



Case Study

Complete wastewater treatment using a FBR process in the meat industry.

Year 2018

Project location Slaughterhouse of the company Vall d'en Bas, in Sant Privat d'en Bas, Girona.

Objectives • Compliance with current discharge requirements. •Adaptation to possible future modifications of the slaughterhouse.

Installed technologies large solids screening; solids, oil and fats separator SIGMA ACAF-025; anoxic-aerobic reactor with diffusers; in-line flocculation system SIGMA PFL-020; secondary flotation clarifier SIGMA BIODAF FPAC 50. Sludge treatment with thickening tank and centrifugal decanter. Control and automation systems.

Capacity 150 m³/day

Wastewater characteristics				
COD	TKN	NH4+	TSS	Oils and fats
6000 mg/L	500 mg/L	175 mg/L	2000 mg/L	500 mg/L

Treatment removal efficiency				
COD	TKN	NH4+	TSS	Oils and fats
> 75%	> 82%	> 65%	> 85%	> 96%

Background

Cárniques Vall d'en Bas is a leading company in the meat sector. It has facilities for its beef slaughterhouse that requires a complete treatment for wastewater. The main objective is compliance with the discharge limits for the discharge of treated water.

A pre-treatment consisting of a sieving system followed by a SIGMA ACAF-25 induced air cavitation flotation primary clarifier is installed. In this pre-treatment, the removal of larger solids, oils and fats takes place. The FBR biological treatment is installed after the pre-treatment.

The **FBR process ('flotation bio-reactor')** consists of an anoxic-aerobic reactor with prolonged aeration of activated sludge where biological treatment is carried out in the presence of oxygen. This biological process consists of the elimination of organic matter through biological reactions with biomass. Microbial flocs are generated by adsorption and agglomeration. These biomass flocs are separated by flocculation and secondary clarification by DAF flotation.

The flocculation is carried out in a SIGMA PFL-020 equipment in which flocculant is incorporated as polyelectrolyte to flocculate the generated biomass agglomerates.

The secondary clarification with dissolved air flotation DAF allows the separation of the flocs formed, with dissolved air micro-bubbles. The biomass flocs are separated by flotation with air micro-bubbles in a SIGMA BIODAF FPAC-50 equipment.

The flotation clarification equipment SIGMA BIODAF are special equipment that present greater reliability against spongy sludge with low sedimentation rate, such as those typically generated in the treatment of industrial wastewater.

The sludge generated in both clarifications is treated jointly by thickening and dewatering with a centrifugal decanter. Dewatered sludge of 20% in dry matter is obtained.

Process diagram

