Service and Maintenance

The Keys to Forklift Efficiency

INTRODUCTION

In today's competitive business climate, doing more with less has become a popular mantra. The material handling industry is no exception. Warehouse operations contain many workflow processes and it is natural to consider which of these can be completed more efficiently.

Efficient processes also require reliable warehouse equipment, including your forklift fleet. What can your organization do to extend the life of your forklift fleet? How can you ensure that your forklifts are operating safely and as efficiently as possible as they age? If you find yourself pondering these questions, it may help to take inventory of your service and maintenance processes.

A thoughtful combination of planned maintenance, quality replacement parts and integrated telematics, supported by an experienced supplier, can make all the difference in the reliability and longevity of your forklift fleet.

In this e-book, we'll examine how each of these aspects play a part in the efficiency of your fleet as you navigate the challenges of warehouse management and service complexity. We'll also reveal how your approach to maintenance and service can be a strategic advantage that encourages warehouse productivity.

1

Increase Forklift Uptime with Planned Maintenance

In any busy warehouse, forklifts play a starring role in the smooth flow of goods from point to point. Just like athletes need to be healthy and strong to excel at their sport, your fleet needs to be in top condition for dependable performance. It starts with planned maintenance.

Planned maintenance is a strategic necessity for any forklift fleet. It can make the difference between a well-oiled operation and one riddled with unexpected and costly disruptions. Recognizing its critical role is essential in increasing your fleet's productivity.

On the surface, accommodating planned maintenance in your production schedule may seem like a difficult task that can be postponed if it is inconvenient. This thinking may become more prevalent during peak seasons when uptime is critical to meeting business goals and facilities seem too busy to deal with planned maintenance. When choosing between service time and work time, the flurry of daily activity makes it easy to delay critical maintenance, but this is short-sighted.

GUARD AGAINST UNEXPECTED DOWNTIME

Instead of looking at planned maintenance as a necessary evil, envision it as an enabler that increases runtime, boosts productivity and extends product life, among other benefits. In addition, a flexible service provider can offer more options than you might realize to fit the service scope, budget and schedule of your operation's needs.

You might be pleasantly surprised at how seamlessly a service provider can help fit an appropriate planned maintenance program into your production schedule.

Just like your car needs regular oil changes, tire rotations and other maintenance to run smoothly, your forklift fleet needs proper maintenance to run efficiently. Consider it preventive care for your warehouse. Planned maintenance is designed to help avoid potential issues before they become expensive problems that drain productivity.

Planned maintenance is designed to help avoid potential issues before they become expensive problems that drain productivity.

HELP PROTECT YOUR BOTTOM LINE

Imagine this scenario: During a planned maintenance inspection, your service technician checks the fluid level in a drive unit and finds it low. The technician adds fluid and takes care of the issue. A potential problem was noticed and corrected conveniently and efficiently as part of your planned maintenance program before damage and unexpected downtime occurred. At a minimum, you've avoided reduced performance until the problem was corrected.

Now imagine the same issue without planned maintenance: If the fluid level isn't addressed for an extended time, forklift performance is affected, productivity suffers and, eventually, it may even result in a complete failure. Then, the expense of a service call charge, labor to diagnose the issue, and replacement parts would follow, including the cost of downtime while it is being repaired.

Without routine planned maintenance, what could have been a simple fix can quickly snowball, escalating into thousands of dollars in costs and lost productivity.

INVEST IN RELIABILITY

The benefits of planned maintenance are far reaching and worthy of exploring as a strategic investment in the reliability of your forklift fleet. Regardless of your application, some type of regular planned maintenance is essential to monitoring and maintaining the health of your equipment. Consider the advantages:

COST SAVINGS

Planned maintenance can help prevent costly repairs and parts replacement. It helps to reduce unexpected downtime and the cost of idle labor. It also makes budgeting easier with predictable recurring costs.

HEIGHTENED PRODUCTIVITY

Avoiding unexpected downtime reduces disruptions in workflow and lost productivity by helping ensure that equipment is ready to work when there's work to be done.

EXTENDED LIFESPAN OF EQUIPMENT

Planned maintenance helps ensure that wearable components such as forks, chains, tires and masts are replaced when needed and continue to function as intended.

ENHANCED SAFETY

You can help support operator safety by ensuring that equipment is regularly inspected as required and is operating as the manufacturer intended.

CHOOSING THE RIGHT PLAN

Once you realize the benefits of planned maintenance, choosing the right maintenance plan is the next step. Ideally, your supplier can choose from a variety of plans to recommend the right fit for your specific application.

An effective service provider understands the nuances of planned maintenance and knows that a one-size-fits-all approach isn't viable given the diversity of the material handling world. Your choices can be the difference between a well-oiled operation and one riddled with unplanned disruptions.

Some facilities require a service call almost daily depending on the application, fleet size, operation schedule and maintenance requirements. Others have less frequent needs. Service providers will typically offer options that range from a time-and-materials approach to full or complete maintenance plans that are more comprehensive in terms of covered products and repairs.

A typical complete maintenance plan includes fundamental maintenance to keep forklifts running, plus coverage of some routine maintenance repairs and even some abuse repairs up to a defined threshold. Many will also offer options for maintenance and repairs for batteries and chargers.

When choosing a planned maintenance program, consider these key questions:

- How many and what type of forklifts are in your fleet?
- How many hours do your forklifts operate per shift? Per day? Per week?
- Are there seasonal business fluctuations that affect operations?
- How does your application and warehouse operating environment affect forklift performance?
- Do you know the service history of your forklifts? Are there specific lift trucks, parts or components that tend to require replacement more often than others?
- What is the average age of the forklifts in your fleet?

No matter the plan, when planned maintenance is performed the provider's technicians should check wearable components such as forks, chains and the mast. The inspection includes not only a visual check of the components themselves but also an operational check to ensure that all forklift systems are functioning as intended. It also includes checking fluid levels and other consumables, like load wheels, tires and other wearable components.

PROVIDER CONSIDERATIONS

Establishing a planned maintenance program involves more than selecting the right service plan. It also includes choosing the right service provider. There are several questions you can ask to help ensure that the provider is a good fit for your business:

- Do the technicians receive thorough and regular training?
- Does a factory-based call center support the field technicians?
- How quickly do technicians complete needed repairs?
- Does the provider use digital resources to help diagnose issues and expedite repairs?
- Are there other time-saving resources available, such as electronic dispatch?
- Is a warranty available from the supplier for the program's parts and labor?
- Does the provider truly understand your business and what uptime means to your success?

These factors can affect the timeliness and responsiveness of service calls and the ability of the provider to diagnose and complete repairs accurately and efficiently. A provider that understands the factors that influence these important maintenance decisions and takes the time to understand the ins and outs of your unique operation is essential.

"Brian is the tech assigned to our facility. He's taking care of our equipment like it's his own – truly a partner."

TIM JOYCE
Facility Manager, Midwest Warehouse & Distribution System

THE BOTTOM LINE

With a broad and varied choice of maintenance plans, a forklift service provider like Crown can help tailor a plan to your fleet size, application and operational schedule to ensure your forklifts receive the care they need while supporting your desired workflow. A provider that actively measures performance and first-time fix rates is typically a good bet for providing reliable and effective service.

Whatever approach you choose, planned maintenance is completed on time to help prevent unexpected downtime and loss of productivity. Beyond just having a maintenance plan, the key is to adhere to it diligently to maintain a level of productivity that aligns with your business and operational goals.

The Integral Role of Quality Forklift Parts

While a thorough and consistent planned maintenance program will help establish efficient and on-time repairs, it is only part of the equation for optimizing fleet performance. The benefits of planned maintenance can be unintentionally offset by inferior parts that wear quickly or fail more frequently, resulting in unexpected downtime. So, even when service experiences are positive and useful, they can become too much of a good thing when repetitive parts failures occur.

FOCUS ON QUALITY

One of the keys to ensuring increased uptime is choosing quality replacement parts designed for durability and reliability. Just like a builder chooses strong and reliable construction materials, the components of your forklift make all the difference. Choosing inferior replacement parts may reduce the immediate cost of a repair but can end up costing far more in the long run – to the tune of hundreds or even thousands of dollars in lost productivity – if the parts negatively affect performance or if they tend to fail more frequently.

SMART CHOICES SAVE MONEY

It's best to consider your forklift parts' long-term return on investment in the same way that you would evaluate the forklifts themselves. For most managers, reliability and durability are considered a "must have" when selecting their forklift fleet.

However, the same scrutiny is not always applied when choosing replacement parts. The result? With every repair, inferior replacement parts chip away at the efficiency and performance originally designed into the equipment by the forklift OEM. After all, they've chosen the original parts for a reason.

Sometimes, even the smallest part failure can render a forklift inoperable. In fact, any part failure can have a negative effect on multiple aspects of your operation, mainly:

An unexpected part failure creates a domino effect of backlogs that are more than just minor hassles. While a forklift is offline, the clock is still ticking. Work is piling up. Operators are still on the clock. Deadlines can be missed. Throughput declines. That's when the true cost of inferior parts kick in like a one-two punch – work isn't getting done and the labor expense continues.

WHY OEM PARTS?

When repairs are required, OEM parts are the obvious choice with all that's at stake. They typically go through a rigorous qualification process that ensures they are designed to fit and perform reliably and consistently.

Qualification processes for both manufactured and sourced parts are typically supported by:

- Documented procedures
- Specific test criteria
- Facilities and equipment designed to perform thorough thermal, humidity, shock and vibration testing as well as Highly Accelerated Life Testing (HALT)
- Precise tolerance limits for proper fit to streamline installation and reduce overall wear

KNOWLEDGE IS POWER

Did you know replacement parts can account for up to 50 percent of your total maintenance cost? Taking stock of what parts you use and how often you use them can help streamline maintenance, repair and replacement processes. After all, how long parts perform and how quickly they can be replaced directly affects your uptime and productivity.

Your parts supplier should provide a routine overview of parts consumption for individual forklifts or your entire fleet, even across multiple locations. Products like Crown's FleetSTATS® Fleet Maintenance System can help capture and analyze parts usage and maintenance costs. This data helps inform parts ordering, improving accessibility and reducing inventory management and procurement costs.

There are many ways to reduce the true cost of a forklift repair and the resulting unexpected downtime, but choosing inferior replacement parts isn't one of them.

"Our focus in the last decade has been on speed and service to our customers. When suppliers like Crown provide service to us in a quick manner, it allows us to achieve those objectives. Crown is a partner. They are as concerned about our end-of-month targets as we are and you don't find that, generally, in today's service world."

BRIAN SHANAHAN
Senior Operations Manager, Ridge Tool

PARTNER WITH YOUR PARTS SUPPLIER

In addition to choosing the right replacement parts, choosing the right parts supplier is just as critical. Can they expedite parts when they are needed? Is your uptime as important to them as it is to you? A reputable supplier will answer these questions with a resounding "yes."

Parts availability can also negatively affect forklift uptime and productivity. Shipping delays can compound the costs associated with parts replacement. A good service provider can address this by stocking replacement parts in multiple locations and supplementing them with parts inventory maintained in their mobile service vehicles. Another option your supplier may offer is online parts availability. For instance, Crown has thousands of forklift parts and accessories available 24/7/365 at shop.crown.com.

If your operation requires near-instant access to replacement parts, ask your supplier about establishing an on-site parts consignment program in which a parts inventory is maintained on your premises on a pay-as-used basis. In addition to enhancing parts availability, this can also help reduce costs by eliminating inventory management, parts procurement costs, parts obsolescence loss, freight costs and downtime.

CROWN

3

Preserving Power with Battery Maintenance

We see them today with increasing frequency – on television and social media, in books, and elsewhere. Messages promoting self-care to maintain or improve our health, performance and well-being are everywhere. However, self-care extends beyond our individual health. The same kind of care can be taken with the material handling equipment we use every day, including the products that power the fleet.

Electric forklifts are highly dependent on the power that moves them and the battery is essentially the heart of the forklift. If you don't prioritize maintaining battery health, you risk having equipment that isn't ready to perform when needed. Since batteries and chargers work together as a system, your battery chargers are significant contributors to battery health, so properly maintaining both chargers and batteries is important.

AVOID DISRUPTIONS

Think about the number of times you've experienced downtime that was somehow associated with your forklift batteries. Perhaps it was caused by a bad cell or the failure of an inner cell connector. Maybe the battery simply could no longer be charged to capacity.

Other power-related issues, such as a non-functioning battery charger or a broken cable or connector, can also compromise your forklift's performance or even keep it from running altogether. A planned maintenance program for your batteries and chargers is instrumental in reducing these costly disruptions that disrupt your workflow.

Proper battery and charger maintenance is a multi-faceted process. A good plan aims to decrease unexpected battery failures (and the associated costs and downtime) while increasing energy efficiency and battery life. It includes:

- Visual inspection
- Cleaning
- Documentation

MAINTAINING BATTERY AND CHARGER INTEGRITY

If you have included battery and charger maintenance in your planned maintenance program, the technician usually begins a planned maintenance check. This includes a visual inspection of the battery housing, filler caps and connectors to look for signs of leaks or corrosion. The battery top and exterior should be wiped down with a solution to neutralize the effects of battery acid.

The technician should then check cell voltages and record specific gravity readings, noting any abnormalities that could prevent the battery from charging and discharging as it should. While these anomalies, may not prevent forklift operation at the time they are documented and tracked over time so issues can be addressed before they result in a work stoppage.

Technicians can also check connector and contact tip conditions and advise users regarding proper cable management.

While completing charger planned maintenance, technicians will clean and inspect the charger and connectors for damage and clean or replace the charger's air filter, if needed. If left unattended, dirty air filters can cause chargers to build up and retain heat. Heat is the enemy of forklift batteries. It can damage the batteries themselves or cause damage to cables and connectors that prevents proper charging.

A healthy, well-charged battery is crucial to the performance of your equipment.

THE EFFECTS OF CHARGING

Once measures have been taken to promote battery and charger integrity, it's time to consider how charging can affect battery health. A healthy, well-charged battery is crucial to the performance of your equipment. Proper charging – including a weekly equalization charge if lead-acid batteries are being used – is one of the most important contributors to a battery's performance and longevity.

Charging causes sulfation to form on the battery plates over time. As it builds, it can cause irreversible damage to one or more battery cells, affecting performance of the entire battery. A proper equalization charge helps reduce sulfation, which preserves more of the battery's original capacity.

A charged battery also loses energy over time, even when it is not in use. A regularly scheduled charge, even for stored batteries, can help them retain and maintain a higher state of charge so they are ready to perform when you need them most.

BATTERY WATERING

In operations with lead-acid batteries, most anyone will tell you that the most challenging part of battery care is keeping each battery cell properly watered. It can be messy, time-consuming, tedious and even a bit dangerous.

Unsurprisingly, improper watering is a primary cause of premature lead-acid battery loss of capacity and a need for replacement. Consequently, in addition to a disciplined charging schedule, it is equally important to maintain a disciplined watering schedule that ensures each battery is filled to the proper level.

Thankfully, there are battery care options available that can help streamline the watering process. Some of these options connect directly to the battery with a system of hoses and filler valves that enable single connection watering for a multi-cell battery. These systems automatically fill each cell to the correct level without having to check the cells individually. This also eliminates the removal of filler caps, which reduces exposure to harmful vapors and battery acids.

For a large operation, these systems offer more than just safety and convenience. They help save time and simplify service labor requirements and can pay for themselves many times over by extending battery life and reducing replacement expenses.

In addition to traditional lead-acid batteries, other battery technologies, such as lithium-ion, may be a preferred power solution for some applications.

THE RIGHT POWER SOLUTION FOR YOUR NEEDS

In addition to traditional lead-acid batteries, other battery technologies, such as lithium-ion, may be a preferred power solution for some applications.

While sealed lithium-ion batteries don't require the same level of maintenance as lead-acid batteries, they shouldn't be viewed as maintenance-free solutions. Charger maintenance, proper charging schedules and procedures and cable management are essential factors in extending lithium-ion battery life and increasing productivity.

PLANNED MAINTENANCE BENEFITS

A regular and disciplined planned maintenance program for forklift batteries and chargers can result in a host of benefits.

- **PROLONGED BATTERY LIFE** – Batteries can become weak and lose their ability to hold charge if not maintained correctly. The proper maintenance plan helps protect battery longevity.
- **ENHANCED UPTIME** – Maintaining performance and battery life means less time waiting for repairs or replacements and the lost productivity that comes with it.
- **IMPROVED SAFETY** – Unattended or neglected batteries are prone to leakage, swelling, corrosion or worse. Proper maintenance can identify and correct battery issues before they can become accidents.
- **REDUCED COST** – A well maintained battery is more efficient, which, in turn, lowers energy costs and helps avoid premature failure. A lower frequency of replacement contributes to a more sustainable operation that consumes fewer batteries over time.

INTEGRATION IS KEY

In a fully integrated power system, such as V-Force lithium-ion, the battery, charger and lift truck are designed to work together as a complete system to optimize operation. No matter which power solution you choose, a proactive approach to battery and charger maintenance is needed to ensure these integrated components work as the OEM intended, helping to extend product lifespan, reduce cost and increase reliability.

An experienced service provider can help analyze your operation to determine the best energy solution for your application. Larger providers that offer batteries, chargers and planned maintenance services can also help you determine proper charging to battery sizing recommendations, track and monitor power usage, manage complex maintenance schedules, promote compliance with safety regulations and help increase operator awareness of safety protocols and best practices. These are the building blocks of efficient forklift power solutions.

Advancing Maintenance with Technology

4

In today's modern warehouse, nearly every component can be connected. This local connectivity and the larger connections made possible through the Internet of Things (IoT) enable multiple components to share data. At the very least, this connectivity enables the warehouse manager to gain new insight into the operation. Adding to that, the fact that nearly everyone carries a small computer with them in the form of a smartphone means that managers now have more technology at their disposal than ever before.

"InfoLink has done exactly what we needed. Implementation was seamless. It allows us to better understand our operation. It allows us to really generate good accountability."

ED ARANA
Executive Vice President, The PRI Group

GAIN INSIGHT THROUGH TELEMATICS

The advantages of planned maintenance for your forklift fleet, including batteries and chargers, are clear, as are the benefits of using quality parts and components. However, applying a strategic and well-thought-out plan for multiple forklifts and shifts can be complicated. Telematics can help reduce this complexity.

Throughput and productivity are always top priorities. They are especially crucial during peak seasons when every piece of equipment needs to operate at its best. No one wants to sacrifice productivity even when forklift maintenance is due, whether planned or unexpected.

Some companies have turned to telematics solutions, like Crown's InfoLink® Operator and Fleet Management system, to establish and enforce the discipline to complete planned maintenance on time and on their terms. Telematics systems can inform and streamline your forklift maintenance program to proactively address issues and avoid the unexpected and disruptive downtime associated with delayed or deferred maintenance.

CUSTOMER **RESULTS**

CITY FURNITURE

Increase Operator Safety and Uptime With InfoLink® Operator and Fleet Management

> ***"At the end of the day, the operators want to have the equipment as maintained as possible. We're preventing further damage and maintenance costs by taking that piece of equipment at the time the incident's noted and actually maintaining it."***
>
> ***DAVID CLEVENGER***
> *Senior Vice President of Fleet and DC Maintenance, City Furnitures*

APPLICATION

City Furniture is a forward-thinking furniture retailer with locations and showrooms that span south and central Florida. The company embraces new technology and environmental responsibility, even combining the two in some of its material-handling and distribution practices. Its over-the-road delivery fleet, comprised of 100% compressed natural gas trucks, is just one example of its commitment to safe, productive and sustainable operations.

CHALLENGE

While City Furniture was always focused on operator safety in its facilities, it struggled to meet compliance and uptime goals with its manual inspection and maintenance processes. As a result, unresolved maintenance issues led to unexpected downtime, and raised the potential of unsafe operating conditions for the operators. The downtime also negatively affected productivity, preventing operators from pursuing and achieving their productivity goals.

The company also experienced damage related to impacts, but incidents were difficult to identify and investigate for cause. It was a challenge to implement process changes or retraining opportunities to help prevent future impacts. City Furniture knew there was an opportunity to improve safety, reduce damage and increase overall uptime if it could capture better information about ongoing operations and lift truck health.

SOLUTION

Crown's InfoLink Operator and Fleet Management system with 7" Touch Display provided operators with a familiar touchscreen interface to streamline pre-shift inspections through on-screen visual cues, ensuring they were accurately completed. The increased accuracy enabled the company to quickly identify and address maintenance issues. It helped ensure that lift trucks were maintained for safe operation, which reduced unexpected downtime. Impacts, and their resulting damage, have decreased, and the company's proactive approach to lift truck health has reduced maintenance costs and improved uptime.

In addition, the InfoLink system's Dynamic Coaching feature reinforces operator training by alerting for potential safety issues and reinforcing safe operating behaviors. It also provides detailed fleet utilization data, enabling the fast-growing company to make informed decisions when selecting equipment for new facilities.

RESULTS

- Increased uptime and reduced cost with accurate pre-shift inspections and proactive maintenance
- Reinforced operator training and safe behaviors with the InfoLink 7" Touch Display's Dynamic Coaching feature
- Leveraged InfoLink fleet utilization data to make informed decisions regarding new fleet requirements, operator scheduling and process improvement

STREAMLINE PRE-SHIFT INSPECTIONS

While the InfoLink system can help keep planned maintenance on track, it can also help streamline and document OSHA-mandated pre-shift inspections. These inspections can help proactively identify repair issues that could potentially cause unexpected downtime if they aren't addressed in a timely manner.

Telematics systems help ensure that inspection checklists are being consistently and thoroughly completed and that issues requiring attention are relayed to the right contact to schedule service proactively. The advantages include scheduling maintenance when it is convenient for the operation, as well as helping to reduce downtime and cost.

THE ADVANTAGE OF DATA-DRIVEN DECISIONS

The InfoLink system captures truck health data in the cloud to enable Crown's Connected Maintenance solution to help warehouse managers to proactively complete maintenance and address potential service requirements.

As the saying goes, the best offense is a good defense. Taking a proactive approach to maintenance by integrating telematics can help you preserve forklift uptime and productivity. It allows you to complete both planned and unplanned maintenance on your terms, especially during peak seasons of the year when nothing can stand in the way of performance and productivity.

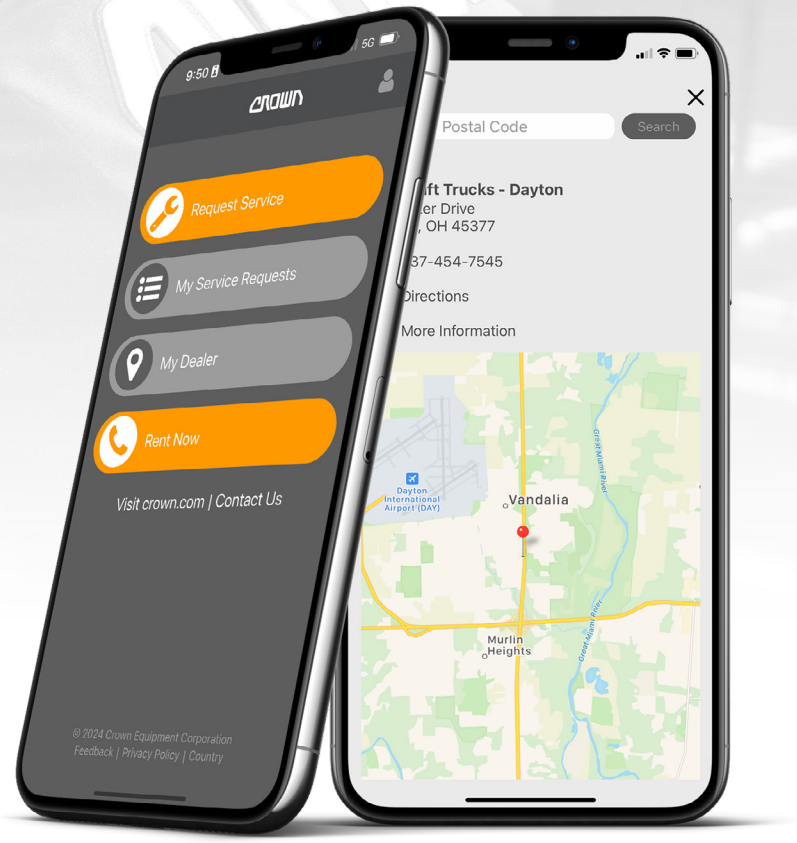
USING SMART TECHNOLOGY TO SIMPLIFY SERVICE

Most warehouse managers are continually looking for ways to incrementally increase forklift uptime. We've already discussed how having the appropriate planned maintenance program in place and working with a provider that can offer proven, reliable service and replacement parts can enhance the availability and longevity of your equipment.

However, no matter what you might do to try to reduce unexpected downtime, inevitably and unfortunately, you're bound to have a forklift that needs attention. The time that elapses between identifying the problem, reporting it and completing the repair is critical, so any tool that helps streamline the process is always welcome.

Requesting service doesn't need to be complicated. Your service experience is better when it is simplified, streamlined and efficient.

Taking a proactive approach to maintenance by integrating telematics can help you preserve forklift uptime and productivity.



A mobile app like the Crown Service Request app offers one easy connection to all your Crown service needs from the convenience of a smartphone or tablet. The app affords you around-the-clock access to submitting service requests to save time and accelerate time to repair.

Upon submitting your forklift information and a brief description of the issue, the request is routed to your local Crown authorized dealer. A technician is assigned and notified and can be on the way to tend to your equipment with an appropriate solution already in mind.

All the while, you're never out of the loop. With the ability to track the status of your submission conveniently from your device, you'll have increased transparency from when your request is received to when the maintenance or repair is complete.

The Service Request app facilitates the process with an easy and convenient way to access all the benefits and value of Crown's complete service program. Just download it from wherever you get your mobile apps and the next time you need service, submitting your request is just a few taps away.

A COMPREHENSIVE APPROACH

All in all, the decisions you make about service and maintenance can profoundly affect the efficiency and lifespan of your forklift fleet. A comprehensive approach that includes planned maintenance, quality parts and a reputable provider is paramount. A provider that can help you integrate and manage your processes, capture and analyze real-time data and predict and prevent workflow disruptions can also be invaluable.

Consider your needs and the options available to you, then make investments in your fleet that will yield game-changing improvements in reliability, productivity and efficiency for years to come.

crown.com