MUNICIPAL

CFAS® technology

INNBYGDA, NORWAY

Project Name:	Innbygda WWTP
Location:	Trysil, Norway
Type of Plant:	Municipal
Technology Used:	CFAS® + DAF Separation (chemical precipitation of P)
Operational Since:	November 2010

Innbygda Sewage Plant takes pride in their plant's architectural design. It is a highly functional plant with advanced operations management and monitoring systems. The operation of all municipal services in Trysil Municipality is located here.

Outside of the CFAS® Reactor

The Challenge

The municipality of Trysil is home to the largest ski resort in Scandanavia. Due to seasonal tourism in the region, the treatment plant must handle fluctuations in load depending on the number of tourists visiting at any given time. In addition, the plant had to have the ability to withstand extremely cold temperatures during the winter months. The existing wastewater treatment system was at the end of it's useful life.

The Design

Many factors affected the design. As mentioned, the cold temperatures and load fluctuations as well as the customer's desire for a compact, highly efficient technology. Biowater was in competition with conventional MBBR technology combined with a separation unit. In the end, Biowater CFAS® (IFAS) Combined Fixed-film Activated Sludge process was chosen because of it's small footprint and reliability.

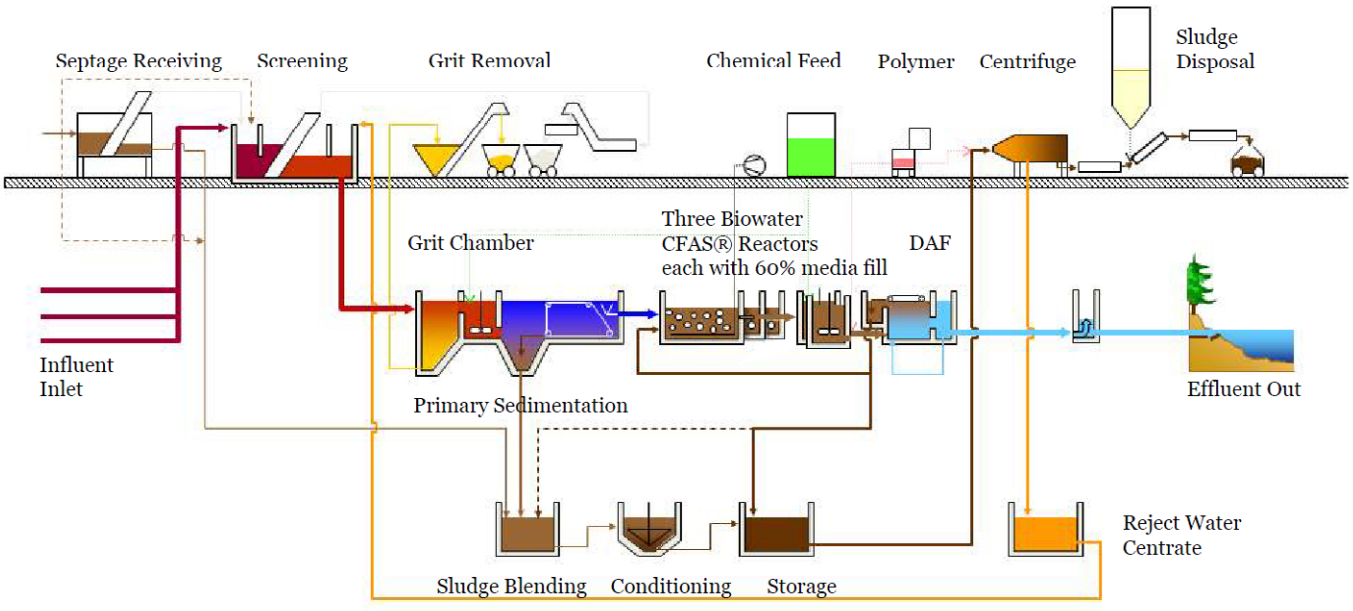
BIOWATER TECHNOLOGY

Achievements

By choosing the Biowater CFAS® biological process combined with DAF separation the client was able to build the plant as compact as they had planned and still achieve the effluent quaility that they were aiming for. Due to the use of DAF separation, the plant could be built without a gravity thickener unit which was in the original design. The plant is so flexible that in the off season only one Biowater CFAS® reactor is needed and the other is shut down to save energy.

	DESIGN LOAD		EFFLUENT REQUIREMENTS
PARAMETER	US	INTL.	
FLOW	2.8 MG/D	26,000 PE/447 m^3/h	
BOD	3,665 lb/d	1,666 kg/d	70% removal / < 25 mg/l
TSS	3,698 lb/d	1,681 kg/d	
TP	99 lb/d	45 kg/d	95% removal / < 0.5 mg/l
TEMPERATURE	64^{0}F high / 41^{0}F low	18^{0}C high / 5^{0}C low	

The basis of our CFAS® biofilm technology is the biological growth on polyethylene pieces called media or carriers. These surfaces provide a protective surface area for the biology to grow. The biofilm can handle extremely high loading conditions without any problems with clogging or shock.



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Biowater Technology *is an innovative company with over forty years of experience in the Biological treatment field. Our focus is on saving energy and resource recovery, with water as our major resource.*