

# High Rate Clarification Process

## ENHANCED SETTLING AND IMPROVED PROCESS PERFORMANCE

### OPTIMIZE WATER TREATMENT USING HIGH RATE CLARIFICATION

#### Treatment Type

- Tertiary Treatment - Low TP
- Primary Treatment - CEPT
- Storm Flow
- Fixed films clarification with ballast
- CSO treatment
- Industrial Power, Mining, P&P, F&B, RO Pretreatment, Produced and Frac Water
- Surface Water

#### Removal Capability

- Particulate (suspended) solids
- Colloidal suspensions, including emulsions
- Heavy metals
- Phosphorus
- Pathogens
- Color
- Algae
- TOC

#### Recovery

Magnetite and Ironwood powder can be recovered from the sludge via a hydrocyclone separator and reused within the process. Recovered magnetite can be as high as 99+%.



Conventional clarification processes pose challenges and present risks for many plant operations. These clarifiers produce light “fluffy” floc’s typically resulting in slow settling, upset conditions, surface overflow rate (SOR) and surface loading rate (SLR) constraints, and larger footprint requirements.

#### HRC

AbTech’s High Rate Clarification (HRC) process improves the settle-ability of solids with any clarification process in multiple industries. It has many applications for which it can be implemented from surface water clarification, to biological treatment to metals precipitation.

The HRC technology uses a combination of magnetite and AbTech’s Ironwood media as a ballast for embedding into flocculated particles. Magnetite is a fully inert material, naturally mined, and possesses a specific gravity 5.2 and particle size 10-30  $\mu\text{m}$ . This allows the magnetite to be embedded into small pin floc’s and settle rapidly. Ironwood powdered media will adsorb orthophosphate and soluble metals.

#### KEY BENEFITS

Whether it is a new greensfield plant or existing equipment retrofit project, AbTech can provide a solution using the benefits of HRC. For a new build clarifier project, footprint requirements are significantly reduced savings on overall capital expenditure. In many cases, older conventional clarifiers can be retrofitted to enhance performance and throughput, while eliminating altogether the need to build new equipment.

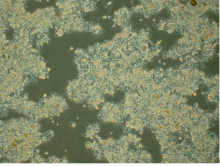
The process flexibility of the HRC can be implemented in the plant makeup treating surface water, in wastewater treatment to enhance primary, secondary or added as tertiary treatment, and for regulatory compliance to meet discharge permits for total phosphorus, metals, etc.

By simply performing engineering, providing the magnetite/Ironwood delivery and recovery equipment, added instrumentation and controls, and performing turnkey construction, your plant can enjoy the benefits of HRC and its related savings.

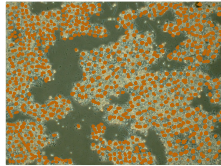
# Experts in Water

THE EXPERTISE TO CONSULT BUSINESSES ON COMPREHENSIVE WATER SOLUTIONS

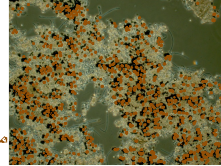
CONVENTIONAL FLOC



WITH IRONWOOD FLOC



WITH IRONWOOD +HRC FLOC



THE HRC TECHNOLOGY USES A COMBINATION OF MAGNETITE AND ABTECH'S IRONWOOD MEDIA AS A BALLAST FOR EMBEDDING INTO FLOCCULATED

## APPLICATIONS

- Enhanced settling within clarification process
- TSS removal
- Use of magnetite as a ballast
- Co-ballast with Ironwood powder for ortho-phosphate and soluble metals removal
- Increase existing clarifier performance by retrofit, minimizing capital expenditure
- Increase clarifier throughput, decrease footprint requirements



## ABOUT ABTECH

AbTech offers innovative solutions for Stormwater Management and Industrial Water Treatment. AbTech integrates its own advanced technologies along with third-party technologies and systems to provide customers with effective and economical solutions. AbTech products include advanced filtration media technologies and various water treatment systems.

WWW.ABTECHINDUSTRIES.COM

4110 N. Scottsdale Rd., Suite 235 Scottsdale AZ 85251 480-874-4000 info@abtechindustries.com

