

# Clean Filtration Technologies, Inc.

## CFT Turboclone™ Filter

## Laboratory Data

### Overview

The CFT Turboclone™ filter is a patented, self-cleaning, low-maintenance device that handles high loads of suspended solids in a single-stage, immediate process. It is specifically engineered to resist fouling and remove solids from difficult-to-treat feed streams through the use of:

- ❖ Particle separation by hydrocyclone for large particle removal.
- ❖ Cross-flow membrane filtration for smaller particle removal.
- ❖ A constant self-cleaning mechanism that virtually eliminates the need for backwash cycles.



Laboratory tests have been conducted at CFT facilities. The results of these tests are summarized below.

### Challenging Seawater



**Objective:** Filter “challenging” seawater with the following composition:

- 32,000 mg/kg Instant Ocean salt
- 132.5 mg/kg fine test dust (ISO 12103-1 A2)
- 20 mg/kg Orchid Pro (Turf Pro USA)
- 10 mg/kg Klamath Blue Green Algae powder

**Test Plan:** CFT created a simulation test in a laboratory setting with “challenging seawater” as defined by the Defense Advanced Research Projects Agency (DARPA). The seawater was tested with 20-, 15-, and 10- $\mu$ m membranes. The system was configured to maximize water recovery.

**Results:** Testing demonstrated the effectiveness of the CFT Turboclone filter to remove solids from “challenging” seawater down to 20 and 15  $\mu$ m.

The CFT Turboclone filter provided a consistent stream of filtrate at over 99% water recovery, without fouling or requiring a backwash cycle.

Independent laboratory testing indicated 56% reduction in total suspended solids (TSS) with 10- $\mu$ m absolute filtration.

### High Loads of TSS (>10,000 ppm)



**Objective:** Filter water with high loads of TSS using Arizona test dust, ISO 12103-1 A2 (fine) and ISO 12103-1 A4 (coarse).

**Test Plan:** CFT created a simulation in a laboratory by mixing fine dust beginning with 100 ppm in water, then adding incremental amounts of dust until 10,000 ppm was reached. A subsequent test was conducted with coarse dust. For both tests, the system was configured to maximize water recovery.

**Results:** Testing demonstrated the effectiveness of the CFT Turboclone filter to operate with high loads of TSS without experiencing a degradation in performance. The filter did not foul nor require a backwash during the testing period.

**Clean Filtration Technologies, Inc.**  
2653 Spring St.  
Redwood City, CA 94063

(408) 914-2700  
info@cleanfiltration.com  
<http://www.cleanfiltration.com>

The CFT Turboclone™ filter is manufactured under U.S. patent 7,632,416 with other patents pending. The information contained in this publication is considered accurate and is intended to be used as a guide. This information is subject to change without notification.

Clean Filtration Technologies, Inc., does not assume any liability for the accuracy and completeness of the data in this publication. Temperature ratings, flow rates, and quality of source can be affected by a number of factors. End users should perform their own tests to determine suitability for each application.

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