KOVALUS Separation Solutions™

CASE STUDY

# Cárnica Batallé (OEM: Corpi SL, Spain)

## Overview

Cárnica Batallé is a long-established meat producer located in Riudarenes, Girona, Spain. Founded in 1920, Batallé is recognized as a leader in the Spanish meat sector, specializing in the production of high-quality purebred pigs. Their long heritage and scale of operation make them a notable industrial food processor in the region.

By 2023, Corpi SL was already supporting Batallé with the operation and management of its wastewater treatment plant. At that point, the existing system was approaching its design capacity, making it timely to evaluate an upgrade to support future operational requirements.

The treatment plant relied on a dissolved air flotation (DAF) unit for biomass separation. However, the DAF was operating close to its maximum hydraulic design conditions, and could not sustain MLSS concentrations above **3.5 g/L.** This reflected the design operating range of the biological process and the corresponding nitrification–denitrification performance in the sequenced biological reactor.

To support production demands and stabilize nutrient removal, Batallé and Corpi SL decided to expand and upgrade the plant by converting it to an MBR system capable of treating higher flows and operating at a significantly higher MLSS concentration.

### Key Highlights

Targeted DAF-to-MBR upgrade improved process stability, treatment capacity, and high effluent quality for discharge

1. DAF-to-MBR conversion for higher MLSS and flow
2. PURON® membranes for stable nitrogen removal
3. Upgrade within existing infrastructure for reliable, compliant discharge

## Objective

The project aimed to:

- **Treat a higher hydraulic flow rate** than the existing DAF could manage
- **Increase operational MLSS to 6 g/L** to provide sufficient biomass for stable nitrification and denitrification

This upgrade was designed to ensure consistent nitrogen removal and improve overall effluent quality for discharge.

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## Solution

Kovalus Separation Solutions (KSS) supported Corpi SL by supplying PURON  membrane technology as part of the full MBR conversion. The works were completed in **February 2025**, transforming the conventional plant into a more robust, higher-capacity treatment system.

Key upgrades included:

- **Automatic rotosieve installation (1 mm spacing):** Improved solids capture compared with the previous coarse screen, enhancing pretreatment and protecting downstream biological and membrane processes
- **DAF repurposed into a degreaser:** Instead of biomass separation, the former DAF was converted for **fat removal**, better matching the waste water profile of a meat cutting facility
- **Homogenization system converted into an anoxic reactor:** Enabled denitrification to remove nitrogen effectively, expanding biological treatment capability without requiring major new footprint
- **Higher sludge concentration in biological treatment:** Operating at increased MLSS improved organic matter removal and laid the foundation for stable nitrification-denitrification
- **Ultrafiltration membrane tank added:**
  - **Capacity: 400 $m^3$/day**
  - **Membranes: Two (2) x Kovalus PURON LE16-16 modules** The membrane stage delivers permeate free of suspended solids and with markedly reduced **COD, $BOD_5$, and nitrogen (ammonium and nitrate)**

By replacing DAF biomass separation with membrane ultrafiltration, the upgraded plant achieves reliable solids retention and consistent effluent quality regardless of flow or load variability.

**Future-proof scalability for higher peak flows**

- Ensure the filtration system could be expanded as demand increased
- In 2022, this scalability was proven when additional membrane rows were installed, increasing module density from 36 to 44 rows per module with 76,560 $m^2$ of membrane area and raising the peak capacity target to 2,088 $m^3$/h

## Achievements

The MBR upgrade delivered clear operational and performance benefits:

- **Stable biomass separation at higher MLSS (6 g/L)**, removing the key bottleneck of the previous DAF
- **Improved nitrification-denitrification stability**, enabling consistent nitrogen removal
- **Substantially cleaner effluent**, with no suspended solids and lower organic and nutrient concentrations
- **Simplified discharge management** for operators, since membrane filtration guarantees the quality required for release to public waterways
- **Consistently high effluent quality**, with suspended solids (SS) below 30 mg/l, BOD below 5 mg/l, total Kjeldahl nitrogen (TKN) below 5 mg/l and nitrate nitrogen (N-NO3) below 5 mg/l, ensuring reliable and compliant discharge.

KSS membranes were selected based on proven performance in industrial MBR applications and the OEM's confidence in PURON technology.

## Takeaways

This project shows how KSS MBR solutions can modernize constrained conventional plants in high-load food-processing environments. For Batallé, the upgrade supports long-term production needs while ensuring regulatory-compliant discharge and improved environmental protection.

The Batallé conversion reinforces KSS capabilities in:

- **Industrial food and meat sector wastewater**, including fat- and solids-rich streams
- **Plant expansions where legacy separation systems limit MLSS and biology**
- **Delivering high-quality ultrafiltered effluent for safe discharge**

Overall, the project demonstrates a successful shift from capacity-limited DAF separation to a robust MBR platform designed for future growth.

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