

# The Bavis APS Provides Up to 26% More Motor Life per Year than Other Tube Systems

## How is it possible that the Bavis APS can provide the customer with up to 26% more motor life per year than other pneumatic tube systems?

The answer is simple: the Bavis APS does not waste motor life as other systems do. The fact is that a pneumatic tube motor has a limited life and every moment that it is not used is a moment that can be used later.

In the case of a pneumatic tube motor, the mean time to failure or life is about 500 hours of operation. The standard pneumatic tube system runs the motor based on timers. When the unit is installed, the technician determines how long the motor has to run to get the carrier from one side to the other. The time of carrier travel will vary depending on a number of different factors. These include, but are not limited to the amount of weight in the carrier, the density of the air (cooler air is more dense than hot air is,) the wear of the carrier, and even the age of the motor. To account for these variations technicians put in a fudge factor of 10-15 additional seconds of run time to make sure that the carrier makes it to either end.

Let's run the numbers to see how this works out and in the process make a few assumptions for purposes of this discussion:

1. The average pneumatic tube does 50 transactions per day, six days per week.
2. On average the technician runs the system 15 seconds more than the average run to insure that the carrier gets from side to side.
3. The bank is open 52 weeks per year and operates 6 days per week.

So using these assumptions:

<b>Wasted Motor Life Calculation</b>	
Number of Transactions per day	50
Number of extra seconds per run (15 sec each way * 2 directions)	30
Number of days per year (52 weeks * 6 days per wk)	312
Total numbers of seconds of excess run time in a yr	468,000
Total number of hours wasted ((468,000/60)/60) in a yr	130
Percent of total motor life wasted (130/500)	26%

Based on these assumptions, the calculations indicate that 26% of the average pneumatic tube motor's life is wasted the very first year. Now one might want to argue that the assumptions used for this discussion are too aggressive for the average situation. While that may be true, what matters is the fact that the average tube system wastes motor life resulting in eventual motor failure and therefore cost and downtime to the purchaser of those tube systems.

The Bavis APS is different from other pneumatic systems. The control system is designed to preserve motor life and therefore reduce maintenance cost and downtime to the customer. Rather than use timers, the APS uses sensors to determine where the carrier is. Those sensors report carrier positions to a microprocessor as it travels the tube. Then, based on the program installed in the memory of the processor, determinations are made how to best use the motor to optimize its life and deliver the carrier to the other end. So, on a normal run, once the carrier approaches the second radius, the microprocessor will shut off the blower motor, because it is no longer needed and allow the carrier to drift softly to the station.

In the example above, all of the same factors that impact run time of a carrier through the tube are accounted for by using the sensors and the actual position of the carrier. If the carrier needs more time to get to the station, the microprocessor allows it. If extra run time is not needed, it is not used. There is no need for all the extra time used as a safety or fudge factor on time based control systems. As a result, the Bavis APS conserves motor life and, in this example, by 26% in the first year of operation!