DEHOUST

Heat.
Energy. Water.
STORAGE & UTILIZATION

Golf Courses – The Challenge: Sustainable Water Treatment

Challenges in water disposal at golf course wash bays

Wash bays on golf courses are essential for cleaning:

- Golf carts
- Turf maintenance machines (mowers, tractors,…)
- Tools and equipment

However, the water generated during washing presents several technical, regulatory and environmental challenges, but also **opportunities for sustainable solutions!**

1. Contaminated Wastewater

The wastewater from wash bays may contain:

- Oils and fuels (e.g. hydraulic oil, diesel)
- Fertilizers and pesticide residues
- Solids like grass clipping, soil and sand
- Cleaning agents and chemicals

➡ Environmental risk: If discharged untreated, this water can harm soil, groundwater and ecosystems. It’s considered hazardous wastewater and must be treated appropriately.

DEHOUST

Challenges in water disposal at golf course wash bays

2. Legal and environmental regulations

Many countries (including Germany and many Gulf states) have strict environmental regulations, such as:

- Waste Resources Law (e.g. WHG in Germany)
- Wastewater discharge regulations – no contaminated water enters the soil or sewer system untreated
- Technical standards for handling hazardous substances
- Compliance with environmental protection laws is documented and maintained

➡ Golf courses must follow national water laws, environmental standards and in some cases ISO or ESG reporting guidelines.

DEHOUST

Challenges in water disposal at golf course wash bays

3. Technical and environmental requirements

A modern, sustainable wash bay includes:

- Sealed surfaces with water collection and drainage
- Oil-water separators (e.g. coalescence units)
- Sludge and solids traps
- Biological treatment systems using microbes for organic breakdown, ultrafiltration and ozone treatment for on-site reuse

⇨ Key sustainability feature: These systems enable water reuse, reducing freshwater consumption by **up to 90%.** Recycled water is used for further wash cycles, creating a virtually closed-loop system.

DEHOUST

Challenges in water disposal at golf course wash bays

4. Water reuse & recycling – a sustainability priority

Wash bay systems with integrated treatment and reuse can dramatically lower water demand

Recycled water can be applied for:
- Equipment cleaning
- Irrigation
- Toilet flushing

Closed-loop systems reduce:
- Water bills (potable- and wastewater)
- Environmental footprint
- Risk of contamination

⇨ Sustainability impact: Using water-efficient technologies aligns with golf industry best practices, certifications (e.g. GEO, ISO 14001) and support climate adaption strategies.

DEHOUST

Challenges in water disposal at golf course wash bays

5. Operational and climate considerations

Especially in hot climates, wash bays face additional challenges:

- Evaporation losses require optimized design for covered or shaded systems
- Dust and sand increase solids content in water
- Stormwater events need separation from wash water

Conclusion: Sustainable Wash Bays are Essential

♻️By integrating water recycling and reuse, golf courses can:

- Reduce water consumption significantly
- Comply with environmental laws
- Improve ESG performance
- Lead by example in sustainable sports facility management
- Being prepared for droughts and lack of water supply

DEHOUST

The Solution – DEHOUST GOtec®

The DEHOUST GOtec® is an innovative, compact, and sustainable all in one solution for treating wastewater generated at wash stations on golf courses - especially from cleaning maintenance vehicles, golf carts, and turf care machinery.
The system combines mechanical, biological and physico-chemical processes in a modular setup to deliver highly efficient treatment that meets the highest environmental standards.

The GOtec® system is currently patent-pending, highlighting the unique and innovative nature of this technology.

GOtec® 500 inside a 10’ Container

GOtec® 10.000 inside a 20’ Container

DEHOUST

The Solution – DEHOUST GOtec®

Treatment process stages of the GOtec® System:

1. **Coarse filter with integrated grass separation**
   Wastewater first passes through a specially designed coarse filter that effectively removes coarse particles such as grass clippings, soil, sand, and sediments.

   - Grass separator function is integrated directly into the filter
   - Grass residues are automatically discharged into a collection container, simplifying disposal and preventing system blockages
   - Coarse filter is regularly and automatically cleaned by the system, significantly reducing maintenance

2. **Biological pre-treatment**
   In an aerated bioreactor, microorganisms biologically degrade organic contaminates such as
   - Surfactants
   - Organic substances

   This stage sustainably reduces the organic load in the water and prepares it optimally for the subsequent filtration steps.

The Solution – DEHOUST GOtec®

Treatment process stages of the GOtec® System:

3. **Ultrafiltration**
   The biologically pre-treated water is passed through low-pressure ultrafiltration membrane, which reliably retains fine suspended solids, bacteria and microorganisms.
   Result is clear, hygienically safe and virtually germ-free water.

4. **Ozone treatment**
   In the final treatment stage, the water is ozonated, which effectively removes odors, colorants, residual germs, as well as residues from fertilizers and other organic compounds, without chemical residues.
   This results in highly purified water, suitable for reuse or compliant discharge.

DEHOUST

The Solution – DEHOUST GOtec®

Available configurations:

- **Plug & Play Units**
  Dehoust GOtec® is a complete pre-fabricated system. Installation is quick & easy

- **Technology base**
  Dehoust GOtec® technology is based on multiple approved and installed greywater recycling units Dehoust GWtec®.

- **Treatment capacity**
  Daily water treatment capacity starts from 500lt/day and units are available up to 30.000lt/day.

- **Containerized solution**
  The system is also available as a pre-fabricated containerized unit, ideal for outdoor installations and sites with limited space.

- **Energy autonomous option**
  The system can optionally be equipped with a photovoltaic system and battery storage, enabling off-grid and environmentally friendly operation, reducing energy costs and lowering the golf course's carbon footprint.

DEHOUST

The Solution – DEHOUST GOtec®

Key benefits at a glance:

- ✅ Efficient Multi-Stage Treatment: Combination of coarse filter with grass separator, biological treatment, ultrafiltration, and ozone disinfection
- ✅ Automatic Grass Separation: Grass residues are autonomously collected in a dedicated container
- ✅ Automatic Coarse Filter Cleaning: Minimizes maintenance and ensures reliable operation
- ✅ Water Reuse Capability: Promotes sustainable resource conservation through treated water recycling
- ✅ Flexible Design: Compact system, also available as a containerized unit
- ✅ Energy Autonomy Possible: Optional PV and battery system for sustainable operation
- ✅ Regulatory Compliance: Protects groundwater and meets all relevant environmental regulations
- ✅ Innovative & Patent Pending: System under patent application, ensuring unique technological advantages
- ✅ User-Friendly: Fully automated operation with optional remote monitoring and control

DEHOUST GOtec® represents intelligent, resource-efficient and future-proof wastewater treatment — specifically tailored to the demands of modern golf courses.

DEHOUST

DEHOUST

Heat.
Energy. Water.

STORAGE & UTILIZATION

Thank you for your attention!