# Iron removal plant (IRP) and Reverse Osmosis (RO) plant media change services

Iron removal plant (IRP) and Reverse Osmosis (RO) plant media change services are professional maintenance procedures designed to restore, enhance, and maintain the efficiency of water treatment systems. These services involve removing old, exhausted, or clogged filter media and replacing them with fresh, certified material to ensure clean, compliant water output and to prevent premature damage to downstream components like RO membranes.

## Iron Removal Plant (IRP) Media Change Service

Iron removal plants typically use oxidizing or catalytic media to convert dissolved iron into solid particles for filtration.

- **Signs Media Needs Changing:** Frequent backwashing, low water pressure, persistent iron stains, metallic taste, and high turbidity.
- **Replacement Media Types:**
  - **Birm:** A catalyst that requires no chemical regeneration, ideal for water with sufficient dissolved oxygen.
  - **Manganese Greensand/MnO2:** For high iron concentrations, sometimes requiring potassium permanganate (KMnO4) regeneration.
  - **Anthracite/Gravel/Quartz Sand:** Used in conjunction to prevent clogging and improve filtration, especially in multi-media tanks.
- **Service Process:** Removal of old, compacted media; cleaning of FRP/MS vessels; inspection and replacement of bottom strainers/lateral systems; loading new media; and backwashing/rinsing.

## RO Plant Media Change Service

- RO plants use pre-treatment media (multi-media filters, activated carbon) to protect the sensitive RO membrane.

- **Signs Media Needs Changing:** High pressure drop across pre-treatment filters, reduced flow rate, increased turbidity, and high silt density index (SDI).
- **Replacement Media Types:**
  - **Activated Carbon (GAC):** Removes chlorine and organic compounds; typically replaced every 6-12 months.
  - **Sand/Gravel/Anthracite:** Used in multi-media filters (MMF) for sediment removal.
  - **Softener Resin:** Replaced or recharged to prevent hardness scaling on membranes.

- **Service Process:** Drainage of old media; cleaning of filter housings; loading of new, graded sand, gravel, and carbon; backwashing to remove fines; and monitoring of post-replacement water quality.

## Key Components of Both Services

- **Assessment & Testing:** Water quality analysis (iron levels, TDS, pH) before and after to ensure efficiency.
- **Professional Handling:** Use of specialized tools for removing hardened, old media to prevent vessel damage.
- **Backwashing & Commissioning:** Thorough backwashing and rinsing to remove new media fines and stabilize the bed for operation.
- **Intervals:** Typically required every 1–3 years for media, depending on usage, but pre-filters may need replacement every 6 months.

## Common Benefits

- **Restored Flow Rate:** Eliminates pressure drops caused by clogged media.
- **Improved Water Quality:** Removes rust, stains, and metallic odors.
- **Extended Equipment Life:** Protects pumps and RO membranes from premature failure.