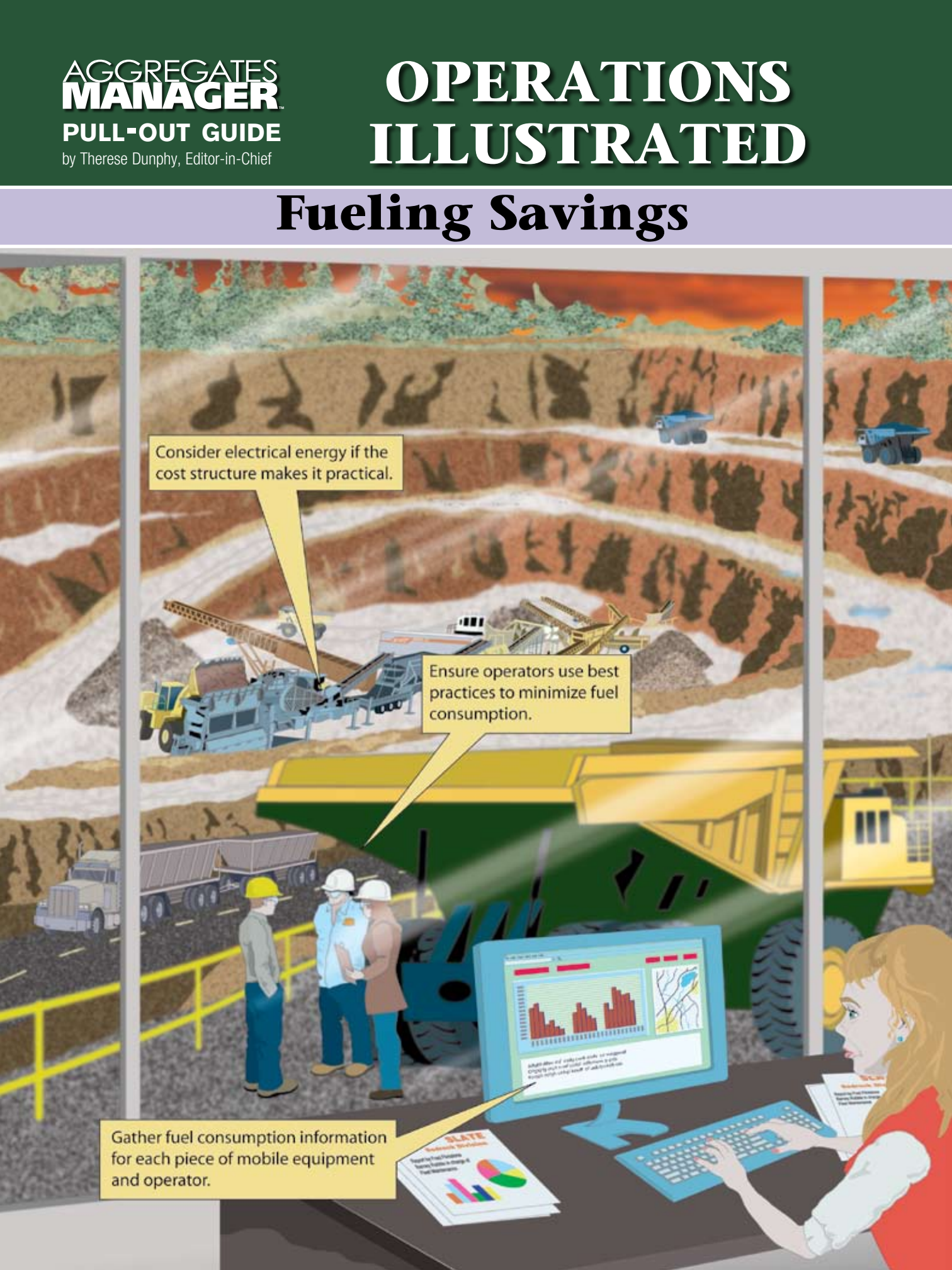


Fueling Savings



Consider electrical energy if the cost structure makes it practical.

Ensure operators use best practices to minimize fuel consumption.

Gather fuel consumption information for each piece of mobile equipment and operator.



AGGREGATES MANAGER

OPERATIONS ILLUSTRATED

Tips and Tricks for Reducing Fuel Consumption

OUR EXPERTS

Fueling Savings

Aggregates managers can reduce fuel consumption in numerous ways throughout their operations. A few of these opportunities include purchasing fuel at the best available price, training drivers to use best practices behind the wheel, and implementing a thorough preventive maintenance regimen for mobile equipment.

But before beginning any fuel-reduction strategy, be sure to gather metrics on current equipment performance. Optimally, gather data based on each piece of equipment, shift, and driver to track the impact of each variable. Once a baseline for performance is established, any change can be measured against that baseline to quantify its impact.

To minimize fuel costs, begin with the procurement process. During the last year, diesel fuel prices have fluctuated across a broad spectrum of increases and decreases. Therefore, having the right strategy is everything when it comes to purchasing fuel at the best price.

"Budgets are very important. We recommend that people only fix the price of fuel if they're trying to control budgets," says Ryan Mossman, vice president and general manager of fuel management for Houston-based FuelQuest. "Aggregates companies aren't in the business of trading to make money on fuel, so they should be trying to control operating expenses." As prices drop, Mossman recommends that producers keep inventories low — but not so low as to risk running out — in order to take advantage of the best daily pricing opportunities.

When it comes to reducing the consumption of fuel, driver training is a wise investment. The person behind the wheel can have the single biggest impact on fuel consumption, according to nu-




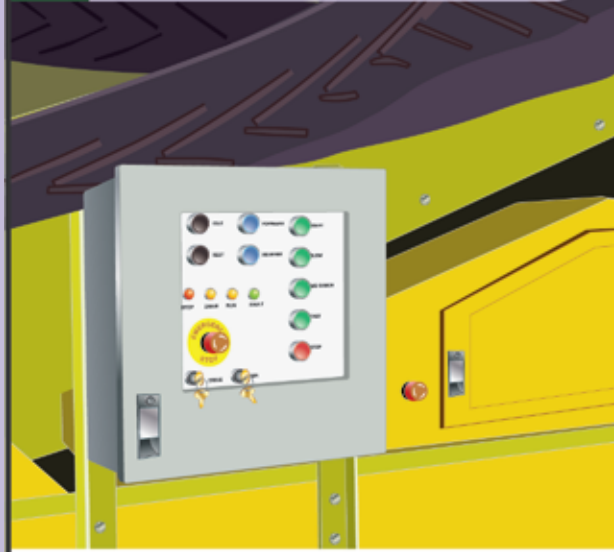

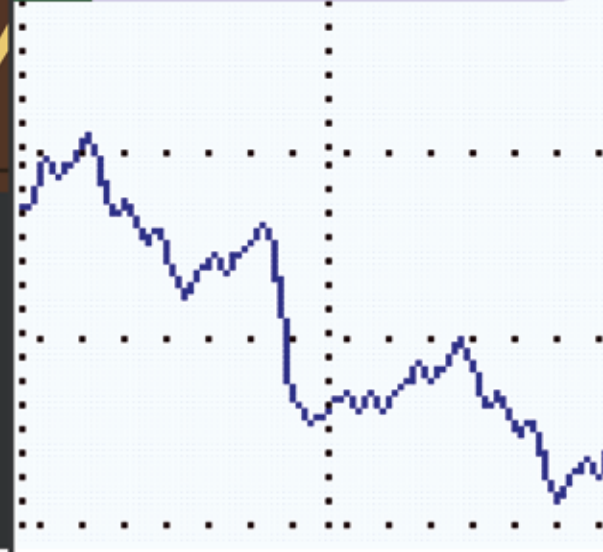
merous operators and equipment manufacturers. As new mobile equipment rolls out, upgrades often include features designed to impact fuel economy.

Drivers should be trained on how to leverage equipment upgrades, as well as everyday best practices. For example, simply lowering vehicle speed can impact fuel efficiency. "Speed is a big issue for our haul trucks. We try to set a 15 mile-per-hour speed limit in the pit," says Chris Upp, director of quarry operations for Missouri-based Conco Quarries, Inc. "It's too easy to get moving along our ramps and use the retarding brake to slow the engine."

And while some aggregate operations have implemented maximum idle times to lower vehicle emissions, an added benefit is reduced fuel consumption. Short cycle times and efficient load/haul process may also yield fuel savings.

In addition to drivers, an operation's maintenance crew plays an integral role in fuel efficiency initiatives. Numerous items in daily, weekly, and monthly checks not only keep equipment up and running, but also increase mileage per gallon. Simple tire checks offer potential savings. If they lack proper pressure or are out of alignment, they can lower fuel efficiency. Proper air flow is another important maintenance concern related to fuel efficiency. Keep equipment in good working order and better fuel efficiency follows.

Diesel fuel prices dropped during the last quarter of 2008, and those decreases created a window of opportunity for savvy aggregates producers to evaluate their fuel management practices. By reducing consumption, sites can become more profitable and competitive.

<p>1 Gather operational intelligence</p> 	<p>2 Take control of the wheel</p> 	<p>3 Re-evaluate the transportation equation</p> 
<p>Establish a baseline for fuel consumption for each piece of equipment and driver. Use this information to determine typical consumption. As operational changes are implemented, their effectiveness can be measured and evaluated against this baseline.</p>	<p>Best driving practices are among the most efficient ways to reduce fuel costs. Using the highest gear practical, reducing idling, and avoiding rapid acceleration and deceleration will improve fuel economy.</p>	<p>Review operational practices to determine if other options for moving materials are feasible. For example, consider whether a conveyor installation would provide appropriate transportation of material throughout various segments of the plant.</p>
<p>4 Consider alternative energy sources</p> 	<p>5 Keep equipment well maintained</p> 	<p>6 Forecast fuel purchasing needs</p> 
<p>A change in energy may yield financial benefits. Consider if electrical energy would yield a cost savings compared to fuel. If so, adapt generators and drive motors to use electricity. Alternative fuel options, such as biodiesel, may also have a more rapid payback when compared to high diesel prices.</p>	<p>When every dollar counts, don't skimp on maintenance. Well-maintained equipment not only eliminates the steep costs of unplanned downtime; it also ensures that capital assets are yielding their best and most cost-effective performance.</p>	<p>To minimize diesel fuel costs, operators can purchase a large percentage of their fuel via hedge funds. If prices drop rapidly, company can choose not to exercise their call options. Remaining fuel needs can be purchased based on day-to-day pricing.</p>



Chris Upp is the director of quarry operations for Conco Quarries, Inc., with locations in Springfield and Willard, Mo. He has been with the company since 1996 when he received his bachelor's degree in mining engineering from the University of Missouri-Rolla.



Ryan Mossman is the vice president and general manager of fuel management for Houston-based FuelQuest. He has a bachelor's degree in economics from Columbia University and a master's in business administration from the University of Texas in Austin. He can be contacted at rmossman@fuelquest.com.

OPERATIONS ILLUSTRATED

Fueling Savings

Chris Upp

Fuel efficiency has been a priority for Conco Quarries, Inc., since 2005, says Chris Upp, director of quarry operations. “We actually started taking a hard look at this when we had the first spike in fuel prices after Katrina,” Upp says of the company’s Springfield and Willard, Mo.-based sites. “Before, diesel had always been a major consideration in our operating costs, but it didn’t look like there was anything we needed to change.”

When fuel prices shot up, however, Upp says that the company reviewed a number of ways to lower its diesel fuel costs. The first step included evaluating its practice for idling vehicles. Typically, the operation’s fleet of nine pieces of mobile equipment each ran idle for approximately 45 minutes to an hour each day.

“We always just jumped out of the truck and kept it idling,” Upp says. The company developed a policy that said whenever a truck is predictably going to be idle for more than 5 minutes, it was shut down. “Just doing that reduced our consumption by 6 or 7 percent,” Upp explains. “It made a big difference.”

He also talked to other operations in the region and heard promising results about installing zinc catalysts on mobile equipment. He installed it on one of the site’s pieces of mobile equipment during the summer of 2008, as diesel fuel prices peaked.

The system uses the same principle as a catalytic converter, but works inside the combustion chamber instead of the exhaust. An aerosol mist is injected into the engine’s air intake duct and blends into the air mixture. As compression heats the air, it reacts with entering fuel, increasing its ability to generate energy.

Early results were promising. He notes that for 400 hours of use, the zinc catalyst reduced diesel fuel consumption by 800 gallons. “It’s about a 12-percent reduction in diesel fuel consumption for this piece of equipment,” Upp says.

Conco Quarries also implemented a surcharge on deliveries made by its fleet of five delivery trucks. The percent of the fuel surcharge is tied to the Department of Energy’s weekly update based on the Midwest region and has ranged from a high of a 42-percent to a current rate around 9 percent.

Finally, the company practices effective preventive maintenance to keep its equipment working efficiently. “We try not to miss any of our regular preventive maintenance,” Upp says. “Even if we’re in a tight production schedule, we might miss it by 10 or 15 hours one way or another, but we will get it done. That’s helped us not have those major issues that could cause consumption to be higher.”

Ryan Mossman

Diesel fuel procurement and management strategies play a significant role in an operator’s ability to control fuel costs.

“There’s all this volatility in the market,” says Ryan Mossman, vice president and general manager of fuel management for Houston-based FuelQuest. “The degree of volatility has been increasing significantly in the last three to five years. The trick is not just managing high prices, but managing volatile prices.”

FuelQuest’s fuel management service, Fuel Center, leverages the company’s proprietary software program (Fuel Management System), internal expertise, and network of fuel providers to help customers do just that. “We take all of the complexities that are normally managed by a distributor for its benefit, and we manage them for our customer’s benefit,” Mossman says.

“The bottom line is that you have all of these disparate sites that are doing things their way and doing a great job at a local level, but there are a lot of opportunities when you aggregate volumes, have one centralized process, have one way to manage fuel buying, fuel inventory levels, and so forth,” he adds. “It gives companies the ability to leverage their size to get better prices for contracting, to centralize and monitor what’s happening at a higher level, and to take advantage of daily price swings.”

The first step is to determine what percentage of a customer’s annual fuel needs should be purchased through contracts. Favorable contracts are then established for that portion of the customer’s fuel needs. “We help them obtain index-based contracts that ensure they perform well against other fuel buyers. In these contracts, customers agree to purchase a consistent volume in return for competitively advantageous prices (e.g. 1 cent better than the average price paid that day in a given market),” he adds.

Operators should not, however, contract their entire annual fuel volume. “In the aggregate business, there can be a lot of rises or decreases in fuel use from year to year,” Mossman explains. For that reason, it is uncommon for operators to procure more than 75 to 85 percent of their annual fuel needs in such a manner.

Remaining fuel needs can be met through daily “spot” purchases. These purchases allow a company to take advantage of unusually low prices when they are available from a non-contract supplier (e.g. an additional cent lower than an operator’s already low contract price). Additionally, it is important to time your purchases (load shift) when possible. Mossman says that daily price fluctuations can range from fractions of a cent to nearly 15 cents per day in some markets. “Therefore, load shifting plays an important role in fuel economy,” he says. “It doesn’t do you any good to buy fuel for a penny less one day if you could have saved 10 cents the next day.”