

# Switching Fuels

## Inside Newton Power Station's Powder River Basin Coal Conversion

Let's say you run a coal-fired power plant. Like all power plant professionals, you want to operate the plant as cleanly and efficiently as possible. So you find a coal that costs approximately 30 percent less than your old coal and emits less sulfur dioxide and nitrogen oxide. ● There are just a few problems. ● OK, there are more than a few problems. ● First of all, the new coal is of a finer consistency than the old coal, raising concerns about mill explosions and equipment malfunctions. When the coal's ash gets wet, it plugs pipes and equipment.

What's more, the new coal has a lower BTU value than the old—meaning you have to burn more of it. And since you can't switch to the new coal overnight, you've got stockpiles of both new and old coal, and you need to keep them separated.

Welcome to the Newton Power Station Powder River Basin (PRB) coal conversion.

Following last spring's extremely successful 90-day test-burn of PRB coal in Newton's Unit 1, AmerenCIPS and Ameren Services Engineering and Construction personnel determined that lower fuel costs and greater environmental benefits would far outweigh the problems associated with the coal.

This spring, with Unit 1 permanently burning PRB coal, the plant is making dra-

matic changes to convert Unit 2 to the less-expensive, low-sulfur fuel. The effort has challenged everyone at the plant—and fostered cooperation among AmerenUE and AmerenCIPS employees.

### THE DUST FACTOR

"One problem with PRB coal is that it's dustier than other coals," says Newton Power Station Manager Bob Kennedy. "That's troublesome because the coal can spontaneously combust and ignite in certain situations. The best way to combat the problem is with an incredible amount of training. We have to operate cleaner and pay more attention to operating details now more than ever."

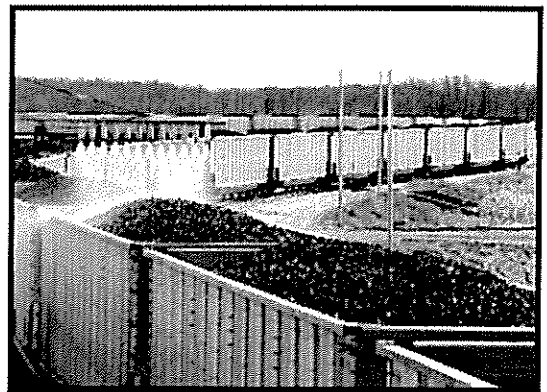
Newton looked to an obvious source for training: plants that had already converted to

PRB coal. They found those facilities across the river at AmerenUE's Labadie, Rush Island and Meramec plants.

"People from Newton's operations, maintenance, coal handling and engineering departments went to the Rush Island Plant early on, and many people from Rush Island and Labadie have come over here," says Training Coordinator Scott Laugel.

"The collaboration proved to be a very lucrative two-way street," says Rush Island Manager Andy Neuhalfen.

"Our people learned a lot—often more than the Newton operators learned from us." Laugel agrees. "It's been a big education for all of us, but the experience has been very good. I've been amazed at how well the transition has gone. One of the biggest gains



was learning that Newton could burn PRB coal safely."

"We remind ourselves every day that plant operations require us to handle PRB coal differently than other coals," says Operation Coordinator Dick Baltzell. "Dust and coal spills must be cleaned up. One of the most significant coal-handling challenges has

PRB coal comes to the plant in trainsets of 115 rail cars. The cars, loaded with about 100 tons of coal each, are backed up to the dump house and rotated to empty their contents. To control dust, water is sprayed on the coal before it is dumped.

been suppressing the coal dust generated when dumping PRB coals."

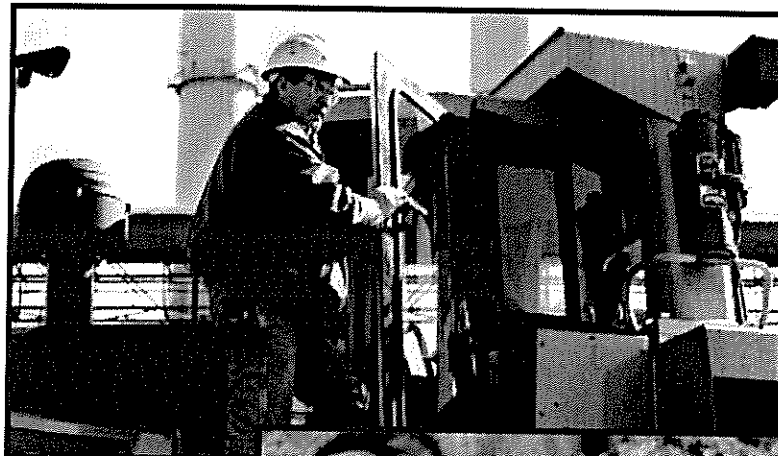
In fact, an early modification completed for the test burn was the installation of a dust suppression system along the entire coal-handling system. Additional modifications were made to the coal mills (which grind the coal before it is burned) and to their start-up/shut-down procedures.

To date, Newton has had no coal mill explosions—a common phenomenon with PRB coal. That record is due to the diligence of Newton's 200 employees, says Kennedy.

#### EXPECTING THE UNEXPECTED

Auxiliary Operator Ted Shaffer—who tends the boiler, checks equipment and monitors bottom ash and fly ash—is on the front lines of the AmerenCIPS Newton Plant conversion to western Powder River Basin coal.

"It's been a challenge," he admits. "Though the original concern was with fire protection, most of our problems have been with the ash removal systems. The best thing to do with the ash, from my perspective, is to keep it as dry as possible for as long as possible. When it gets wet, it plugs up our lines and equipment. Labadie Plant has been a big help with our fly ash problems."



Equipment Operator Tom Hannaman climbs on board a piece of equipment used to move huge piles of coal around the Newton coal yard.

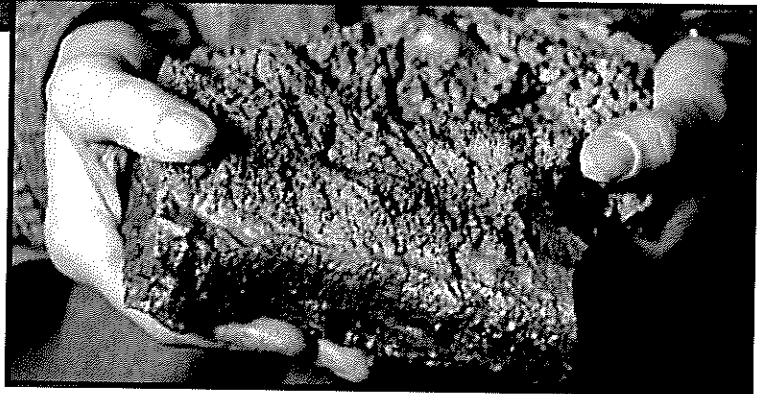
Below: This large chunk of boiler slag came out of the plant's ash handler. Newton is implementing new equipment and procedures to reduce problems caused by such formations.

When *Ameren Journal* visited Newton Power Station, a large chunk of boiler slag had fallen out of the boiler, denting the lower slope tubes. Newton personnel loaded wheelbarrows with hundreds of pounds of PRB coal slag from the bottom ash hoppers. They had been hard at it for four days.

"We've got some equipment on the way that will help," says Shaffer. "Twenty-four new soot blowers are coming, and a new dust handling system is on order."

Beyond that, Shaffer is confident he and his colleagues at Newton will figure out how to handle the other complications.

"Rush Island made a number of modifications to handle the slag," he says. "They've done several things to help



keep the boiler from plugging up that we've adopted here, like redirecting air flow in the boiler.

"It's been a lot of work, but we're learning from our own experiences—and the experiences of the other plants."

#### DOWN IN THE DUMPS

Unfortunately, PRB coal dumping and handling pre-

sents problems other than dust and fly ash. The coal comes to the plant in trainsets of 115 rail cars, each car carrying about 100 tons of coal. On average, the plant receives five train sets of PRB coal a week—50,000 tons of coal—to feed just one PRB-burning unit.

"Our annual coal burning will increase from 2.5 million

tons a year to at least 4 million tons when Unit 2 comes online," says Kennedy. "We needed a better way to handle the increased tonnage and reduce coalyard expenses."

Currently, coal travels from the dumper house up a conveyor belt, which guides the coal to either the plant or to storage. With two types of coal entering the plant weekly, the

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coal has to be moved to its appropriate pile to make room for the next train's shipment. "Working with two different kinds of coal increases the time it takes to unload cars," says Equipment Operator Tom Hannaman.

To handle the additional PRB coal, Newton is installing a device called a stacker/reclaimer—which automatically stores and retrieves coal. Expected to be operational in late August, the stacker/reclaimer will connect with the existing conveyor belt. Operators can guide coal to the plant or send it to the new stacker/reclaimer.

"The stacker/reclaimer and other coalyard modifications are big projects," says Kennedy—big both physically and financially. The PRB conversions are expected to cost about \$30 million. But in the end, all the changes, and all the hard work, will be worth it.

"The 30 percent reduction in fuel costs will improve Newton's competitive position in the regional power market," Kennedy says. •

## NEWTON FIRE BRIGADE TO THE RESCUE

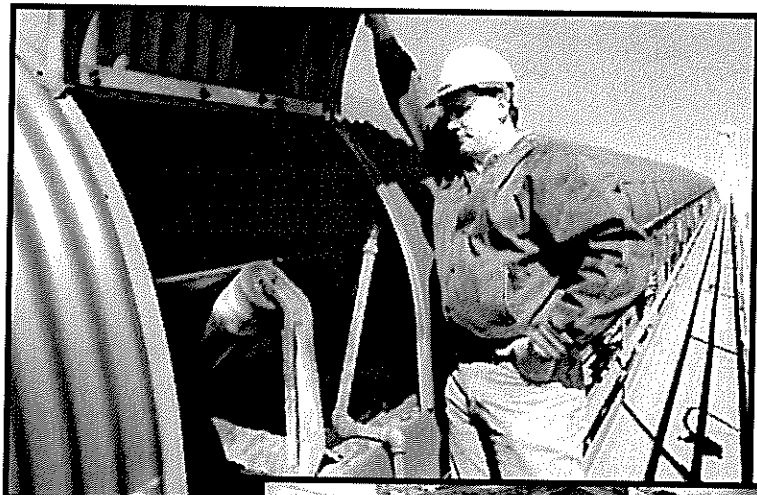
**PRB** coal costs less and is cleaner to burn than Indiana, Illinois or Colorado coal, but Newton employees recently experienced another benefit of their PRB conversion: fire protection.

On Jan. 4, 1999, a small fire in Unit 2's excitation transformer sent smoke billowing into the plant—and Newton's Fire Brigade into action.

"The fire wasn't related to PRB coal, but putting it out was," says Training Coordinator Scott Laugel.

Training for the Newton Fire Brigade started in February 1998, before the Unit 1 test burn, with 56 employees completing 32 hours of training over a six-week period. Each continuing member of the brigade completes 20 hours of training a year, including one full day of training at AmerenUE's Wellston, Mo., fire school.

"The Fire Brigade is a way to do something for both our plant and our community," says Laugel. "We partner with the



Technical Support Coordinator Jim Williams inspects newly arrived PRB coal making its way up the conveyor belt to either the coalyard or the plant.

all-volunteer Newton Fire Department. We learn from them and they learn from us."

For Plant Manager Bob Kennedy, the Fire Brigade is a valuable part of the PRB conversion.

"We didn't have a Fire Brigade before the PRB conversion," says Kennedy. "We've invested many hours of training and about \$90,000 worth of fire equipment in it, but it really paid off Jan. 4!" •



Newton Power Station has invested about \$90,000 in equipment for its Fire Brigade.