



Agon-Coutainville Demonstration Site, Normandie

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Advanced monitoring-modeling interface for optimised MAR/SAT system design & operation, Agon-Coutainville site

The Site 8 of Agon-Coutainville (Figure 1) uses secondary effluent after reed bed and sand dune filtration for golf course irrigation in a coastal area. The underlying aquifer is prone to salinization. The study of Agon-Coutainville site will demonstrate how innovative water quality monitoring and modelling linked to data management and communication, facilitates an optimised management of cNES sites and their future implementation (Figure 2).

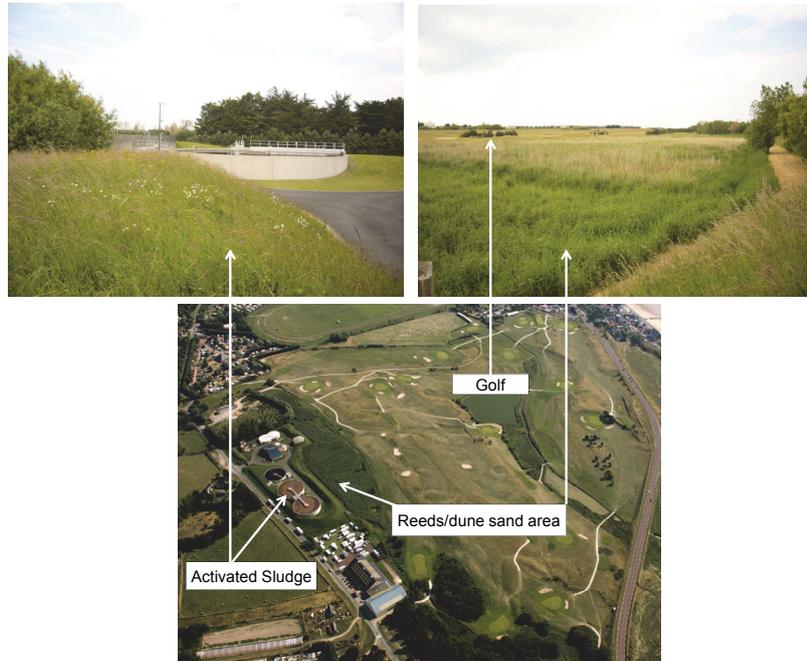


Figure 1 : Agon-Coutainville WWTP situation

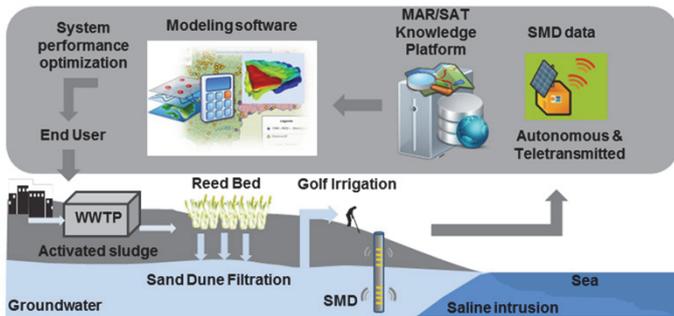


Figure 2 : Agon-coutainville advanced monitoring-modeling interface conceptual scheme

The complexity of Agon-Coutainville MAR-SAT systems needs innovative monitoring strategies to be able to assess their efficiency under varying conditions:

- Subsurface Monitoring Device (SMD) or continuous high frequency long-term (months-years) monitoring of the quality and availability of groundwater resources regarding MAR and saline intrusion,
- BACTcontrol monitoring of microbial parameters,
- Non-target screening data obtained by LC-Q-TOF, a shortlist of pertinent micropollutants will be monitored by target analysis, together with geochemical parameters,
- Innovative environmental isotope tracing providing information on progress and spatial extension of storage, and mixing processes during storage-retrieval.

Based on this online monitoring and punctual sampling campaign, model will be conceptualize in order to predict the geochemical processes that may lead to long term decrease of system performances and test system optimisation options.

The evaluation of system optimisation options will be simulated for scenarios of pre-treatment train modulation, SAT/MAR efficiency, inflow quality changes and constraints such as groundwater quality standards, and climatic conditions. An ICT system will be set up ensuring the interoperability and the knowledge integration of cNES for SAT/MAR systems.

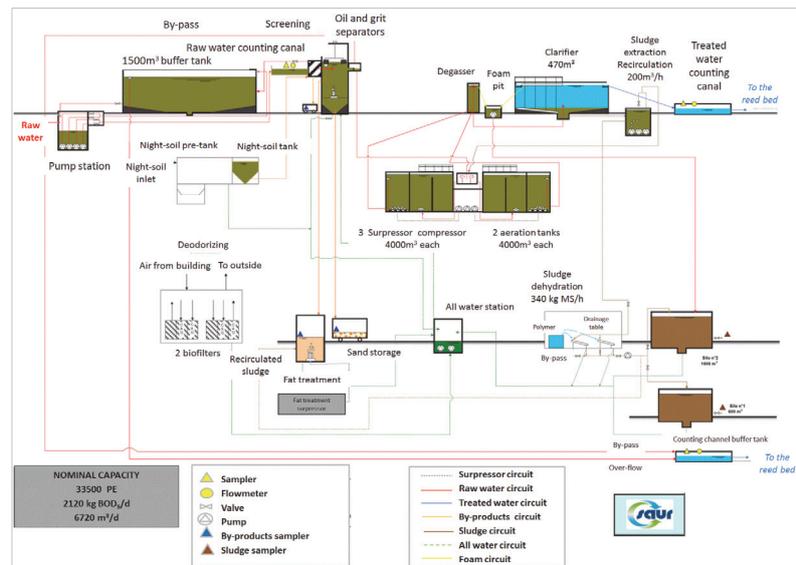


Figure 3: Detailed flow chart of the demonstration site

Agon Coutainville MAR/SAT system	
Secondary treatment	Activated sludge
Inhab. Equiv	35300
Reeds area monitoring	4 piezometers
SAT System	Depths 3 to 6 m : shellfish/quartz sand (dunes)

Location	<i>E. coli</i> /100 mL 2006 results (means)
screened raw wastewater (inflow)	10 ⁸
Secondary treated wastewater	8 x 10 ⁴
Groundwater below the reed bed	1.5 x 10 ²

→ about 2.7 log removal by vertical sand filtration in the reeds areas

