

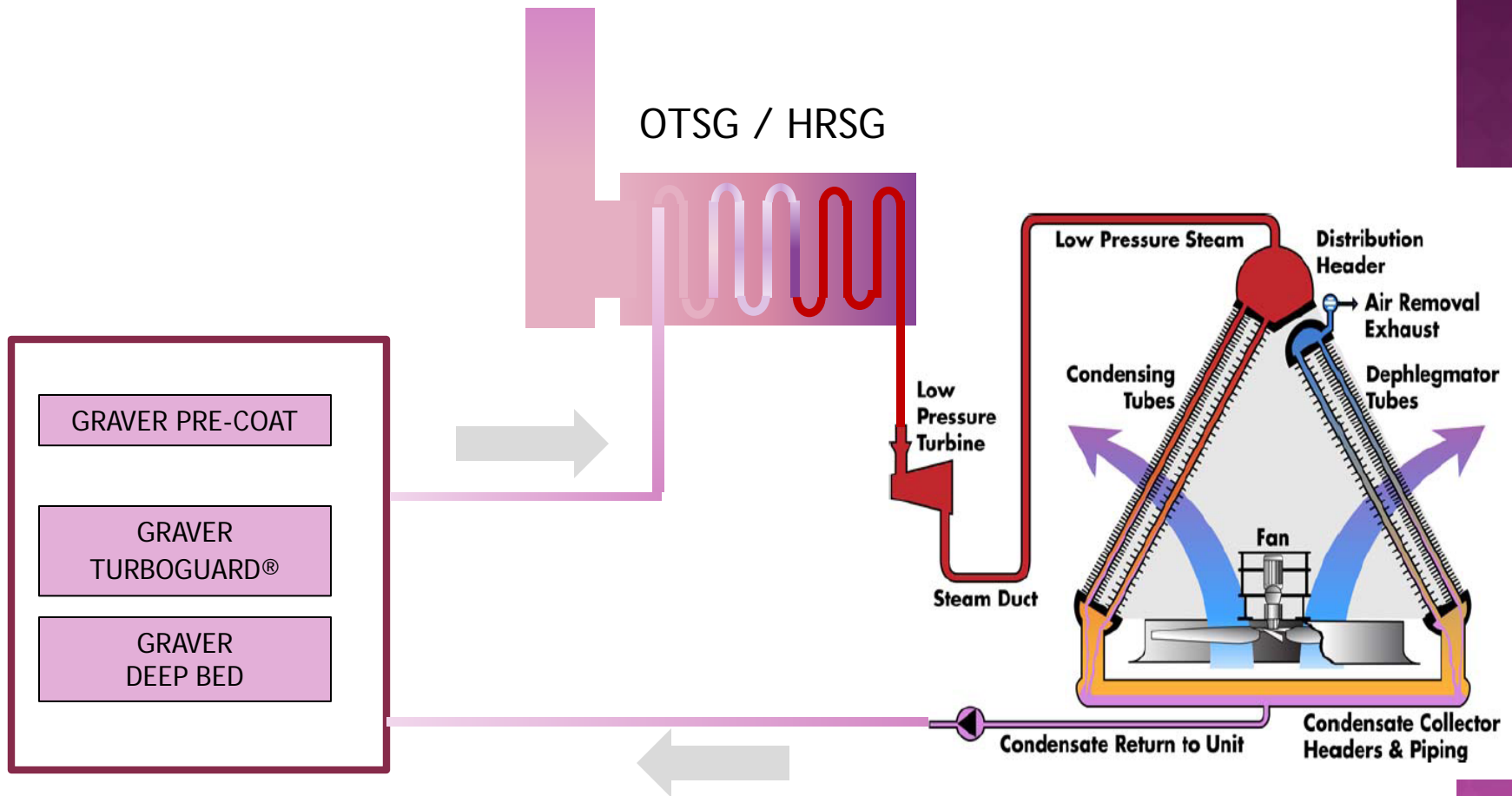


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WHEN IS CONDENSATE POLISHING JUSTIFIED IN A CCGT PLANT WITH AN ACC?

AIRCOOLED CONDENSER MEETING
GILLETTE, WYOMING
SEPTEMBER 25,26, 2012

GRAVER SOLUTIONS FOR FOSSIL UNITS WITH ACC'S





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AN ACC USUALLY JUSTIFIES A POWDEX SYSTEM

- ◉ REMOVE IRON
- ◉ FASTER STEAM TURBINE STARTUP
- ◉ LARGE SAVING IN BLOWDOWN WATER

IRON LEVELS

- FROM AS HIGH AS 3000 PPB TO BELOW 10 PPB IN 4 -6 HOURS



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INSTALLATIONS

- ◉ IPA SUEZ/ MIDLOTHIAN DALLAS, TX
- ◉ IPA SUEZ/ HAYS SAN ANTONIO, TX
- ◉ IPA SUEZ/BLACKSTONE BOSTON, MA
- ◉ IPA/SUEZ/ BELLINGHAM BOSTON, MA
- ◉ EQI POWER/LAKE ROAD DAYVILLE, CT
- ◉ J POWER/ PINELAWN BETHPAGE, NY
- ◉ CONSTELLATION/MYSTIC BOSTON, MA
- ◉ CONSTELLATION/WOOD RIVER
- ◉ BASIN /DRY FORK GILLETTE, WY

PERFORMANCE

NORMAL OPERATION	CONTAMINANT	STARTUP OR INLEAKAGE
5PPB	IRON OR SUSPENDED SOLIDS	90% REMOVAL
5PPB	COPPER	90% REMOVAL
	SILICA	
5PPB	SODIUM	90% REMOVAL
25PPB	TDS	90% REMOVAL
.1 μ mho	CATION CONDUCTIVITY	.2 μ mho

STEAM TURBINE STARTUP

- EPRI ASKS FOR IRON LEVELS UNDER 10 PPB

BLOWDOWN WATER SAVINGS

- From 2-4 days to 4-6 Hours could be as much as 250,000 gallons

ADDED BENEFITS

- ◉ SIMPLE BACKWASHABLE OPERATION –BW WATER CAN BE DECANTED AND USED AGAIN
- ◉ SINGLE VESSEL OFFERING BOTH FILTRATION AND POLISHING BENEFITS
- ◉ BACKWASHABLE FILTER ELEMENTS LAST OVER FIVE YEARS
- ◉ FOR HRSG'S THE POWDEX UNIT WILL JUSTIFY ITSELF IN SAVINGS ON BLOWDOWN WATER

PAYBACK

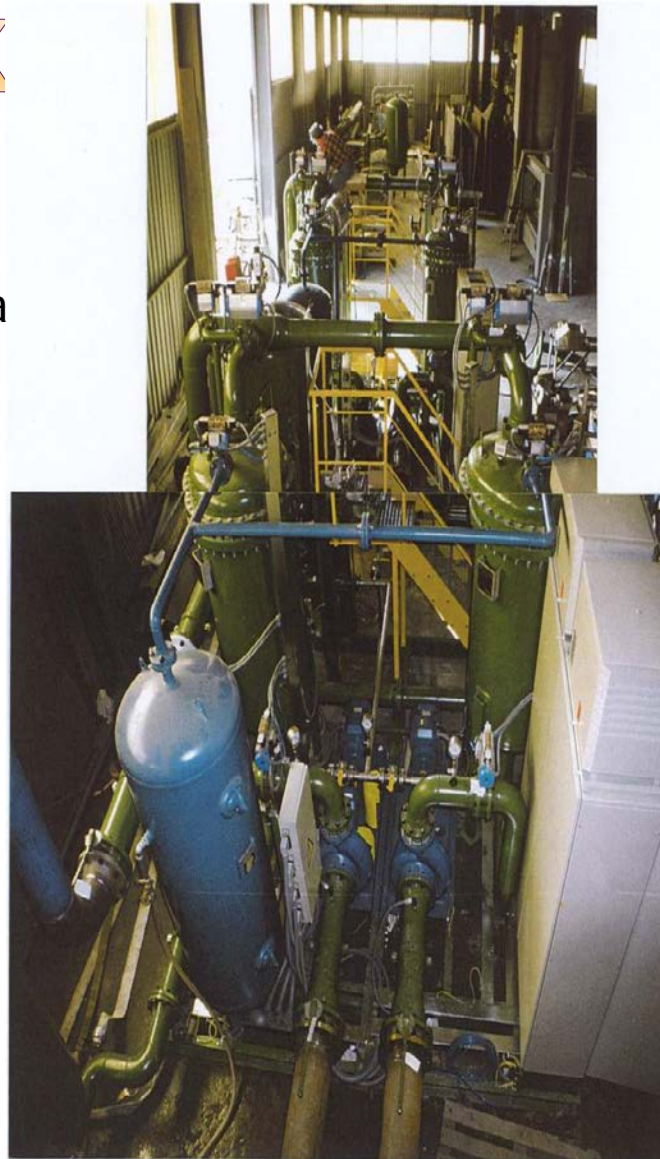
- ◎ STARTUPS > 20 TIMES YEAR
- ◎ BLOWDOWN WATER REDUCE BY 75%
- ◎ PRESERVE HRSG AND STEAM TURBINE- LESSEN NEED FOR CHEMICAL CLEANING

POWDEX MINIPAK

Two 36" x 72" Vessels
Each contain 52 2" x 50" precoat Septa
Provides both particulate and IEX
Protection (N/H/OH/MORPHOLINE)
Skid mounted
PLC controlled



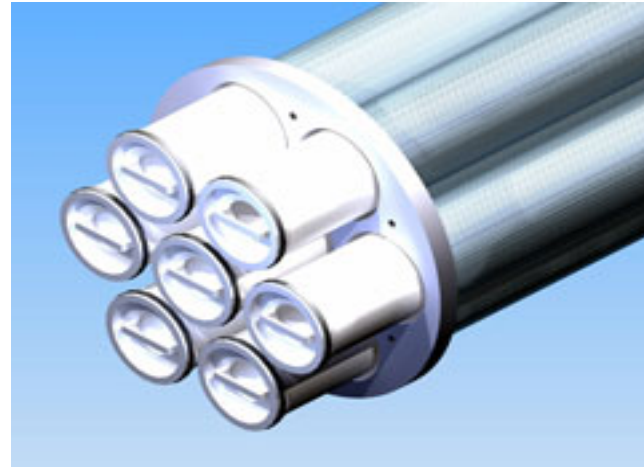
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RECENT POWDEX ASSEMBLIES



PREFILTER TURBOGUARD



- UP TO 8000 GPM PER HOUSING
- EASY CHANGEOUT
- CRUD Capture



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Graver Technologies' AEGIS TurboGuard



DEEP BED POLISHING

TO REMOVE
DISSOLVED SOLIDS



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DEEP BED

- ◉ Resin requires regeneration
- ◉ Will accumulate iron load

POWDEX APPLICATIONS

Thank you

POWDEX[®]

***A GRAVER ORIGINAL...
STILL FIRST WORLDWIDE***