SUPERIOR FILTRATION

CASE STUDY

AGF: AUTONOMOUS GRAVITY SAND FILTER - DOUBLE DECKER

TERRAGEN LTD – SIDE STREAM FILTRATION FOR BELLE VUE POWER PLANT COOLING TOWERS

Client: Terragen Ltd. (Terra Mauricia Ltd.)
Industry: Power and Energy
Region: Plaine des Papayes, Mauritius
Product: 4 X AGF33D Autonomous Gravity Sand Filters – Double Decker Version ± 15 Mld
Installation: 1999

Challenge

- Terragen Ltd. owns a 2 x 35 MW thermal power plant, producing around 370 GWh of electricity annually from bagasse and coal.
- Cooling systems are the most water-intensive part of the thermoelectric generation process.
- Cooling towers scrub large volumes of air and effectively remove solids. Tower water adds suspended solids from the tower and process leaks.
- If allowed to settle, these solids lead to significant losses in efficiency and increased costs.
  - A layer of foul or scale measuring 25µm thick can reduce heat transfer to increase energy costs by as much as 10%.
- The solids consume chemicals used to prevent scaling and corrosion.
  - As a result, dirty water requires more chemicals and receives less effective treatment than clean water.
- Of the numerous water quality parameters that may affect performance, suspended solids are the most common and serious culprit. Therefore, the benefits of removing particles from the system are numerous.
- During the design phase of the water treatment plant for Terragen Ltd., process engineers looked for the best side-stream filters.
- They required:
  - easy, drop-in installation
  - effective and efficient filtration
  - high reliability and durability
  - lowest lifetime costs
  - low maintenance
  - small footprint

Application

- Side Stream filtration of cooling water

Solution

- The inherent simplicity, high efficiency and low operating costs of AGF autonomous gravity sand filters make it the ideal filter to install on side stream filtration applications. AGF filters offer:
  - Easy Installation:
    - Minimum civil works on site
    - Fabrication under tightly controlled factory conditions
  - High effectiveness & efficiency:
    - Our AGF filters have a 40-year track record of effective filtration – across a range of industries and application
    - The lowest lifetime costs translate to the highest efficiency
    - Autonomous operation ensures that filters only backwash when required, minimising water losses
  - High reliability and durability:
    - 100% Mechanical, with no moving or rotating components
    - No peripheral components
    - No automation obsolescence, valve and electrical maintenance
    - Units in active operation for 30+ years
  - Lowest lifetime costs
    - Once the required head is established, no further energy is required

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Solution (cont.)

- The head is often freely available in the system

– Low Maintenance Costs:
- Maintenance is limited to oversight functions and periodical replacement of media and nozzles

– Small footprint:
- With Superior Filtration's AGF "D" model, the footprint is reduced significantly
- Effectively doubling the filtration surface area on a single footprint

– 4 x **AGF33D** Autonomous Gravity Sand Filters were installed, processing 600m³/h at an average filtration velocity of ±9m/h.

Results

- AGF filters effectively remove suspended solids from the system, resulting in:
  – Lower energy consumption
  – Improved chemical performance
  – Lower maintenance costs
  – Improved productivity and less downtime
- AGF filters have added these benefits consistently for decades. At this plant – for 25 years and counting.

Client experience

"The filters don't have any PLC, valve, nor motor for backwash, so no worries about automation obsolescence, valve and electrical maintenance."
Jean-Marc IWEINS – Power Plant manager

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