# HYDRO ENGINEERING, INC.

# WASH/RINSE DECONTAMINATION SYSTEMS

## COMPLETE PRE-ENGINEERED SOLUTIONS

### HYDROBLASTER™ - HYDROPAD™ - HYDROKLEEN
### "PROVEN SUPERIOR TECHNOLOGIES"

















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# WASH/RINSE DECONTAMINATION & CORROSION CONTROL SYSTEMS

Thanks for your consideration of Hydro Engineering, Inc. There are several methods of approach for standard vehicle or heavy equipment wash/rinse decontamination and corrosion control. The selected approach can vary widely depending upon on the expected demand, location conditions, desires for operation and of course budget available. The information to follow will present some very general considerations relative to basic wash requirements. Following your review of this information we welcome the opportunity for a detailed discussion to determine how Hydro Engineering, Inc. can best be of service.

## APPLICATION CONSIDERATIONS

The first aspect regarding vehicle decontamination is that there are two very basic but different considerations. Very often there are heavy deposits of soil or mud accumulated during excavation. Lying beneath this muck are metal and painted surfaces with a thin layer of general dirt and grime containing a wide variety of contaminants. The cleaning for both methods requires different technologies to optimize performance.

De-Muck systems for heavy soil pack removal utilize a high volume of water dispensed at relatively low pressure. This can be accomplished with a variable spray pattern nozzle which allows operators to perform surface soaking followed by focused impact removal. The process can move very quickly as operators gain experience. Alternately, or in combination with, an automatic drive through high-volume undercarriage & wheel wash system can be employed.

Standard, or final wash/rinse decontamination is performed using a high-pressure hot water impingement spray. This is best accomplished with a Hydroblaster capable of dispensing 5-gpm with a backpressure up to 3,000-psig. This may be preceded by Hydrofoamer application of a cleaning compound if beneficial. Experienced use of the high-pressure hot water impingement process will effectively remove the accumulation of contaminants on all equipment surfaces and optimize corrosion control.

It is important to mention that both technologies are significantly beneficial in combination if required because they are designed to achieve two completely different objectives. While high-pressure impingement can eventually remove muck, the time required to do so can be tremendous depending upon the degree of accumulation. A high volume low pressure de-muck system on the other hand will remove heavy deposits but does nothing to remove the wide variety of contaminants on the equipment surfaces.

All water used during either process described above becomes wastewater once in contact with the equipment. In accordance with the Clean Water Act, users have the responsibility to collect and manage this wastewater for either pre-treatment prior to an approved sanitary discharge or alternately, process the wastewater to remove contaminants then reuse the processed water. Hydro Engineering, Inc. can help with either case.

As an example, consider a system to de-muck, a system to impingement wash, a wastewater collection/containment system, and a filtration system that will remove solids and wide variety of contaminants from the wastewater will be needed so the processed water can be returned to the de-mucking and impingement wash systems for reuse. This could be considered a complete system.

When such a system is in place, users are in full environmental compliance and also accomplishing significant water conservation. And best of all, you have the most effective, efficient and reliable decontamination and corrosion control system to maintain equipment.

The required size of system components and specifics of equipment needed for a complete decontamination system will vary depending upon many things. For example, it is important to consider the type, size, and condition of equipment to be serviced, the total number of units to be serviced, the frequency of cleaning required, the speed at which any single unit will need to be serviced, daily hours of operation, and days per week operation is expected.

Consider that each de-mucking gun or high-pressure impingement wand will require an individual to operate. Multiple guns and wands can expedite the process if required and should be planned for during design. In conjunction with this therefore is the consideration of manpower available to perform the tasks once the system is installed.

Other considerations of a site specific nature would be system location and approach/retreat traffic path, the total area size required, utilities available, ambient temperature extremes, overspray mist limitations, and possibly more. Everything can be accommodated for but must be considered for beneficial planning.

## SYSTEM EQUIPMENT AND DESIGN

As mentioned, there are several approaches that can be considered for any wash/rinse decontamination and corrosion control system. The decision can be influenced by several factors to include short-term & long-term objectives required, existing site conditions, site limitations, location facilities, and again, budget available.

Every decision in system design will have a cost influence that results in either a benefit, or a compromise. Decisions should take into consideration all aspects of both short-term and long-term importance. System capital investment, installation cost, operating cost, maintenance and performance are all necessary aspects for review. Keep in mind one of the primary objectives is corrosion prevention to extend service life of equipment which can have a tremendous pay back in operational life extension.

Hydro Engineering, Inc. manufactures equipment and systems primarily for above ground installation. This reduces costs for construction, installation and permitting. We likewise prefer to offer packaged systems where possible. This allows components of a system to be completely mounted, wired, plumbed and tested at our factory prior to shipment. This can also provide significant savings of installation time, costs and frustration. If most beneficial to the customer's situation, we can supply individual components and provide direction or field service assistance to install a system in an existing facility.

Hydro Engineering, Inc. three basic product lines combined to form a complete system are as follows:

Hydropad™ Systems (Patented) – Modular, above ground, all steel wash pad systems for collection, containment and transfer of wash/rinse wastewater fluid to processing. Individual Hydropad platform modules incorporate an integral side gutter and are available in a variety of widths and structural weight ratings. Hydropad systems are designed for field installation of modular components to form virtually any wash pad dimension required.

Automatic undercarriage & wheel wash systems can be incorporated into a Hydropad system to compliment de-muck design if warranted and beneficial to overall operation.

Hydrokleen™ Systems – This product line provides a wide array of wastewater processing innovations for optimization of solids and contaminant removal/recovery for wash/rinse decontamination and a variety of other applications. Perfect for desires to utilize full recycle operation or discharge to sewer.

Hydroblaster™ Systems – Includes an array of high-pressure, low pressure, cold water, or hot water systems and associated equipment for control, dispensing and application. Hydroblaster systems are UL Listed and approved for CSA and CE certified application.

Based on knowledge of specific application criteria and decisions for best design approach, we can prepare a preliminary concept design and associated budgetary estimate using the appropriate products and supporting equipment. Subsequently, we can then refine the information based on communications with customer to result in the best fit, form and function for the application, and hopefully in accordance with any budget constraints.

## DESIGN INFORMATION

### Hydropad Wash Pad System

The largest vehicle size and weight are important to know to select the appropriate Hydropad systems. Likewise any special equipment service requirements can be helpful. Hydropad platform modules are 8' long and available in widths of 8', 10', 12', 14', 16', 18' or 20'. Multiple platform modules are connected to form the desired total wash pad length.

Hydropad load ratings are based on vehicle weight per axle and range from 12-tons/axle up to 30-ton/axle. Hydropad platform modules are placed above ground on a hard surface and field install with standard tools. The integral side gutter of each platform module mate with adjacent modules to form a continuous side gutter the full length of the completed wash pad.

Hydropad systems include a selection of ramp modules to best accommodate the site, application, and customer desires. Ramps modules can be used at one or both ends of the wash pad and can be as wide as the platform module or less as desired. Extended length ramps are also available to accommodate special equipment with minimal ground clearance.

Optional Hydropad items include incorporation of an automatic undercarriage wash system, side walls from 4' to 10' high, elevated service ramps, special transfer in ground sumps, automatic drag conveyor solids cleanout, and more as dictated by the requirements of the application.

Some applications may have extremely high demand. In consideration that each vehicle is going to take a certain amount of time to service, at some point a single lane Hydropad wash pad system may not be enough. In such cases multiple wash pad lanes may be required. It is possible to employ multiple lanes with a centralized wastewater processing system to best satisfy the requirements. We welcome the opportunity to assist with design evaluation and logistics to accomplish objectives.

Hydrokleen Wastewater Processing

Hydrokleen wastewater processing for any application is a combination of field proven technologies to effectively remove/recover contaminants using the best balanced approach. Process optimization is a balance to achieve both high-quality water for recycle use and maximize simplicity of contaminant handling and disposal.

Contaminants generated during a wash/rinse process can vary widely depending upon the application and type of equipment serviced. Generally, contaminants removed and collected will fall into five categories to include; Solids, Oil/Grease, Hydrocarbons, Metals, and Chemicals.

Hydrokleen system technologies target specific aspects of process requirements, in a specific sequence, with unique solutions to optimize system operation and performance. All Hydrokleen processing is modular, above ground, and is installed quite simply to interface most effectively with the wash pad, wash equipment, and compliment the entire wash/rinse system operation.

Depending upon the application specific desires and requirements, Hydrokleen systems can be placed in and existing equipment room or provided in an environmentally controlled enclosure as a packaged system. System design is based upon the wastewater volume planned and the contaminant constituents expected.

Hydroblaster Wash/Rinse Equipment

As outlined, an application may require de-mucking, standard wash/rinse operation or both. The Hydroblaster product line includes many options of field proven innovations to optimize wash/rinse decontamination performance.

Hydro De-mucking systems and Hydroblaster systems can be provided with remote station operation. Vehicle wash systems also normally include a Hydrofoamer soap/foam application system using a separate wand for cleaning compound application as a prewash step. Hydroblaster/Hydrofoamer remote stations provide operators with complete machine control plus include self-wind retractable hose reels.

Multiple Hydroblaster and/or Hydro De-Mucking systems can be employed with remote stations strategically placed adjacent the Hydropad wash pad lane. Excellence in design, performance, and flexibility.

## SUMMARY

Thank you very much for your consideration of Hydro Engineering, Inc. We welcome the opportunity to assist with design and planning for a complete system to satisfy specific requirements of your application. With more than 30-years experience, we are the leader in innovation, performance and manufacturing quality. Continued solutions through quality manufacturing, innovation and customer service. Please let us know if you have any questions and how we may assist with your application design and specification.

Regards,
Hydro Engineering, Inc.

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