Solutions for Circulating Cooling Water Systems

- Debris Filter
- ATCS Ball Strainer
- Band Screens
- Raking Machine
- Bar Screen
- FDS
- Stop Gate
Stationary Screens
Band Screen Through Flow Patterns

**Through Flow (TF):**

- Produces a parallel flow
- Simpler civil work requirement
- Flow has to pass through the mesh twice, can lead to higher headlosses with fine mesh.
- Influent side in contact with effluent side
- Debris carry over cannot be avoided
Influent Side is in contact with Effluent Side. Debris Carry over cannot be avoided.

Debris not removed is “Carried Over” to “Clean Side”
Carry over with Thru Flow
Debris in condenser from typical “thru flow screen” due to debris carry-over
Band Screen DualFlow Patterns

Dual Flow (DF):

No “carry-over”
Produce a converging flow, therefore suitable for close coupling to CW pump
Debris Washes Outside
Out - To - In Dual Flow Screen
Primarily used for raw water intakes

Influent Side is totally separated from Effluent Side.

How can this be applied to an existing intake?
Fish Recovery - Bandscreens
Band Screen Flow Patterns

Through Flow (TF):

- Can “carry-over”
- Produces a parallel flow
- Simpler civil work requirement than for DF or CF types.
- Flow has to pass through the mesh twice, can lead to higher headlosses with fine mesh.
- Predominately used in USA
S.I.M.P.L.E. Benefits and Performance

- Considered one of the BTA’s for existing plants under rule 316 (b) now under review due to “cost” considerations (vs. cooling tower option) to increase survivability of juvenile marine life

- > 50 North American installations
Juvenile fish drawn near screen seek the natural protection of the hydraulically stabilized bucket.
Fish are elevated in a water tight bucket and transported to deck level.
Juvenile fish are discharged by a gentle sluice into a fish transition trough which mates with final return trough.
After fish are returned the screen continues past the debris spray and baskets return to water. Debris and fish are returned in separate troughs.
Fish Recovery - Bandscreens

Debris Trough

Low Press. Fish Recovery jet pipe

High Press. Debris Removal jet pipe

Fish Recovery Trough

Modifications to Head section for Fish Recovery
Fish Recovery - Bandscreens

- Modifications to Head section for Fish Recovery
  - Low pressure wash water jets for sluicing fish
  - High pressure wash water jets for debris removal
Bridgeport Harbor Generating Station with Fish Recovery Band Screens
BAFF Fish Barrier/Deterrent Technology
Behavioral Barrier & Guidance System to Prevent Fish Entrance Into Water Intake

**The Sound Projector Array or ‘SPA’**

**The BioAcoustic Fish Fence or ‘BAFF’**

- Sound contours
- Air curtain
- Sound projectors
- Concrete ballast
- Cable channel
The aim is to achieve a smooth gradient of sound pressure.
Engineering Construction of a Multi-Stimulus Barrier
AFD installed at Power Plant Intake
AFD installed at Power Plant intake
Thank You