



RMV w/ Crack Sealer Proposal

"Roadwork is incredibly dangerous, so we developed the Robotic Crack Sealer to save lives, by moving road workers out of harm's way."

With over 25 years of experience in designing and building industrial automation & robotic systems, our team has repackaged our expertise into a modular mobile solution to perform various road maintenance applications. We've partnered with [SealMaster](#), the one-stop source for all your pavement maintenance needs and their network of 110 franchise locations across the US, to offer our innovative technology for sale.

Designed with safety as the priority, the Robotic Crack Sealer provides a safer, more efficient, and reliable solution compared to traditional manual crack sealing. By greatly reducing the labor requirements, allows leaders to allocate those valuable employees to other more desirable and profitable roles.

RMV w/ Crack Sealer Capabilities

Only a single driver/operator required to oversee the automated scanning, blow-off, and crack sealing application.

Operate 24/7 – day & night

Additional Robotic Maintenance Modules in development to accompany the Robotic Crack Sealer.

Safety

Reallocate exposed road workers to the safety of the truck cab or other safe value added roles.

Safety fence enclosing the robot work zone with a virtual safety envelope to ensure the robot does not travel beyond the safety fence.

Equipped with safety lights, emergency-stops, programmed safety redundancies, and closed-caption video around the truck that's visible from the cab.

Data

Accurately measure and collect sealing performance metrics, easily accessible through a web-based app.

- LFCS (lineal feet of cracks sealed)
- Distance traveled in miles
- Duration in sealing mode in mins
- Amount of material dispensed in lbs
- 24/7 login access to data dashboard

Maintenance | Service | Support |

Recommended Annual Vision System Calibration & Preventative Robot Maintenance

Extended Warranty & Service Contracts available

 419-737-9506

 www.rmv.llc

 16442 US HWY 20
Alvordton, OH 43501

[Robotic Crack Sealer
Demonstration Video](#)

[Robotic Crack Sealer
FAQ Sheet](#)

Why it's important to crack seal...

Extending pavement life: By sealing cracks early on, the overall lifespan of the pavement can be significantly extended. Unsealed cracks can expand over time and worsen, requiring costly repairs or complete resurfacing. Crack sealing helps to minimize the growth of the cracks and delays the need for more extensive and expensive maintenance measures.

Preventing further damage: Cracks in pavement surfaces not only allow water infiltration but also provide a pathway for other harmful substances like oil, gasoline, and deicing chemicals to enter the pavement layers. These substances can degrade the binder and aggregate materials, leading to further damage and deterioration. Sealing cracks effectively prevents the ingress of such materials and protects the pavement from accelerated deterioration.

Cost-effective maintenance: Crack sealing is a cost-effective maintenance practice compared to other rehabilitation methods. By addressing cracks early, before they develop into more significant issues, the need for more extensive repairs or reconstruction can be avoided, saving substantial costs in the long run.

Risks with manual crack sealing...

Exposed workers: Road workers that traditionally perform manual crack sealing are exposed to the dangers of the roadways – speeding and distracted drivers, traffic congestion. In addition to the outside environments, and any labor-intensive activity over long periods of time are subject to physical strain and exhaustion.

Hot materials: Crack sealing often involves the use of hot asphalt or rubberized sealants, which are heated to high temperatures to ensure proper application. These materials can cause severe burns if mishandled or if proper safety precautions are not followed. In addition, the misuse or lack of maintenance of a traditional oil jacketed sealant kettle equipped with hydraulic pumps can often be dangerous and lead to serious injury.

Toxic fumes: The heating process involved in crack sealing can release fumes and vapors that may be harmful if inhaled in excessive amounts. These fumes can contain hazardous substances such as volatile organic compounds (VOC's).

Labor intensive: The actual application of sealant requires an immense amount of labor to effectively fill the cracks. Depending on the method used, such as hot pour or cold pour, workers may need to handle equipment, operate applicators, and carefully pour or spread the sealant along the cracks. This can be a physically demanding task, especially when working on large-scale projects or in challenging weather conditions for long periods of time performing the same task over and over.

Labor shortage: In today's market the labor shortage is a real problem that is plaguing every industry and will not be going away anytime soon, especially those labor-intensive and undesirable roles. There are many factors creating the immense labor gap in the United States, one of the most impactful is the rate of the baby-boomer generation retiring, and the rate of incoming labor force not being sufficient to staff all of all the needed jobs.

RMV w/ Crack Sealer Components

RMV LEASING, LLC in coordination with our Strategic Partners [Pioneer Industrial Systems](#) and [SealMaster](#) will offer for sale our Robotic Maintenance Vehicle with Crack Sealer.

OPERATION SEQUENCE The system will consist of an advanced vision system that will map the road surface, filter the cracks that fall within predetermined parameters, send the cracks data points that qualify to a 6-axis robot that will then fill the cracks automatically using a SealMaster crack sealer and heated hose. The system will be powered by a generator and controlled by an industrial PC working with the robot controller. The system will be mounted to a class 7 truck chassis for mobility. A single operator will initiate the cycle and oversee system controls from the cab while driving down the road. An optional tender may be necessary to maintain the kettle level in high volume conditions.

RMV w/ CRACK SEALER INCLUDES:

1	FORD F750 Class 7 Truck Chassis (or equivalent) with air ride suspension Standard new chassis color is white cab
2	PIONEER Installation of fabricated tubular steel - diamond decking flatbed, robot mounting plate, underhung toolbox, vision shroud, component mounting, assembly, and wiring.
3	FANUC 6-axis robot with controller, required software, dress package, End Of Arm Tool
4	SEALMASTER CP-260-gallon crack sealing unit with burner, temperature controls, heated hose, electric gearboxes for agitation and fluid delivery pump
5	REPUBLIC 15hp turbine blower (94,000 cfm) - 12 ft air knife with 52 nozzles (1800 cfm each) to help clear cracks and the pavement surface of loose debris
6	STATELINE 18kW 480V 3phase generator with Perske engine, step down transformer to 120VAC
7	VISTA Advanced Vision System with a series of cameras and lasers for crack mapping and IPC w/ GPU (Industrial PC) for processing crack data using AI (Artificial Intelligence) to calculate robot points and pump data.
8	PIONEER Electrical Control package with PLC (Programmable Logic Controller), Ethernet, 4G Verizon Data, GPS, Perimeter Cameras, and required cables.
9	Safety Components include the required safety gates, handrails, flashing lights, and emergency stop push buttons.
10	System Programming and Calibration (PLC/HMI/ROBOT/VISION)
11	Documentation includes operating manual and training video.
12	Delivery and (2) days on-site training and support
13	24/7 Customer Portal Access for Data Reporting by www.HardFin.com

**** NOTE THE ABOVE** components are used for quoting purposes and exact material, manufacturer, or part numbers may change during the design phase.

RMV w/ Crack Sealer Specifications & Operation

SPECIFICATIONS: This quotation will consider the specifications and the equipment will be built to industry, ANSI, OSHA, RIA, DOT, and NEC standards.

ELECTRICAL CONTROLS: Included will be 480v 3phase main electrical enclosure with main disconnect, Allen Bradley controller, relays, transformers, motor control, and all other necessary components. Included are all push button stations, field devices, junction boxes, piping, and wiring.

OPERATOR INTERFACE (HMI): This system is equipped with an HMI touchscreen located in the cab of the truck for operator control. The HMI includes a power-up screen with safety checklist, main screen with systems status, main screen with manual functions, cycle start, vision crack info, current alarm, and alarm history.

ROBOT OPERATIONS: This system includes a FANUC Robot. The robot is integrated into the control system and its functions are initiated automatically during normal operation. Automatic operation requires the robot to start from a known or *Home/Shipping* position. A collision, emergency stop condition, or other system faults may require an operator or technician to send the robot to its *Home/Shipping* position using the HMI. Any robot-specific fault or alarm that occurs on the system will be displayed on the HMI. Cycle start and operation will be from the HMI touchscreen. The robot teach-pendant should only be used for the setup by factory personnel.

SPEED: Cycle time will vary with crack size, density, pavement type, and region. The RMV is programmed to optimize the crack to robot path. The operator will receive a red/green signal in the cab and the live crack processing data from the HMI for informational purposes only. The operator is responsible for the braking and thus the speed of the truck.

SAFETY: Standard sheet metal guarding or shielding around the drive mechanisms and pinch points to be included. There will be a safety fence around the perimeter of the truck bed with (2) access doors. There will be (5) emergency stop pushbuttons located on the vehicle. It remains the responsibility of the buyer to ensure that all guards are in place, operators are professionally trained, and equipment follows local safety regulations before running equipment.

SPARE PARTS: No spare parts have been included in the base price of this quote. As part of our standard documentation process, we will provide a recommended spare parts list. At that time, we could provide an itemized quote for those recommended parts.

CUSTOMER RESPONSIBLE FOR: The Customer or end-user to provide the correct crack sealing material and a trained operator for the RMV. The Customer shall maintain insurance to cover both the base vehicle and the equipment (cargo) and the required liability insurance for the state or territory of operation. It is the Customers responsibility to secure contracts and meet the licensing and bonding as required by those contracts. The customer is also responsible for work zone safety, flaggers, cones, signs, barriers, and other traffic control as required by those contracts. Any truck or equipment repairs resulting in damage from improper use or normal wear.



RMV w/ Crack Sealer Pricing

RMV NOT RESPONSIBLE: RMV is not responsible for damage to the RMV due to improper operation or road conditions.

COMPLIMENTARY SERVICE TRIP: With this equipment, you will receive a complimentary service trip, approximately 12 months following the delivery and commissioning of the system. During this 1-day service trip, our technician will meet with your operators, maintenance, and or engineering to review the condition of the equipment, recalibrate the RMV for optimal performance, provide recommendations for the replacement of worn or damaged parts, discuss any spare parts required, and schedule the next preventative service call. Our technician will now answer any technical questions or provide additional training in specific RMV functions if so desired. An RMV representative will contact you ahead of time to schedule this service. If for some reason you deem service or support is required prior to 12 months, please contact us to schedule the complimentary 1-day trip.

DELIVERY: Lead times dependent on build queue, contact a sales representative for today's current availability.

SHIPPING: Price includes delivery of RMV to the destination within the Continental United States.

TRAINING: The base price does include **(2) days** of initial startup and training of the RMV w/ Crack Sealer at time of delivery.

PHASE 1 EARLY ADOPTER PURCHASE PRICE: RMV w/ Crack Sealer.....\$779,000.00 USD

Phase 1 Early Adopter Discount pricing limited to next (5) trucks only.

PAYMENT TERMS:

\$99,000 deposit with signed purchase agreement or purchase order, net 0

\$340,000 due at start of build phase, net 0

\$340,000 final payment due upon delivery, net 0

MSRP: RMV w/ Crack Sealer\$979,000.00 USD

*Price includes all software, licensing, and data reporting fees.

**Please note that your local state sales tax will be added to the above prices and any invoices unless a properly completed Tax Exempt Form has been provided in advance.

BUY NOW

Financing Options

Pricing Terms & Conditions are subject to change, please contact a sales representative for current pricing.

RMV w/ Crack Sealer Terms & Conditions

PRICES AND TERMS OF PAYMENT: Prices are listed as US Dollars and do not include VAT tax, tariffs, import fees, licensing, nor insurance. Standard terms are net 0 days upon receipt of the invoice based on payment milestones outlined above.

DOCUMENTATION: RMV is committed to being an environmentally friendly company and will provide documentation electronically via download links.

WARRANTY: See the attached one-year warranty statement. After warranty period service will be based on our T&M rates. The truck chassis will fall under the standard manufacturer's warranty. Please request extended warranty options.

CANCELLATION: If an order is received and then terminated the deposit is non-refundable.

FORCE MAJEURE: RMV will not be responsible for delays in shipment, loading, transit, or non-delivery of the product due to Force Majeure, including but not limited to abnormal manufacturing conditions, strikes, fires, accidents, and causes beyond the seller's control, including priorities which may be established by United States or customer's governments. The seller shall advise the buyer immediately of any such occurrence with in (14) days thereafter, the seller shall send by airmail to the Buyer a Certificate of Occurrence issued by competent government authorities as evidence of a Force Majeure occurrence. However, under such circumstances, the seller shall take reasonable steps to hasten delivery of the product. For every day, the Force Majeure event caused a delay in the completion of the product, the seller shall receive a minimum of one-day extension, without penalty, to complete the shipment of the product.


HIRING RESTRICTION: Our pricing and service are conditional; our clients shall neither hire nor offer to hire our workforce personnel during ongoing work and or for a period of one year thereafter. If you hire one of our employees, you agree to pay RMV Leasing, LLC or Pioneer Industrial Systems, LLC 25% of that person's current yearly salary based on 2080 hours per year. We are most useful and effective to you, having an undisturbed workforce. In return, RMV and or Pioneer agrees not to solicit any of your employees.



RMV w/ Crack Sealer Warranty

RMV Leasing, LLC and Pioneer Industrial Systems, LLC warrants all new equipment to be free from defects in material or workmanship under normal and proper use and maintenance service as specified by Pioneer Industrial Systems, and upon proper installation and start-up in accordance with instructions supplied, for a period of one (1) year from the date of shipment from our facility.

This warranty does not cover, and the following are specifically excluded:

Normal wear for perishable items such as duckbill nozzles, end of hose pucks, EOAT (End of Arm Tool), UHMW slip sleeves, fluid pump packing, heated hose assembly, snap on vision shrouding, robot cover, etc. 

All vendors purchased components.

On any such components that fall under the original manufacturer's warranties, including Fanuc Robots which carry a (1) year warranty from date of install, if a purchased component is deemed defective Pioneer will work with the original vendor to see if it is still covered under manufacturer warranty, return the defective part, and replace at no cost to customer. If the part is out of warranty a new part and labor to replace it will be charged against a purchase order for the service call.

Items purchased for the equipment from a vendor to Pioneer Industrial Systems, LLC are warranted only as warranted by the manufacturer of such items. Otherwise, all such items are sold on an "AS IS" basis.

Losses caused by improper or insufficient maintenance, normal wear and tear, and any improper operating, storing, handling, and installation.

Repair or replacement of failed or damaged components resulting from electrical power failure, low voltage, voltage spikes, or voltage drops to the unit; or

Losses or damage caused by someone other than Pioneer modifying any PLC, HMI, Vision, or ROBOT programs originally installed on the equipment.

Losses or damage caused by environmental changes, changes or inconsistencies with process, product, or material provided by others.

Economic Loss, lost profit, or special, indirect, or consequential damages, including without limitation, losses or damages arising from equipment failure.

This warranty is not transferable.

A purchase order or credit card is required for warranty service calls. If the workmanship is deemed defective Pioneer Industrial Systems, LLC will repair it at no expense to the customer. If a purchased component is deemed defective, Pioneer will work with the original vendor to see if it is still covered under the manufacturer warranty, return the defective part, and replace it at no cost to the customer. If the part is out of warranty a new part and labor to replace it will be charged against the purchase order for the service call.

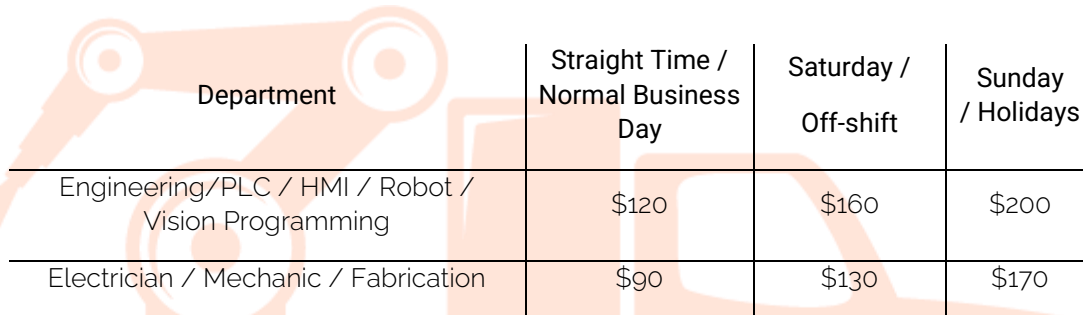
To schedule a service call, please call (419) 737-9506 with RMV serial number (located by main disconnect switch, truck location, contact person, and purchase order number.

THIS SALE IS MADE ON THE EXPRESS UNDERSTANDING THAT THERE IS NO IMPLIED WARRANTY AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

RMV w/ Crack Sealer T&M Rates

Effective January 1, 2023 through December 31, 2023

Rates are listed in U.S. \$ per hour



Department	Straight Time / Normal Business Day	Saturday / Off-shift	Sunday / Holiday
Engineering/PLC / HMI / Robot / Vision Programming	\$120	\$160	\$200
Electrician / Mechanic / Fabrication	\$90	\$130	\$170



Travel time to be billed door-to-door, at Straight Time rates.

Material and Travel Expenses will be billed at cost plus 20%

Mileage will be billed at \$0.62/mile

Remote support includes 1-hr of free support, additional time will require a PO or Credit Card billed at the rates above.

ROBOTIC MAINTENANCE VEHICLES
 Emergency service calls will be billed at a minimum of 4 hours, including travel.

HIRING RESTRICTION: *Our pricing and service are conditional; that our clients shall neither hire nor offer to hire our workforce personnel during ongoing work and / or for a period of one year thereafter. If you hire one of our employees, you agree to pay RMV, or Pioneer, 25% of that person's current yearly salary based on 2080 hours per year. We are most useful and effective to you, having an undisturbed workforce. In return RMV and Pioneer agree to not solicit any of your employees.*