30-day period, then they are not required to use ELDs either, provided they prepare

paper logs on those days when they are not exempt from the HOS rules.

### Proposed HOS Changes

In mid-August, the FMCSA published a notice of proposed rulemaking to modify the HOS rules, part of the Trump administration’s quest to relax regulations across the board. Transportation Secretary Elaine Chao said the proposal gives commercial drivers “more flexibility while maintaining the safety limits on driving time.” In 2018, FMCSA sought public input on portions of the HOS rules “to alleviate unnecessary burdens placed on drivers while maintaining safety on our nation’s highways and roads.” Based on more than 5,200 comments received, the FMCSA has proposed five key revisions to the HOS rules.

The first proposal is to “increase safety and flexibility for the 30-minute break rule by tying the break requirement to eight hours of driving time without an interruption for at least 30 minutes and allowing the break to be satisfied by a driver using on duty, not driving status, rather than off duty.” DeLullo and his 24-year-old son Sam, who is head of sales and general manager of DeLullo Trucking, are in favor of this proposal, saying it puts them back into the position before the Obama administration “threw the 30-minute break” re-

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quirement at them. “In our line of work, we have 20 trucks—18 day-cabs and two bunk trunks,” Sam tells *Pellet Mill Magazine*. “We’re grouped with OTR guys. We don’t run with them. We run five to 10 trips a day, in and out all day long. Between six and eight hours, they want you to park. You’ve got to stop and do nothing. Now, if you sit while being unloaded, you can’t count that as the half-hour break.” In a press release issued by the Teamsters, Jim Hoffa, president of the union, said, “The Teamsters are ... concerned about language changing the 30-minute rest break.”

The second proposal would “modify the sleeper-berth exception to allow drivers to split their required 10 hours off duty into two periods: One period of at least seven consecutive hours in the sleeper berth and the other period of not less than two consecutive hours, either off duty or in the sleeper berth. Neither period would count against the driver’s 14-hour driving window.” DeLullo says this is a good change. “It’s going back to the old way—same as the change to the 30-minute break,” he says. “They need to reverse some of these rules and get back to the old way. It’s a biological thing for the driver. If you’re running Florida to Texas, it doesn’t bind you to sit in the truck for 10 hours. If you have to sit for 10 hours, let these guys split their time,



Loesche

take a break then get going. They can figure this out all by themselves. Some don’t need 10 hours off.”

FMCSA’s third proposal would “allow one off-duty break of at least 30 minutes, but not more than three hours, that would pause a truckdriver’s 14-hour driving window, provided the driver takes 10 consecutive hours off-duty at the end of the work shift.” What this has done since ELDs went into effect and “since the federal government has been overregulating us,” DeLullo says, “is it has made this a ‘shotgun start.’ The clock goes off at 6 a.m., and with the

current laws, whether you encounter bad roads, accidents or fog, the clock doesn’t stop. To make all this work, speed limits have increased to compensate. It’s truly life in the fast lane. You can’t stop to take a break—the clock keeps running. And it’s sped all traffic up. In my mind, not only is that unsafe, but you’re burning more fuel doing it. I’ll never understand what their thinking is. Our trucks stop at 70 miles per hour (mph). We understand what all this means, so as a company we used to pay by the trip or mile, but because of that, we now pay everyone by the hour and our



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safety culture has improved tremendously around here. We understand the cost of an accident—that's the last thing we want is a fatality, lawsuit, or having one of our quarter-million-dollar trucks banged up. It gets expensive. This proposal will allow us to stop the clock, slow down, take a break and catch our breath—it's very important we get this and lose the mentality of the shotgun start. Now, our guys just gotta keep rolling." The Teamsters Union, however, is concerned about the ability of drivers to "press the pause button" on their hours of service clock, according to Hoffa.

DeLullo mentions speed limits and how, across the U.S., they have been ratcheted up over the past 10 years in order to allow truckers the ability to complete their jobs amidst all of the additional regulations. Interestingly, in June, U.S. Sens. Johnny Isakson, R-Georgia, and Chris Coons, D-Delaware, introduced legislation to codify a pending "speed limiter" rule that has been

tied up in red tape for 10 years. The "Cullum Owings Large Truck Safe Operating Speed Act of 2019" (S.2033) would require all new commercial trucks with a gross weight of 26,001 pounds or more to be equipped with speed-limiting devices, which must be set to a maximum speed of 65 mph and be used at all times while in operation. The maximum speed requirement would also be extended to existing trucks that already have the technology installed. Trucks without speed limiters will not be forced to retroactively install the technology.

"I'd hate to think that the regulations mean drivers have to go faster to get their jobs done," says Darren Winchester, plant manager for Indeck Ladysmith, a 90,000-ton pellet mill in Wisconsin. "Slow and steady wins the race. There's merit to having a maximum speed of 65 mph, but if they're also trying to fight a window of time because of the regulations and reduced speed limits on top of it, these are just some of



DeLullo Trucking Corp. has a fleet of 20 trucks, only two of which have sleeper berths.  
PHOTO: DELULLO TRUCKING CORP.

the things to consider when weighing such proposals." Safety goes both ways, however, so if a truck is hauling 80,000 pounds and going too fast, this might be an issue, but if traffic is moving fast and vehicles come upon a truck moving too slowly, "this can create its own problems," Winchester says. "Neither is really a good scenario."

The fourth proposal by FMCSA to relax the HOS regulations seeks "to modify the adverse driving conditions exception by extending by two hours the maximum window during which driving is permitted." Sam recalls a bad accident on I-80 this summer that backed up traffic for miles, which left trucks sitting on the side of the road for hours. "Say you came up on the accident at seven hours and you sat in traffic for an hour," he says. "You're ELD starts flashing red so you have to pull off the side of the road, shut the truck down and can't move, otherwise the ELD will hold that violation for seven days for any local officer to plug into and see."

Winchester says Indeck Ladysmith averaged 16 trucks a day coming into the plant January through August, just to deliver raw materials. "We've had trucks that roll in here on occasion, and they can't go anywhere because they're out of hours," he tells *Pellet Mill Magazine*. "Sometimes they park and can't move their truck, even when they're right in the way."

The fifth proposed modification to HOS regulations is perhaps the most contentious for the Teamsters, but one of the most prized by DeLullo and Sam. The agency proposes a "change to the short-haul exception available to certain commercial drivers by lengthening the drivers' maximum on-duty period from 12 to



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14 hours and extending the distance limit within which the driver may operate from 100 air-miles to 150 air-miles.”

“In an effort to increase so-called ‘flexibility’ for trucking companies, the FMCSA is abandoning safety and allowing drivers to push themselves to the limit even further,” Hoffa said in the Teamsters’ August press release. “Changes for short-haul truckers, for example, would extend their days from 12 to 14 hours on the job. That means a longer and more exhausting workday for tens of thousands of American workers.” Loesche says the short-haul exemptions, especially for drivers in such industries as waste hauling and package delivery, mean they don’t have to keep electronic logs nor be provided 30-minute rests. “Now, in addition to those, the new proposal seeks to extend their workday from 12 to 14 hours,” he says. “All that does is tack two more hours onto a driver that is already fatigued. Short-haul driving is incredibly demanding. They are in and out of the truck all day long, using hand carts, jacks, moving pallets. We are more open to other changes, such as the adverse weather and split sleeper berth provisions, but we remain strongly opposed to extending short-haul operators’ days from 12 to 14 hours.”

DeLullo asks, “Why is a so-called short-haul driver allowed to run 12 hours now, and OTR drivers are allowed to run 14 hours? Who’s more apt to get tired? Someone driving nine hours steady or someone who’s in and out of the truck? Who’s more likely to fall asleep on the job? They need to bring both to 14 hours.” He adds that boosting the air-miles from 100 to 150 for short-haul drivers must also be implemented. “I think it should be even higher,” he says. Sam adds this will allow his drivers to haul more loads per day in a 14-hour period.

Beyond HOS and ELD regulations, there is a spiderweb of additional federal and state regulations to which truckers must adhere. In California, for instance, there are major issues playing out revolving around misclassification and state vs. federal laws.

In late December, FMCSA announced that carriers are not required to comply with California’s meal and rest break requirements, which require employers to provide meal breaks every five hours and 10-minute rest breaks for every four hours worked.

According to FMCSA, federal HOS requirements trump California’s more stringent regulations.

There has also been a “monster” problem in California, as Loesche describes it, with employers misclassifying owner-operators as independent contractors when they should be considered company employees. “The state of California has taken incredible, proactive steps to address one of the biggest diseases plaguing our industry, which is drivers who are actual employees but are being misclassified as contractors to save the employer a few bucks to the detriment of the drivers,” Loesche says. “They’re being treated as second-class workers and there’s been an uprising to say they are no longer willing to take this. What California is doing to prevent this situation moving forward is terrific for drivers.”

Trucking is already one of the nation’s most dangerous jobs, according to Hoffa. “We shouldn’t be sacrificing the health and

safety of drivers just to pad the profits of their big business bosses,” he said. Winchester says he understands safety is the reason these rules are there to begin with. “They don’t want people getting hurt, it’s no different in our plant,” he says. “But it’s tough to control certain elements with policy and regulations. The shoe doesn’t always fit all that well in every scenario. Anything that can be done to improve the safety of our drivers and folks on the road is in all our best interests. But there comes a point when you have to ask, are they really making it safer or just more economically challenging? If it just jacks prices up, then it hurts folks like us. Freight rates are already so crazy, it makes business more difficult.”

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# STRATEGICALLY NAVIGATING AIR PERMITTING CHALLENGES

BY CHUCK DOYNO

In a world where time is money, air quality permitting is often the lynchpin in determining when construction can begin on a project. Depending on the type of air permit you are applying for or the level of public interest, the length of time from submittal of an air permit application to receipt of a final permit can range from three months to longer than 12 months.

Based on our experience and observations over the past few years, both public and regulatory interest in the biomass industry (specifically the wood pellet industry) is at an all-time high. In many cases, this increased scrutiny has caused significant delays in obtaining requisite air permits. This added level of scrutiny has led to a reactive permitting approach, where facilities agree to more restrictive operating limits like production or wood mix splits. While this approach may help to

expedite air permit issuance, long-term it hampers operational flexibility and may require a much more involved air permitting process to remove those original restrictions. A primary goal for plant management is to increase efficiency, or make more product with the same or less raw materials. Agreeing to operating or production limits as part of the permitting process can limit the ability of facilities to take advantage of these increases in efficiency. And let's not forget the ongoing compliance worries that come along with a facility that continually flirts with exceeding a production limit. It is a sometimes-daily battle to ensure that your facility will not violate the terms of your air permit.

I suggest an alternative: Play the long game and use the air permitting process strategically to position your facility for the future. Spend a little more time and money on

the front-end and save yourself the headache of navigating under a production limitation. Give your facility more operational freedom and lessen the chance that you will need to revisit air permitting in a few years to alter your production limitation. In fact, there is an argument to be made that a strategic air permitting approach may compress the length of time it takes to get an air permit and potentially provide an economic advantage with future facility growth (I'll explain below).

What does strategic air permitting actually mean? Let's look at a hypothetical example. Say I am looking to build a new wood pellet facility, and I want to build this facility as expeditiously as possible in the most economical way possible. My primary pollutant of concern is likely volatile organic compounds (VOC). I know from an air permitting perspective, I want to avoid federal and state Prevention of

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## Permitting »

Significant Deterioration (PSD) permitting because it will significantly complicate the air permitting process and schedule. PSD permitting could involve air quality modeling, require the installation of add-on control technology like a scrubber or thermal oxidizer, and will likely delay my timeline for construction.

To avoid PSD permitting, we need to limit the VOC emissions from our new facility to less than 250 tons per year. In order to keep the permit process moving, we commit to a production limit of 75,000 tons of pellets per year, an annual average softwood/hardwood mix of 75/25, and an emissions rate (pounds per ton) for each source to ensure that our actual emissions remain below 250 tons per year. Our permit application has a significant amount of interest from the public and environmental groups, which leads to a heavy comment and response period, public hearings, and delays the issuance of our permit by months.

If we rewind and approach the permitting strategically, how much production can our local wood basket support? Possibly 200,000 tons of wood pellets per year, the majority of which would be made up of softwood. How do I need to design my facility to operate at 200,000 tons per year? I can look at technology improvements on my dryer to reduce VOC emissions or maybe even look at an add-on control technology. The big difference between add-on control technologies in this scenario and PSD permitting is that the type of control technology will not be mandated by the permitting process. I have the flexibility to choose an option that works best for my facility from both a financial and technological standpoint. I understand that add-on controls will add to the cost of construction and may add operational challenges, but let's look at some of the benefits:

- Increased annual production by 125,000 tons of pellets per year.
- VOC emissions are below the 250 tons per year threshold to avoid being classified as a major source under PSD permitting regulations.
- No air quality modeling for the National Ambient Air Quality Standards (NAAQS).
- Permit timing could be dramatically reduced.
- Avoid the complications of future permitting for increased production.
- Improved public and regulator perception.

The forgotten element with taking a more strategic approach is that it could ultimately

result in receiving a permit faster. As I stated before, the environmental permitting landscape is shifting. Public access to data is at an all-time high and U.S. EPA is continuing to emphasize its commitment to transparency. For the regulated community, we can continue to expect increased public involvement in the permitting process, and the timing of permit issuance may continue to increase. But if you can anticipate the public's concerns and address them as part of your permit application (e.g., with an add-on control technology), you may be able to significantly reduce the amount of time it takes to receive a permit.

This same thought process can apply to existing facilities as well. How can I use environmental permitting as a strategic advantage rather than a hinderance? Talk with your plant operators and make sure you have a thorough understanding of your equipment and operations. Where might there be opportunities to reduce emissions that could ultimately lead to increased production? Once you have identified environmental opportunities, talk with facility management. Educate them on the air permitting obligations and encourage a collaborative environment to put your facility in the best long-term strategic position to take advantage of efficiency improvements and operate at a production rate that you want. Do not wait until your operational limits have already become a problem. Instead, be proactive. This type of mindset will allow you to react quickly without potentially needing to modify your air permit in an increasingly competitive market.

Approaching air permitting strategically is certainly not without its challenges. As I mentioned previously, add-on controls bring their own challenges to the table. Add-on control technologies could trade one pollutant of concern for another (nitrogen oxides for VOC as an example for thermal oxidizers), so it will require additional consideration to determine the path forward that best suits your long-term vision for the operation of your facility. Control technologies may increase your costs and the time spent engineering and designing the facility. But if it allows you the operational freedom to produce more, it may just be worth the extra challenge.

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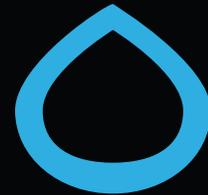
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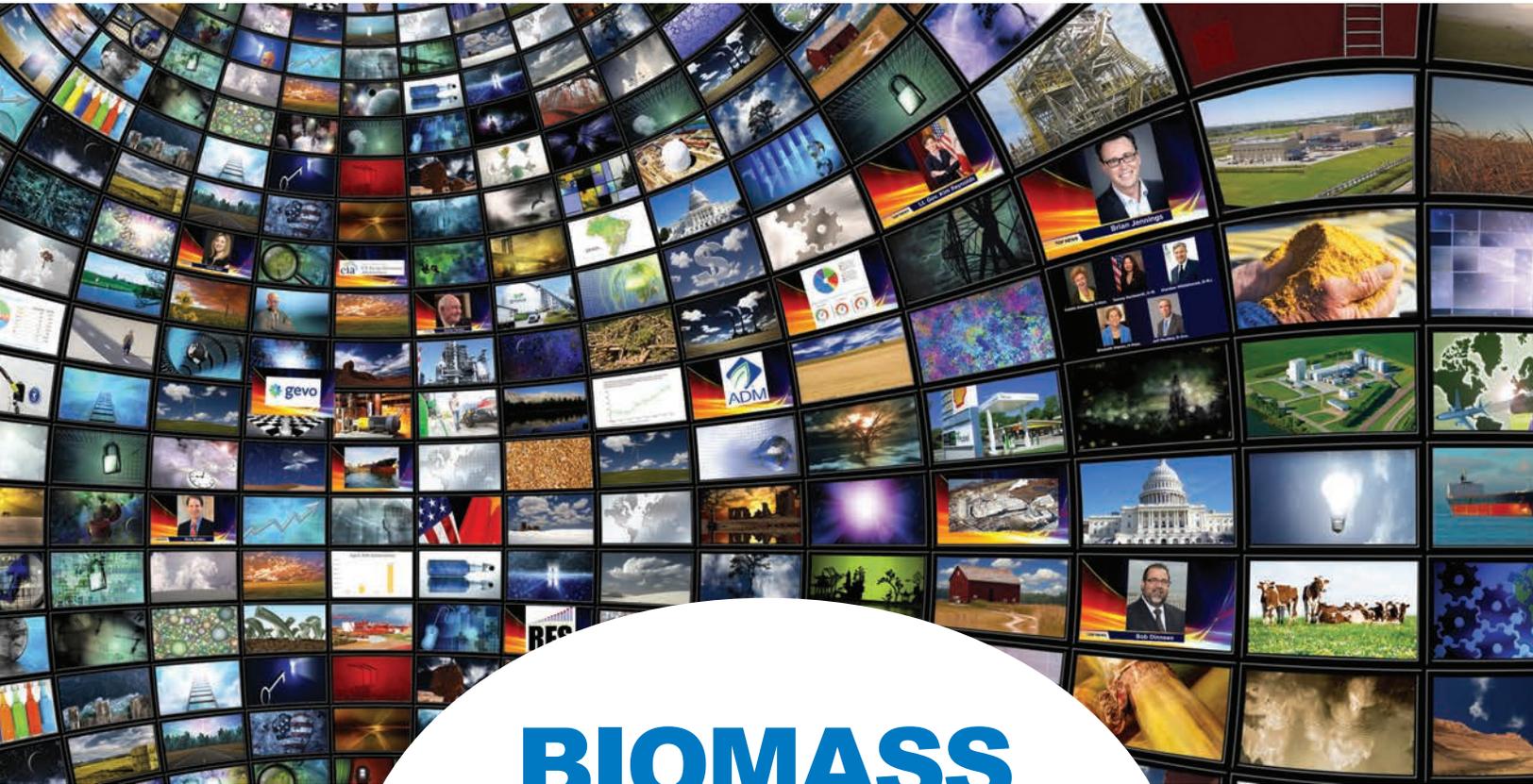
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