



*“Service is our  
last name, but our  
FIRST consideration!”*



## *To Optimize Their Investment In Tires, Trucking Companies Rely on Retreads*

Over-the-road trucks roll on tires – 10, 14, 18, and sometimes more. Truck tires are designed for much heavier duty use than passenger car tires, and their underlying structure (the “casing”) is so sturdy it usually outlasts the tread. Rather than discard a tire when the tread is worn, truck tires can be retreaded, producing a tire with the performance characteristics of a new tire for less cost. Retreads are especially popular for trailers where they just need to roll the load, not steer or put power down.

In the eastern Carolinas, trucking companies look to Black’s Tire for quality retreaded truck tires. For nearly 80 years, Black’s Tire has served the region with quality products and services. At the company’s Retreading Center in Clinton, about midway between Raleigh and Wilmington, Black’s Tire manufactures retreads and provides complementary services that help customers achieve maximum service life from every tire in their fleet.

### **Making Retreads**

The heavy duty casing of a truck tire can be retreaded a number of times, so Black’s Tire begins the retread process with a careful inspection of each candidate for retreading. Casings are tested and those judged to be in good condition have the worn tread removed (“buffed”). Precision equipment creates the optimum radial and circumferential profile for proper tread fitment.

Black’s Tire offers Goodyear Precure and Unicircle retreads. To create Precure retreads, vulcanized tread rubber is firmly bonded to the buffed tire casing using a layer of adhesive. The two ends of the new tread segment are carefully fitted together. Unicircle Retreads are made with Goodyear’s patented, computer controlled tread building machine that uses laser guidance to place seamless tread onto the casing.

Using whichever method a customer prefers, new tread is placed on the prepared casing. The tires are then moved into a curing chamber where a high temperature, high pressure environment bonds the new tread securely to the tire casing.

### **Compressed Air**

Compressed air does more than fill truck tires; it's critical to the process of making retreads. Once new rubber tread is attached to the tire casing, tires are ready for the curing chamber. "It's a long, cylindrical tank that looks a lot like the fuel tanks buried underground at a gas station," according to Mark Frink, Operations Manager at Black's Tire's retreading plant. In preparation for curing, the tires slide down a track to a specific location in the chamber. "There are 23 slots in the tank, so we can process 23 tires at a time," says Frink.

With the tires in place inside the curing chamber, pressurization of the chamber begins. Because compressed air has to pressurize a large space, the air compressor must be able to produce a high volume of air quickly for each production run. Running at full speed, the compressor fills the chamber in about 30 minutes.

"Filling the curing tank consumes the major part of the air volume we use," Frink explains. "We also use shop air for pneumatic tools, to grind the old rubber off tire casings, and to lay on the new rubber, but that's really nothing compared to the volume that's used for the curing tank."

### **Production Surge**

The skyrocketing cost of diesel fuel has placed enormous cost pressures on trucking companies and, as a result, most are looking to reduce their operating cost. Since retreading cuts cost by extending the useful life of a truck tire, Black's Tire has been busy keeping up with the growing demand for retreads.

The increased level of retread production at Black's Tires brought the shortcomings of their existing compressed air system to the fore. "Our old compressors were becoming worn and unreliable," Frink recalls, "and they were having difficulty producing enough air to fill the chambers."

Randy Leath, Sales Manager of Atlas Copco's Edmac Customer Center in Wilmington, had been working with Black's Tire for about three years and was familiar with the situation. "The existing compressors were having reliability problems," Leath says, "and Black's Tire was ready to replace them."

The old system had 50 horsepower and a straight modulation control system. While modulation systems do provide some level of air production control, their fundamental design is energy inefficient. Whenever the system detects a rise in outlet pressure (signaling a drop in air demand), it compensates by closing the compressor's inlet valve (raising the compression ratio to reduce air supply). Compression ratio and compressor efficiency are inversely proportional, however, so this type of control system results in excess power consumption.

### **Operating Efficiency**

Why is operating efficiency so important? Over the life of an industrial compressed air system, power typically accounts for 75% of the total cost for compressed air. The additional investment in an energy efficient compressor and control system quickly pays for itself.

"Two or three times a day the curing chamber has to be filled with compressed air," Leath explains. "It's a large chamber – big enough to hold 23 truck tires at once – and it took the full 50 hp to fill it. But the rest of the time the plant did not need 50 hp worth of air just to operate some air tools and pneumatic controls. Black's Tire has a great application for a Variable Speed Drive compressor."

Leath invited Frink to visit Top Tobacco in Lake Waccamaw, just a few miles from the corporate office in Whiteville, to see an Atlas Copco GA90VSD compressor that has been running for over five years. "When you see a Variable Speed Drive machine in operation for the first time," Leath says, "the advantages become obvious."

Acting on Leath's analysis and recommendation, Frink selected an Atlas Copco GA37 Variable Speed Drive compressor. "I visited other sites to see this type of compressor working to see what it was doing for another business," Frink recalls. "I saw the potential it had for us."

At first, Frink was unsure whether he wanted to spend the extra money on the Full Feature model, which integrates a refrigerated air dryer into the system. “I showed Mark the advantages of the Full Feature package, which include low pressure drop, single point monitoring and zero installation costs,” Leath explains. “Mark decided it was smarter to invest in a new integrated system now, rather than wait until the old dryer had problems.”

### **Return on Investment**

The initial cost of an Atlas Copco VSD compressor is roughly 30% more than a comparably sized single speed compressor, but by precisely and continuously matching compressed air production to demand, power consumption drops significantly to reduce the total cost of air.

A case in point is the electric bill for the Black’s Tire Retreading Center. “Our largest use for power is heating coils, and the next largest is compressed air,” says Frink. “In the two months previous to installing the Atlas Copco compressor, the bills for power were \$2,991 and \$3,049. With the new compressor working, the electric bill in October 2007 it was \$2,200, and in November it a bit over \$2,000. By replacing the old compressor, we cut power usage plant-wide by one third, or about \$1,000 a month. I was impressed at the amount of savings. Randy Leath had predicted cost savings conservatively at 10-20%. We were amazed at reality when the bill came in. The payback will be under two years for the new compressor.”

### **Superior Operation**

Lower operating cost was not the only welcomed improvement with the new compressor. “The older compressors were very noisy, produced lots of heat, and were cumbersome to work on,” Frink explains. “The noise level made it difficult to communicate within the facility. With the new compressor running we can stand and talk at normal voice level and get along just fine. Heat production of the new compressor is minimal compared to the old one, which had added noticeably to the ambient temperature inside the facility. The new compressor is much easier to work on, with everything laid out right where you can get at it.”

## **Rolling Out The Retreads**

The economy has hit many businesses hard, and with pump prices for diesel fuel continuing to set records, trucking companies in particular are looking for every way to cut cost. Quality retreads are an effective way to manage costs, and that keeps the Black's Tire retread plant busy. Their Atlas Copco Variable Speed Drive compressor helps the plant keep rolling out the retreads.

“This compressor has been phenomenal,” says Frink. “The cost savings have been out the roof. We did the right thing getting this compressor.”

[sidebar 1]

*According to the Tire Retread and Repair Information Bureau, a non-profit, member supported industry association, “Every time you buy and use a retreaded tire, you help to conserve our valuable natural resources. And since retreaded tires are always less expensive than comparable new tires, you save money while helping the environment.”*

[sidebar 2]

*A retreading facility operates differently than a new tire manufacturing line because no two used tire casings are alike. Each used tire is evaluated individually, typically through a combination of nondestructive tests and the experience and judgment of the inspector. Tire casings with damage due to factors such cord deterioration or underinflation are reject for retreading.*

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