Going Green in the Banking Industry

Increasing profits by saving energy with new drive-thru technology

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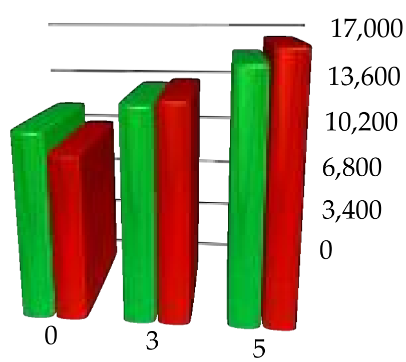
Executive Summary

Due to societal pressures and governmental regulations involving building codes, "Going Green" through energy conservation is a national trend that has reached Corporate America. As such, financial institutions face a unique challenge in finding measures that are not only cost effective, but profitable as well. One new measure presented in this white paper is the finding that banks can "Go Green" and at the same time cut costs by replacing outdated pneumatic tube systems in drive-thru lanes with conveyor type delivery systems. One such type of delivery system is TransTrax® built by E.F. Bavis and Associates, Inc. specifically for banking drive-thru service lanes. Field tests show that the TransTrax® system uses less than one-tenth the power of a standard pneumatic tube system (Std. PTS). Furthermore, analysis of product maintenance and repair records show that the long term costs of the TransTrax® system are substantially less than that of the standard pneumatic tube systems used by banks nationwide.

Cost comparison over 5 years

TransTrax Std. PTS



Introduction

Market Drivers: The Greening of America

With recent concerns about Global Warming and the implications of how it may adversely affect the environment and mankind, American businesses are under pressure to find green measures to lessen their carbon footprint.

In the January 17, 2008 issue of *The Economist*, an article titled "A change in climate: the greening of corporate responsibility," describes how many businesses are not only adopting green speak as a way to burnish their brand for eco-conscious consumers, but that some are actually taking steps, albeit difficult ones likened to infants learning how to toddle along a grassy path.

What businesses have discovered is that there is more to going green than simply announcing a target date toward reduced or zero emissions—a claim which in itself may be impossible for many industries. The key before making green claims is as with all business operations, the need to measure and manage...to discover their current carbon footprint and use it as a baseline for realistic expectations toward change.

The initial positive result of determining a baseline is that it provides opportunities for a business to uncover waste in paper, packaging and delivery (among other items) that can be easily and immediately remedied while cutting costs.

Many businesses have discovered that measures as simple as changing a light bulb from a standard type to an energy efficient one has payoffs within the first year of investment. Another benefit is that like weight watching through monitoring carbs consumed,

employees are becoming more aware of what they are doing and how it may be affecting their company's "waste-line."

From midlevel businesses like Patagonia to behemoths like General Electric, *The Economist* explains how businesses are discovering that cutting waste and changing their ways of doing business can be profitable as well as good for the planet and public relations.

However, beyond typical waste and energy saving measures, not all companies have easily defined carbon goals by which they may implement green measures.

Industrial businesses such as textile manufacturers, the automotive makers and shipping companies have obvious fuel and transportation-related carbon burdens. But what of businesses such as banking institutions? How can a financial industry show that it too has a green ring around its collar—and without resorting to cost prohibitive measures?

"...the fact that banks are very concerned with their income and expense items—especially when there is something we can do to be green and save energy costs—there's a bottom line motivation to that."

Steve Wilson
Chairman and CEO
Lebanon Citizens National Bank

Buildings: Significant Potential Toward Climate Change

In May of 2008, the Intergovernmental Panel on Climate Change (IPCC) released a report that identified buildings as having significant potential toward change in limiting our carbon footprint on the earth.

Their findings are the result of many businesses having already implemented energy saving measures that include installing light sensors to automatically turn lights off when a room is not in use; operating climate control systems on a room-by-room basis; and, use of smart meters that monitor energy usage. Businesses are discovering that simple measures can produce significant green savings as well as cut expenses.

Other than the savings that will result from making a building more energy efficient, there's another reason why business owners are deciding to go green with their buildings: someday it will be the law. Energy efficiency regulations provide a proven solution for enforcing green decisions at work places. Standards governing lighting, heating and air conditioning, indoor environmental controls, etc. are measures that can play an important role in building codes so that buildings will consume and waste less electricity.

Mr. Bill Bily an architect with DEI—a national design/build company in Cincinnati that specializes in retail-driven facilities for financial institutions—is earning certification as a green building designer and foresees a trend: "I think that eventually environmental attention is going to be required by the government. I believe that it is going to be very similar to the Americans with Disabilities Act where it was an option in the beginning and then became required in public

projects—and now is required everywhere. This is an initiative that has a real strong foothold in governmental and education projects. And once you start to see that, I think you will start to see it adopted into building codes."

A strong motivation for big businesses taking measures toward going green is the eventual attainment of highly desirable accreditation by the non-profit Green Building Council's Leadership in Energy Efficiency and Design (LEED). LEED is the biggest green rating system in the U.S. and is expected to eventually become the standard in building codes for new construction.

"Increased awareness of our responsibility to the environment and evolving building options that address this concern have increased interest in green building. Green buildings are taking a strong foothold in government projects. We anticipate government regulations will become more stringent on building materials and methods."

Richard Grow

Chairman, DEI

DEI is a national design/build organization specializing in financial institutions

Banks: A Special Situation

Some buildings have electrical consumption burdens that others do not have. One example is that of bank buildings that offer drive-thru lane service.

A conservative estimate is that the typical bank has 3 drive-thru lanes operated by a pneumatic tube delivery system. If each lane does 50 transactions per day at three lanes per bank, then that's 150 instances where a pneumatic tube system must make at minimum one transfer between the customer and the teller. Multiply this by six days per week and 52 weeks per year and you will get 46,800 drive-thru transactions per year by a single bank. This number becomes significant when you take into consideration how much energy is consumed per transaction per year. And not just by one bank, but many branches within a metropolitan city that use the same type of drive-thru lane service.

There are two reasons why this problem has not been identified previously as an energy consumption/saving matter: (1) It's not as obvious as seeing a light left on in a room or a thermostat that is not turned down after the work day ends. (2) Banking as well as other industries have relied on the pneumatic tube delivery system for many years without an alternative technology. Which begs the following question: "Is the pneumatic tube delivery system an outdated technology?"

Pneumatic Tube Delivery Systems

An Outdated Technology: Problems

Historically, as technology and manufacturing processes improve, product quality also improves while pricing drops. For example, a personal computer with much greater computing capabilities can be bought today at a fraction of the cost of a less powerful computer from the 1980s. Unfortunately, this is not true with all technologies—especially those that have

not changed significantly over the years. One example is that of pneumatic tube systems.

Pneumatic tube systems are conceptually simple, but mechanically complex. Most operate through a large number of critically interdependent parts where if one breaks then the entire system shuts down. Pneumatic tube systems use air as the medium in moving a carrier from one end to the other through a combination of high and low pressure forces. These forces are responsible for the numerous problems experienced with pneumatic tube systems. Examples of problem areas are as follows:

Carriers

Carriers typically suffer from breakage with pneumatic systems that use a combination of vacuum/ pressure type forces to move a carrier. Vacuum/ vacuum type systems pull a carrier gently in both directions through the tubes, whereas a vacuum/ pressure type system exerts excessive forces that cause a carrier to slam into its receiving stations. Such slamming forces eventually shatter the carrier, which in turn then causes motor damage when fragments of the carrier are sucked into the blower motors.

Motor life

Standard pneumatic tube systems are time based. The blower motors are set to run 10-15 seconds longer than needed (under optimal operating conditions) to deliver a carrier from one end of a tube system to the other to ensure delivery. This translates into a waste of total motor life by as much as 26%.

Another fault affecting motor life is heat buildup. Standard pneumatic tube systems typically use either periphery discharge or through-flow air design motors that inadequately self-cool. If airflow is restricted, such as with an overloaded or stuck carrier, the motor becomes overheated resulting in reduced motor life. This is in contrast to tangential motors, which are cooled externally and are not subject to overheating even in the event of an overloaded or stuck carrier.

Other problems seen in pneumatic tube systems is the use of relatively inexpensive motors that possess bush bearings rather than ball bearings, and old style brushes that wear quickly from excessively high rpm.

Weather

Other factors that make pneumatic tube systems inefficient is the fact that air pressure is affected by changes in both air density and humidity. As a result, this forces the motors that create the high and low air pressures to work very hard and become subject to early motor burnout.

Manufacture

Because pneumatic tube system technology has not changed, yet the expectation and demand for a less expensive tube delivery system has, manufacturers have resorted to compromising quality with cheaper parts and less durable motors. Rather than using the industrial turbines and stainless steel fittings of yesteryear, manufacturers have resorted to outfitting their pneumatic tube systems with plastic parts and vacuum cleaner motors.

"How..." you may ask "...can manufacturers of today's pneumatic tube systems stay in business if the technology is so faulted?" The answer is simple: (1) Without an alternative product, businesses with service lanes are forced to buy what's available—regardless of the quality and performance. (2) Profit for the manufacturer is made through low cost, inexpensive products where lost profit margins are recouped through service agreements and parts sales.

Environmental

From an environmental point of view today's typical pneumatic tube system imposes a carbon burden. Like the oft paraphrased example, it's not the energy from your stove that you used this morning to cook the egg you had for breakfast—it's the farm machinery that planted the seed, that grew the grain, that fed the chicken, that laid the egg, that was delivered by truck to the store, that you drove to to buy the egg, that you took home, that you stored in your fridge, before you cracked the egg to cook in your omelet.

It's really no different with poorly made products. Due to typical pneumatic tube systems in need of repeated replacement parts (often shipped globally rather than locally), and repeated service calls requiring a tech to drive (or in some cases fly) long distances, and repeated electrical motor disposal and replacement, and increased time spent by multiple vehicles idling in drive-thru service lanes impeded by poor pneumatic tube performance—it all adds up to a cumulative burden that weighs needlessly heavy on the environment.

A final consideration is that pneumatic tube systems are not energy efficient. Recent studies have shown that the typical pneumatic tube system requires an operating power of just over 26,000 Watt seconds of power for a single transaction in one direction. To put this in perspective, that's equivalent to a lamp burning a 75 watt bulb for 6 minutes. If you extend this to one bank with three drive through lanes each operating 50 roundtrip transactions a day, 6 days a week, 52 weeks a year, then the carbon burden becomes significant in energy waste considerations alone.

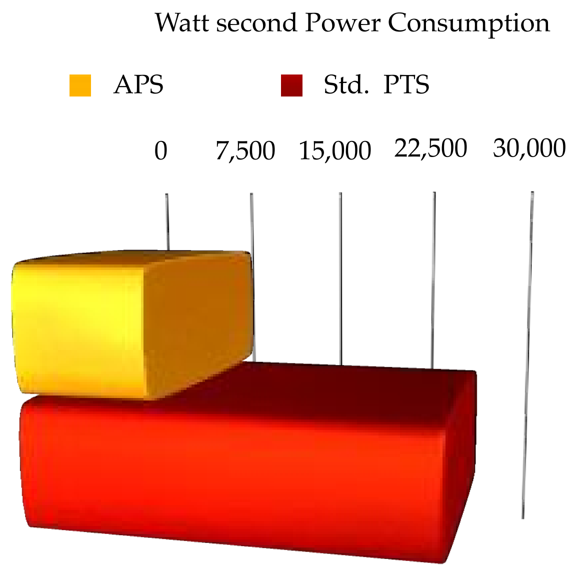
Bavis APS® System: The way pneumatic tube systems used to be be built

Does this mean that there is no justification in investing in a pneumatic tube system? It depends. If a pneumatic system is designed with function and components that result in a superior product over the current industry standard, then a pneumatic system is justifiable. Case in point—the Bavis Advanced Pneumatic System (APS).

The engineers of E.F. Bavis and Associates, Inc. have designed a pneumatic tube system that addresses many of the problems listed earlier found with standard pneumatic tube systems. Some of its design features include:

- A vacuum/vacuum type system with non-contact sensors for gentle, controlled carrier delivery
- Tangential discharge blower motors that continue to self-cool even during airflow blockage

•System design that allows minimal motor operation in delivering a carrier toward its station, resulting in less energy used and no wasted motor life



Green savings

The Bavis Advanced Pneumatic System (APS) in comparison to standard pneumatic tube systems is not only superior in construction and product life, but in energy consumption as well, making it a true green alternative. **Testing of the APS by Bavis engineers revealed a power consumption of 8,640 Watt seconds, which in comparison is only 1/3 the power of a standard pneumatic tube system (PTS) that tests at 26,460 Watt seconds of power.**

Bavis APS: Efficient Pneumatic Design in Motor Operation and Life

•Fail safe design protects carrier from damage, thereby decreasing maintenance and service calls

•Externally cooled motors for longer life and fewer replacement costs

•Reduced runtime resulting in energy savings and extended motor life, both of which cut operating costs

FEATURE	BAVIS APS	STANDARD PTS
Carrier Delivery	Gentle, controlled	Harsh, uncontrolled
Motor Type	Self-cooling	Inadequate cooling
Motor Life	Long lasting, energy saving	Shortened life, energy wasting
Energy Consumed per Transaction	8,640 Watt seconds	26, 460 Watt seconds
Sensors	Long lasting non-contact	Wear prone, contact based switches
Controls	Diagnostic microprocessor	Non-diagnostic timers & relays

However, when it comes to even greater green savings, there is an alternative technology that is superior to any pneumatic system available—a positive drive conveyor delivery system called TransTrax®.

Conveyor Systems

Conveyor technology is as old as pneumatic technology, but unlike the pneumatic systems in use today it has undergone modifications and improvements over the years.

In everything from mining operations to production equipment, belt conveyors have been the drive medium of choice. Requiring few moving parts, easy installation, simple alignment and little maintenance, conveyor systems are the preferred method of moving materials from one point to another.

A positive drive in a conveyor system means that there is a physical attachment between the carrier and the drive medium. This is an important difference in function and efficiency in comparison to pneumatic delivery where the driving forces are less direct and variable.

The TransTrax® System: an alternative to pneumatic systems used in drive-thru lane service

The TransTrax® is a positive drive conveyor based system designed to alleviate the problems business owners face with pneumatic tube delivery systems. More specifically, it is a push/pull tape drive conveyor system with an attached carrier built for banks as a service lane delivery system. Its most significant feature is its durability and dependability. Consisting of only four moving parts in the entire system, it not only offers all the functionality of a pneumatic tube system (and then some), but more importantly, it exceeds the performance of typical pneumatic tube systems used in bank drive-thru lanes.

Simplicity in design and durable components prevent the TransTrax® from experiencing the mechanical failures and need for constant maintenance and repair required by pneumatic tube systems. Among many features, it includes:

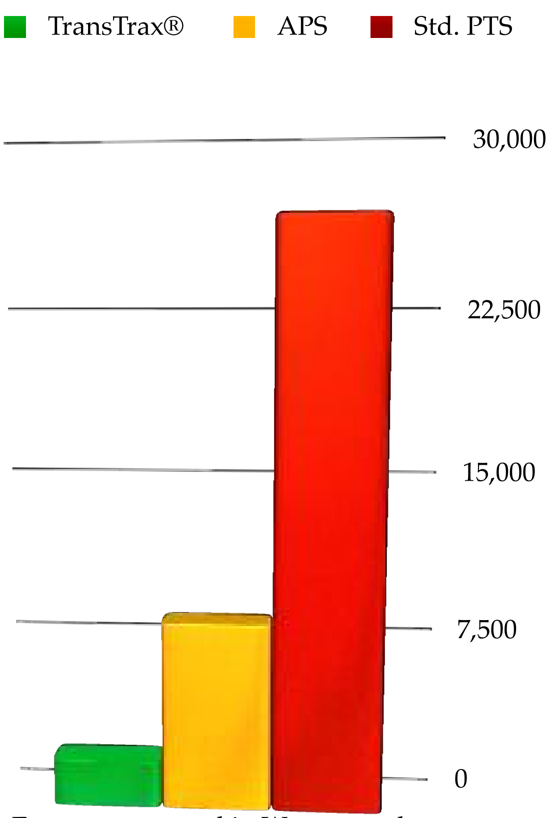
- Inexpensive carriers as opposed to higher cost pneumatic carriers
- A single motor as opposed to two or more motors required in pneumatic tube systems
- Self lubricating
- Can transport more weight than a pneumatic tube system
- Can handle awkward items such as rolls of coins
- Carrier can be retrieved manually by a teller in the event of a power outage
- Delivers to typical car and truck vehicle heights for customer convenience

And, more importantly in today's political climate—it is environmentally friendly. The TransTrax® system is constructed of recyclable materials most of which are aluminum.

TransTrax® is Green Tech

The engineers of E.F. Bavis and Associates, Inc. designed the TransTrax® to operate with efficiency so as to produce the least amount of wear and tear on the motor that powers the tape drive. The immediate benefit of their design was a prolonged motor life allowing the TransTrax® to operate significantly longer for a greater number of transactions than the multiple motors used in pneumatic tube systems.

As a result of their engineering design, the TransTrax® system consumes significantly less electricity per transaction in comparison to typical pneumatic tube systems.



Energy consumed in Watt seconds

Measurements made by engineers under actual load and drive-thru service lane conditions of both an industry standard pneumatic tube system (PTS) and a TransTrax® system, found that a standard pneumatic system consumes 26,460 Watt seconds of power for a transaction in one direction, whereas a TransTrax® consumes only 2,160 Watt seconds of power under the same conditions.

Repeated testing consistently shows that the TransTrax® system uses at a maximum, one-tenth the power of a standard pneumatic tube system per transaction

Why the TransTrax® uses less electricity

Pneumatic tube systems typically operate by running a two-motor system for a preset amount of time. The operation time of the motors is based on a rough approximation of the time it takes to send a carrier to its destination, plus...additional time to compensate for factors that may necessitate a longer blow/suck cycle. In other words, pneumatic tube systems rely on

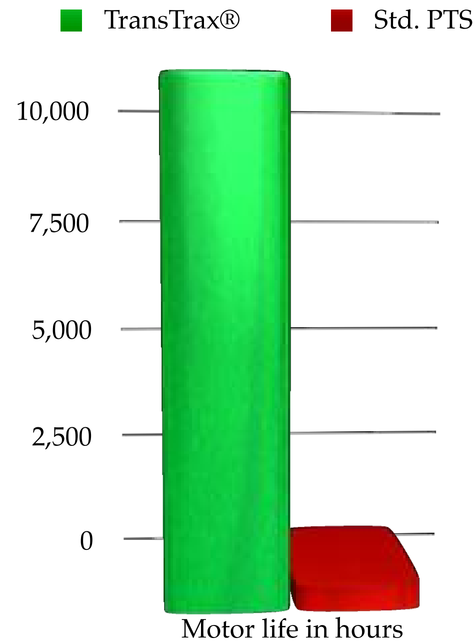
overrunning the motors to ensure that a carrier reaches its destination. This translates into wasted electricity and excessive wear on the motors.

In contrast, the TransTrax® system possesses a solid state electronic sensor that monitors the travel of the carrier and controls the varying operational speed of the single motor as it delivers the carrier back and forth. No more energy is consumed than is necessary to run the tape drive that transports the carrier to its destination. The benefit is less energy used and less wear on the motor.

"Because our TransTrax® motors are running a positive drive system, they do not have to run at the high rpm used to power pneumatic tube systems...we've been building TransTrax® systems since the late 80s and have yet had a motor burn out, out of thousands of units sold."

Michael Brown
Vice President & Engineer
E.F. Bavis and Associates, Inc.

Engineers at E.F. Bavis and Associates, Inc. made a comparison between the single motor used in TransTrax® and the dual motors used in standard pneumatic tube systems. What they found was that the life cycle of a TransTrax® motor is rated at 10,000 hours—20 times the life of a motor used in a typical pneumatic tube system!



Cost Comparison Analysis

Standard pneumatic tube system vs TransTrax®

The cost of purchasing delivery systems for banking drive-thru service lanes varies significantly from one company's product to another. The general trend is that the providers of typical standard pneumatic tube systems offer the least expensive product.

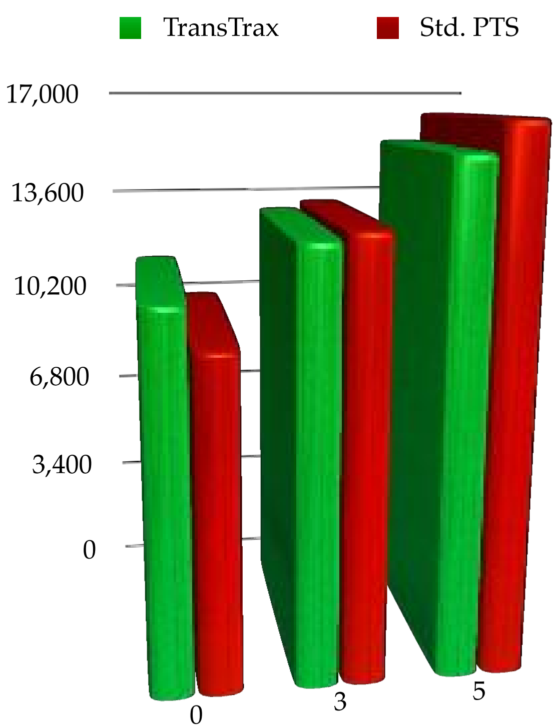
However, long term cost comparison analysis shows that there is a false economy in purchasing the least expensive pneumatic tube system. When taking into account a five year plan with estimated expenses involving repair/maintenance agreements and a projected estimate of failure rates, significant costs are revealed. When comparing a standard pneumatic tube system to the conveyor type TransTrax® system, it becomes clear that the adage "You get what you pay for" applies in this market.

Analysis made by engineers at E.F. Bavis and Associates, Inc. using field test data gathered from actual product maintenance and repair records, along

with independent data gathered from in-house laboratory tests comparing standard pneumatic tubes and TransTrax® systems, show that by the third year after purchase the cost of owning the least expensive standard pneumatic tube system meets the projected costs of investing in a TransTrax® system. Furthermore, by year 5 the standard pneumatic tube system exceeds the TransTrax® system in cost by approximately $1000.

Extrapolating further, with multiple lanes per bank and numerous banks per chain—the long term savings are significant when investing in the TransTrax® system.

Cost comparison over 5 years



In summary

Businesses have discovered that green is good—good for the environment, good for the public, good for the shareholders and good for the company. The latest scientific studies have determined that the greatest potential for easing the carbon burden many businesses bear lies in their buildings in controlling energy usage and waste. Relatively simple measures such as replacement of inefficient lighting have proven to be profitable.

And in the case of specialized businesses such as banks with drive-thru lane service, replacement of inefficient pneumatic tube delivery systems with a positive drive conveyor system such as TransTrax® can not only lead to savings in avoiding needless maintenance and repair costs, but also savings in electricity usage and reducing a businesses' carbon footprint on the Earth.

Company credits

This White Paper is a production of Eclipse Copywriting Services (www.eclipsecopywriting.com) in association with E.F. Bavis and Associates, Inc. a manufacturer of smart products yielding cost saving solutions for industries that use drive-thru service lanes. E.F. Bavis and Associates, Inc. is the manufacturer of TransTrax® and the APS pneumatic tube system as well as other green drive-thru lane products including LED lighting in lane control signs. To learn more about how E.F. Bavis and Associates, Inc. can help your business go green, call Terry Roberts at (513) 677-0500 or send an e-mail to tar@bavis.com for assistance.

TransTrax®

Delivering customer transactions to different vehicle heights

TransTrax® is both a UL listed and classified product.

Same great reliability with even more product enhancements

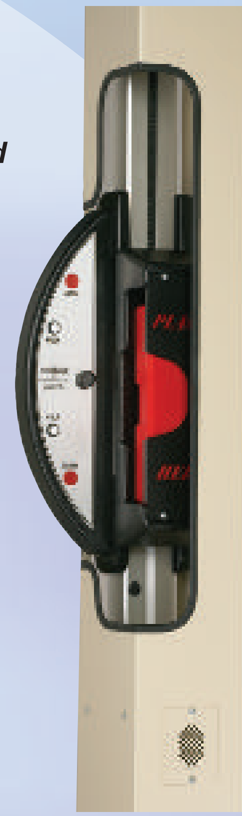
- Redesigned exterior customer panel featuring dual height controls, call buttons and microphone rain shield
- Customer panel will now accommodate optional camera for one-way viewing
- Expanded audio/video capabilities
- Carrier cover with integrated instructions

The TransTrax®:

- Includes a full duplex audio system designed specifically for drive-thru
- Is capable of transporting rolls of coins
- Requires no power on the customer island, reducing installation cost up to $1500.00
- Uses inexpensive carriers
- Has only one motor rated for 10,000 hours of trouble free and quiet operation
- Operates with only four moving parts
- Small profile requires a smaller island which lowers canopy and real estate cost
- Includes a three year manufacturer's limited warranty[1]

Unlike most competitive transport systems, the TransTrax® has complete control of the carrier. This allows the TransTrax® to:

- Transport more weight
- Stop at car and truck heights
- Be manually retrieved in the event of a power failure



Optional housing shown with Car/Truck Model TransTrax®

TransTrax® does not take up any valuable counter space and provides an excellent line of sight between customer and teller.

Economical Basic Model TransTrax®

The Bavis Air

Advanced Pneumatic System (APS)

The Bavis Air is engineered to solve a number of the problems that plague other tube systems including:

- *Automatic doors seal closed on both ends when power is off, preventing condensation in tubes*
- *Microprocessor logs blower run times, number of transactions and system faults*
- *Redundant shut off system results in minimized blower run time, less down time and extended motor life*
- *Powder coated aluminum vertical enclosures available in custom colors provide an attractive rust free finish*
- *Dependable braking action of carriers increases carrier life*
- *Microprocessor based controls with always active diagnostic LED's*
- *Quiet operation allows two-way communication while system is in use*
- *Includes exterior customer audio components consisting of microphone, speaker and call button*
- *Rain shield protects microphone and windscreen for greater audio clarity*
- *4 1/2" standard with 4"option*
- *Multiple audio and video options available*
- *Larger clam shell carrier for greater capacity*
- *Operates on single 110v circuit*
- *One year manufacturer's limited warranty[1]*
- *A UL listed and classified product*