



FOOD INDUSTRY

# Condenser Scale Control Case Study **Olifantsfontein, SA**

HydroFLOW® controlled scale formation and softened existing deposits in a dairy condenser, maintaining clean surfaces without chemical dosing and outperforming a chemically treated reference unit.

**0**

New Scale Observed

**3 mo**

Scale Softening Period

**0**

Chemical Dosing



Maintenance Requirement

## ⇒ BEFORE & AFTER

### ● BEFORE

- ✗ Hard scale on tubes and panels
- ✗ Heavy deposits on nozzles and frames
- ✗ Continuous chemical dosing required

### ● AFTER

- ✓ Scale softened and easily removed
- ✓ No new scale observed on surfaces
- ✓ Operated without chemicals



**BEFORE**

Scaling on nozzles before trial



**AFTER**

Clean nozzles after 3 months operation

## OVERVIEW

A dairy facility in South Africa operated multiple condensers for cooling processes. Scale deposits were present across tubes, nozzles and internal panels, affecting performance. A *HydroFLOW*® unit was installed on Condenser No. 4 for a controlled trial, with post-cleaning testing used to compare treated and untreated systems.

## CHALLENGE

Heavy scale deposits reduced cooling efficiency and required ongoing chemical dosing.

- Hard scale on tubes and internal panels
- Deposits forming on spray nozzles and frames
- Reduced heat transfer efficiency
- Reliance on continuous chemical dosing

## SOLUTION

*HydroFLOW*® i120 unit was installed on the 100 mm vertical circulating pipe of Condenser No. 4 to control scale during operation and enable comparison with an untreated condenser following cleaning.

### UNIT INSTALLED

1x *HydroFLOW*® i120

### INSTALLATION POINT

100mm vertical circulating pipe

### INSTALL DATE

May 2020

### TRIAL DURATION

Approx. 4 month



### INSTALLATION

*HydroFLOW*® i120 installed on condenser line

## RESULTS

### ✓ No New Scale Formation

No scale formed on cleaned surfaces during operation

### ✓ Scale Softened

Existing deposits became soft and removable by hand

### ✓ Clean Surfaces Maintained

Nozzles, tubes and panels remained largely scale free

### ✓ Chemical-Free Operation

Condenser operated without chemical dosing

### ↗ Improved Heat Transfer

Reduced scale insulation improved heat exchange efficiency

### ↘ Scale Breakdown Observed

Increased debris indicated ongoing scale removal

KEY TAKEAWAY

## Summary

HydroFLOW® treatment was applied to a dairy condenser with existing scale, where deposits softened over time and surfaces remained clean during operation. The system operated without chemical dosing, demonstrating improved performance and clear contrast with an untreated condenser.

0

NEW SCALE OBSERVED

3 mo

SCALE SOFTENING TIME

0

CHEMICAL DOSING



## ADDITIONAL PHOTO EVIDENCE



BEFORE

Condenser 3 tubes with heavy scale



BEFORE

Condenser 3 tubes and frame with scale



BEFORE

Scale on eliminators before treatment



AFTER

Condenser 4 tubes largely scale free



AFTER

Condenser 4 tube ends and frame clean



AFTER

Condenser 4 eliminators with minimal scale



BEFORE

Eliminator frame with heavy scale



AFTER

Condenser 4 eliminator frame with minimal scale

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COUNTRIES

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YEARS EXPERIENCE

**1M+**

UNITS INSTALLED

## RELATED CASE STUDY

### McCain Potato Fries Factory Case Study

Lewedorp, Netherlands

HydroFLOW® units were installed at the McCain potato processing factory in the Netherlands, dramatically extending maintenance intervals from 500 to 1,500 hours and eliminating the need for acid cleaning since installation, resulting in a 6x reduction in cleaning frequency.

#### 3x Longer Intervals

Maintenance intervals extended from 500 to 1,500 operating hours

#### No Acid Cleans

Complete elimination of acid cleaning procedures since installation

#### 6x Less Cleaning

Dramatic reduction in overall cleaning frequency and downtime

**HYDROPATH** 

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