CASE STUDY: Transmission Line towers installed on OFF-ROAD and hardly reachable locations
Cost-effective preventive maintenance polluted insulators washing system
WITHOUT A POWER OUTAGE

Scope: Cleaning, polluted Insulators installed on MV-HV-EHV transmission line towers not served by access roads or installed in hardly reachable locations.

Revolutionary solution: Wilorton Hybrid Washing System (HWS).

The HYBRID washing system design combines a pumper truck with a fixed, rigid piping system installed on the transmission tower. The HWS washing efficiency is a de facto revolution in the insulators maintenance programs.

Shown 500 kV DC-V-String Insulators tower, the height of approx. 70 m



Shown a Pumper truck parked approx. 50 m outside a rice field. The insulators are washed in minutes by connecting the flexible hose to the quick coupler mounted at the tower base and starting the Pumper's motor pump.

A seasonally adjusted maintenance program focused on washing energized and POLLUTED insulators to eliminate leakage currents, flashovers, and power outages.

Preventing T&D power interruption with Hybrid Washing System, attain operational excellence by reducing downtime risk, ensuring personnel safety, and achieving financial efficiency by optimizing the maintenance budget.

Cleaning, polluted Insulators installed on MV-HV-EHV power line towers not served by access roads
or installed in hardly reachable locations.

The pumper truck shall be parked approximately 50/100 m from the towers. Once the flexible hose mounted on the mobile washer is connected to the quick coupler fixed at each tower base, **multiple insulators are simultaneously washed** in minutes.

The pumper truck **does not require skilled personnel,** such as qualified crane operators and staff adequately trained to operate from the ground with joysticks or from platforms/telescopic boom.

The Hybrid washing maintenance system minimizes the investment in equipment such as heavy-duty off-road vehicles with an aerial platform or telescopic boom, suitable for washing insulators installed at remarkable heights.

ALL INSULATORS INSTALLED in one tower are cleaned in minutes (Time depends on the tower's configuration and elevation).

(General Specifications: Ref. Standard IEEE 957-2005)



Wilorton Holding

Design, Engineering, Manufacturing and Project Management expertise on Power Lines & Power Generation Industry,
Oil & Gas OEM spare parts, Mechanical works, Process Automation, Technical & Procurement services end-to-end solutions, since 1998.

500 kV-DC-Tower, Live video Hybrid Washing system: https://youtu.be/lxFX1FCQkqE

Cleaning, polluted Insulators installed on MV-HV-EHV power line towers not served by access roads
or installed in hardly reachable locations.

HYBRID SYSTEM OVERVIEW (HWS)

These cost-effective maintenance solutions prevent power outages caused by polluted insulators on MV/HV/EHV (Medium, High & Extremely High Voltage) transmission lines, outdoor Substations, and Gantries.

The scope of this document is to outline and detail the HYBRID design benefits, and advantages in cleaning polluted insulators installed in hardly reachable locations, without a power outage.

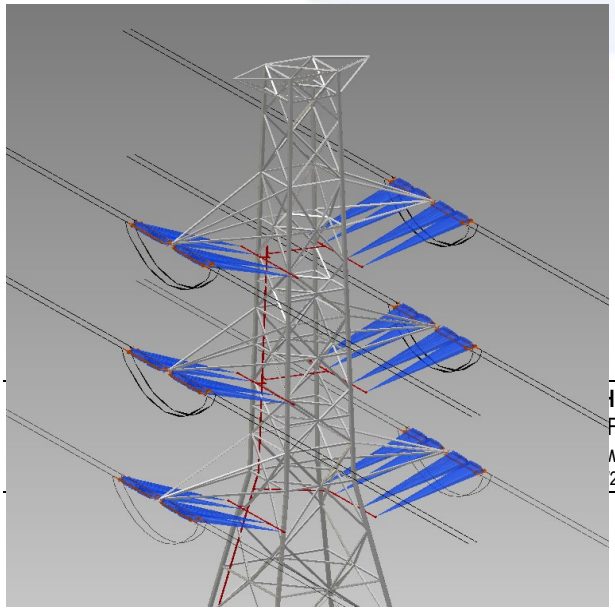
Standard washing equipment, mounted on heavy-duty trucks/chassis with an aerial platform or telescopic boom and personnel, requires much time to get close to the tower location in such hard-to-service sites.
Washing efficiency, e.g., the number of insulators cleaned daily, is very few, and the maintenance cost is high.

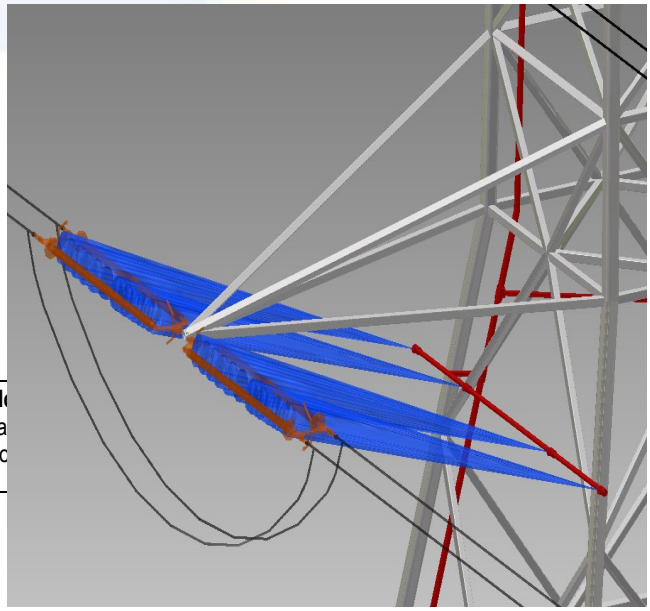
The Hybrid Washing set-up (HWS) integrates Fixed & Mobile Systems and is installable on existing and new T&D transmission lines and gantries.

BRIEF HYBRID WASHING SYSTEM DESCRIPTION

A simultaneous wash of all insulators of one standard Suspension/Tension tower and Gantries.

The water envelopes and swamps all energized insulators installed on one structure in one surge.
In calm wind conditions, the washing activity duration is **approx. 25/60 Seconds for one structure. (Washing time depends on the tower's configuration)**





BRIEF HYBRID WASHING SYSTEM DESCRIPTION, Cont'd

On each tower, a rigid water piping system must be installed.

Piping sizes, water flow capacity, and pressure parameters are determined by the insulator's types, kV rating, and towers/gantries/steel poles height.

Suitable spraying nozzles are installed on the piping system at the required elevation. Nozzle quantity depends on the insulator's type.

Washing effectiveness may be limited by wind speed.

No washing activities shall be planned with wind speed above 25 Km/H. A high washing rate is achieved with calm or low-speed wind conditions.

The demineralized water remaining in the piping system might be **recovered** into the storage tank at the end of the washing activity.

Washing water:

For washing energized insulators **from 132 kV to 765 kV with water pressure ranging from 2750 to** 7000 kPa (400 to 1000 PSI) at the pump outlet, **demineralized water** with minimum permissible conductivity not to exceed 20 µS/cm (micro-Siemens per cm) is required.



MV-HV-EHV Power Lines - energized polluted insulator Hybrid washing system - CASE STUDY.

We accept challenges and questions on the T&D substation/power lines preventive maintenance of energized polluted insulators, one of the main factors causing leakage currents, flashovers, costly interruption, and power outages.

We eliminate T&D power line outages caused by polluted energized insulators.

Reduce network outages and repair costs, eliminate "cold" cleaning maintenance (De-energized and grounded system), and improve the income statement from the loss of turnover.

Free-of-charge Automated and Hybrid Washing Systems case/cost studies for your infrastructure are available upon request.
Send relevant layout & section drawings of your Power Lines to our Customer Service & Support office (CSS): info@wilorton.com specifying in the subject CASE STUDY.

Learn more and stay updated following our LinkedIn Insulator Washing Systems showcase page: https://cutt.ly/treL4LU

Visit our YouTube channel to view Live Videos: https://youtu.be/DIw9VgIzkns.

We appreciate your attention,
http://www.wilorton.com

Wilorton Holding Inc.