

Uptime: How to Integrate Solutions Across the Board

By Crystal Jeffers

Introduction

Managing a fleet is no small task. On top of organizing drivers, handling invoices, and overseeing operations, there are vehicle inspections, maintenance, and repairs to worry about. As if that weren't enough, when a truck fails in the field, there are customers to call, contingency plans to coordinate, and uncertainties around when your vehicle will be operable again. The last thing you want is to get that call from a stranded driver. This sentiment is shared among fleets in the industry for all applications. And this is where the concept of uptime has become so popular.



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Uptime is the amount of time a vehicle is available for operation. The end goal of a fleet manager is to minimize the time a truck spends in the shop so it's available to do its job. This is a two prong effort: what to do before it's in the shop and what to do after. The preemptive approach to increasing uptime includes building a truck whose specifications are designed for the job. One strategy that successful fleet managers use is to apply quality parts and service when performing maintenance on vehicles. Over time, equipment naturally degrades from normal wear and tear. Good preventative maintenance lessens the impact of unexpected repairs. Post breakdown, uptime is measured in dwell time. Dwell time is the industry term for the amount of time a vehicle is out of operation. As these metrics grow in popularity, it continues to raise the expectation among fleets for how quickly trucks should be able to be assessed and repaired. A manufacturer's top priority is to get equipment out of the shop and back on the road as fast as possible. A manufacturer's next priority is to increase the amount of money you make with your truck. The growing demand for faster service and parts availability is driving a substantial shift in the marketplace.

Where Did Uptime Begin?

When the Federally mandated Emission Regulations were released in 2010, many North American Truck manufacturers contributed complexity of the trucks. This complexity increased future maintenance costs to their product in an attempt to meet the stringent regulations. The sophistication of modern engines, with all the sensors and added equipment from DPF's to SCR's, means that more things can go wrong, and they do. Downed vehicles with the new technology threw a wrench into the operations of many businesses and caused late deliveries and upset customers. Millions in revenue and productivity were lost in needless downtime. Dealers found themselves in triage mode, attempting to mend long term customer relations and fix trucks as fast as they could.

The most efficient solution is not always the most effective in the long term. For example, when a truck starts smoking, a natural reaction is to treat the effect instead of the cause. So maybe the smoke gets cleared by cleaning the DPF. That same truck may be back in a few weeks because the culprit, a plugged AFI injector, wasn't checked during the first repair and is now causing additional problems. The truck was in operation faster, but overall uptime was diminished due to an incomplete diagnosis and repair. This is where customer patience and technician experience trumps the quality of repairs done with diagnostic tools alone. Increasing uptime in the long run requires more than just what works in Finding solutions to customer problems and anticipating future problems is critical to increasing uptime.

the moment. It calls for an integrated approach where manufacturers, dealers, shops and owners work together to maximize uptime over the life of the truck.

A Dealer's Role in Uptime

An influential aspect of uptime is the ability of salespeople and engineers to meet or exceed customer expectations of the reliability of their vehicle. Listening to customer concerns is a critical component to the design of the truck. Finding solutions to customer problems and anticipating future problems is critical to increasing uptime. If a customer mentions that they are continually replacing and adjusting clutches in their fleet as opposed to being an order taker for their next buying cycle, a professional salesperson will discuss the pros and cons of an automatic or automated manual transmission to see if it will work in the customer application. Experienced salespersons may even go the extra mile and become proactively engaged with progress in the service department while their customer's trucks are in the shop. Sharing your equipment maintenance files can assist in evaluating what works well in your fleet and what doesn't. A truck that works can solve today's problems; we can't be this short sighted.

An Owner's Role in Uptime

An effective method for avoiding unnecessary downtime is identifying areas where preventative maintenance can be taken. Not only does it save time and money, it also reduces the potential for a dangerous failure during operation and creates more



control around managing the costs of vehicle upkeep¹. Planning downtime provides greater peace of mind than scheduling corrective maintenance on a stranded truck. Some companies have units on standby specifically for this type of preplanned work, though that is costly². Guiding a customer through the pursuit of maximizing uptime up front before the truck is built rather than after is a prime example of what it means to exceed customer needs.

Downtime is inevitable, but the frequency and impact it has on a fleet can be minimized when the needs of the future are weighed against the needs of the present. Not all components are created equal. Some equipment in stock inventory has less expensive components to keep prices low. That could come at the price of higher future maintenance costs. Savvy customers often spec higher grade components like OEM parts because they tend to help with uptime. Stock inventory is generally also standardized, which means it may not come equipped with the appropriate features for specific applications. For example,

having to shorten wheelbases to meet proper cab to axle measurements for body applications is a big issue that can lead to loss of uptime due to poor alignment, bearing wear, tire wear, and steering issues. If a customer can wait to have the equipment built properly at the factory, it can reduce the likelihood and the impact of unnecessary downtime in the future. It can also reduce the cost. Significant savings are possible when preemptively specing a truck with applicationbased or convenience features instead of adding them in after purchase. This is why it's so important to specify the right type and components to be properly engineered when building trucks.

Using high quality parts and products on equipment may require additional time and resources, but saves an equivalent if not greater amount of resources down the road. If a major brand name tire is being used on the steer axle, that same brand name should be used on the drive axle. Using "extended life" fluids and synthetics or blends minimizes service intervals, increases longevity of your equipment and often extends warranties. Using the largest brake pads available reduces how often replacements are needed. Using LED Lights adds more hours of life than the traditional halogen lights while also reducing horsepower demand. Downtime is inevitable, but the frequency and impact it has on a fleet can be minimized when the needs of the future are weighed against the needs of the present.

Parts and Service Shifts

Major changes are unfolding for parts and servicing dealerships to keep pace with the competitive market. Dealers have always relied on the manufacturer's infrastructure, but now it's more important than ever³. Parts distribution warehouses are strategically placed across North America to minimize lead times for out-of-stock parts fulfillment. What used to be a 2-3 day lead time on a replacement part is neither good enough nor fast enough anymore. Competition drives dealers to increase their own parts inventories and rely on neighboring dealers for quicker turnaround on out of stock parts. Service Departments are also under pressure to provide expedited service bays for immediate assessment on all incoming equipment. While most parts and service dealers are closed on Sundays, competition is driving some toward seven day work weeks. Embracing new expectations is at the core of making Uptime a reality.

Uptime: The Proactive Solution HOW TO MINIMIZE VEHICLE FAILURE

Uptime is largely a function of mindfulness. Many cues that a truck is about to fail can be dismissed or overlooked. Cues can be anything from catching a repair too late, not understanding the sensors, or having low quality or a complete lack of maintenance on



¹ Nakagawa, T. (1989), "A replacement policy maximizing MTTF of a system with several spare units", IEEE Transactions on Reliability 38/2, 210-211

² Brouwers, J.J.H. (1986), "Probabilistic descriptions of irregular system downtime", Reliability Engineering 15, 263-281.

³ Jay Lee (2016) Measurement Of Machine Performance Degradation Using A Neural Network Model, International Journal of Modeling and Simulation, 16:4, 192-199, DOI: <u>10.1080/02286203.1996.11760299</u>

components⁴. Consistent and high caliber maintenance is essential. Fix it before it fails. Even seemingly small things, like adding a little too much coolant, have the potential to blow a motor. An overfilled EGR cooler starts with light leakage but builds until it fills a cylinder and pushes it out the block. This is a prime example of where attentiveness contributes to uptime. If an issue is caught early on, it could be a 4-5 hour repair. If it isn't caught until it completely downs the vehicle, it could quickly turn into a 10-14 day repair. So be aware. How often does your vehicle receive excessive fuel, oil, def or coolant use? Don't wait for a failure. A simple, proactive inquiry could limit days of repairs to hours and minimize unnecessary downtime.

The Key to Uptime is Scheduled Downtime

Downtime is inevitable. It always has and always will happen. The only real choice for an owner is timing and severity of impact. Will it be now or later? Will the vehicle be down for a few hours or a few days? The first line of defense against unexpected breakdowns: operator awareness. Routinely performing inspections and monitoring vehicle safety items, drivability, and body damage can help drivers catch repairs early and avoid unsafe conditions⁵. This, in tandem with a preventative maintenance program, adds control to the traditionally uncertain operational landscape. Preventative maintenance (PM) is performed by either a certified, in-house equipment technician or a local service center that specializes in PM. Maintenance is then based on mileage, engine hours, or fuel use and includes routine inspections, lubrication, adjustment, cleaning, testing and replacing worn parts⁶. These proactive measures maximize the overall availability of a fleet. The power is in preparation.

Know Your Truck

Knowing is half the battle. With the knowledge that nearly 75% of engine repairs are related to drive train failure, an experienced technician investigating engine problems has a good idea of where to start, reducing the amount of time needed for an inspection. Owners can choose when downtime occurs and minimize its impact by scheduling maintenance Like most things in life, what one gets out of a vehicle is contingent upon what they put into it.

at the first sign of trouble instead of waiting for an unexpected breakdown. An important factor in determining the right service schedule is considering the vehicle generation and application. Each generation and application type will be prone to a different set of weaknesses. For instance, some trucks are more prone to problems with EGR coolers, turbo chargers and wear on V8 cylinder blocks, whereas trucks from 2016 are primarily prone to QLS sensor issues⁴. Applicationwise, a school district would experience higher PTO time than a heavy haul fleet. In comparison, the heavy haul fleet would have a shorter servicing schedule7. Another example is considering whether maintenance should be determined based on vehicle mileage or engine hours of fuel consumption. Trucks with low vehicle mileage but high engine hours would be more prone to turbo and oil pump failures⁸. Advanced knowledge of these variations across generations and applications can provide insight around which areas may need extra attention during inspections.

⁸ Ernst, S. (2019, February 6). Top Maintenance Best Practices for Medium-Duty Trucks. Maintenance - Work Truck Online. https://www. worktruckonline.com/324568/top-maintenance-trends-for-medium-duty-trucks.



⁴ Cosby, B. (2018, March 20). Phone Interview.

⁵ Bartole, P. (2006, September). How to Implement a Fleet Preventive Maintenance Program. Retrieved March 22, 2018, from https://www.government-fleet.com/article/story/2006/09/how-to-implement-a-fleet-preventive-maintenance-program.aspx

⁶ Brajkovic, V. (2021, May 17). 4 Ways to Improve Fleet Uptime. Maintenance - Trucking Info. https://www.truckinginfo.com/10143404/4ways-to-improve-fleet-uptime?utm_source=email&utm_medium=enewsletter&utm_campaign=20210602-NL-HDT-HeadlineNews-BOBCD210527018&omdt=NL-HDT-HeadlineNews&omid=1102409784&utm_content=01&oly_enc_id=6244E1877712A1A.

⁷ Thinking about extending maintenance intervals? Here are some things to consider. FleetOwner. (2015). https://www.fleetowner.com/ resource-center/maintenance/article/21691765/thinking-about-extending-maintenance-intervals-here-are-some-things-to-consider.

Uptime Starts On The Assembly Line

Like most things in life, what one gets out of a vehicle is contingent upon what they put into it. In 90% of applications, OEM parts make for the best replacement parts. Not only do OEMs provide the highest quality, but they typically come with much better warranties than most aftermarket part suppliers. When OEMs produce high quality parts, their warranty costs are reduced, making it possible to offer better warranties. So they have a vested interest in making only the best parts available to the market. Aftermarket parts may be cheaper in the moment, but they will have to be replaced more frequently, costing more in the long run. Maximizing uptime is a function of investing resources today for the returns of time, money and peace of mind in the future.

Conclusion

Uptime is the measure of time a vehicle is on the road. The amount of time a truck is able to stay up and operational is based on the degree of preparation put in before a breakdown and the quality of parts and service applied after a breakdown. Signs of a quality dealer are a high level of involvement and planning with you and your fleet, a quick yet thorough diagnosis, quick service, the availability of OEM parts, and experienced technicians. Use of these key factors increases uptime, optimizes your maintenance spend, and creates the most sustainable level of uptime possible.

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