

# Med *Clean* *Propre* *Limpio* *Mediterranean*



Regional Activity Centre  
for Cleaner Production



Generalitat de Catalunya  
Government of Catalonia  
Department of the Environment  
and Housing

**No. 46**

**Recovery and recycling at source**

## Reduction of water consumption

### Company background

Tyco Electronics AMP Española, SA. Montcada i Reixach (Vallès Occidental).

### Industrial sector

Electronics/Equipment and parts for automobiles.

### Environmental considerations

Tyco Electronics is engaged in the manufacture of electrical contacts and performs stamping and galvanic coating operations at its Montcada i Reixach plant.

One of the keys to the success of the company's environment policy has been to deal with environmental interventions in the same way as those related to production, quantifying the consumption levels of raw materials and resources and the costs associated with deviations caused by bad housekeeping practices and defining environmental indicators to measure the results of these interventions.

The plant is ISO 14001-certified and submits a yearly environmental programme that is appropriately evaluated and backed by a specific budget.

### Background

By implementing the actions described below, the company aims to reduce the overall consumption of water and raw materials, while also optimising its production processes.

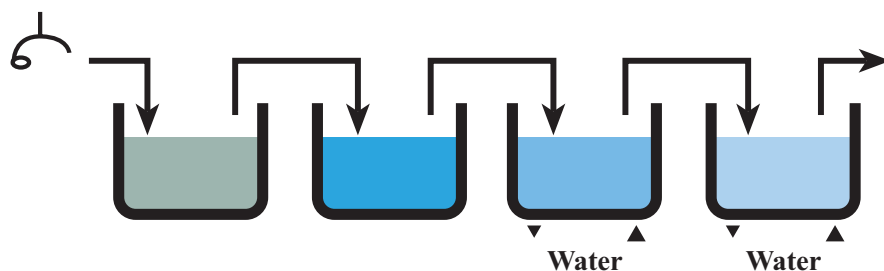
### Summary of actions

Tyco Electronics has carried out the following actions:

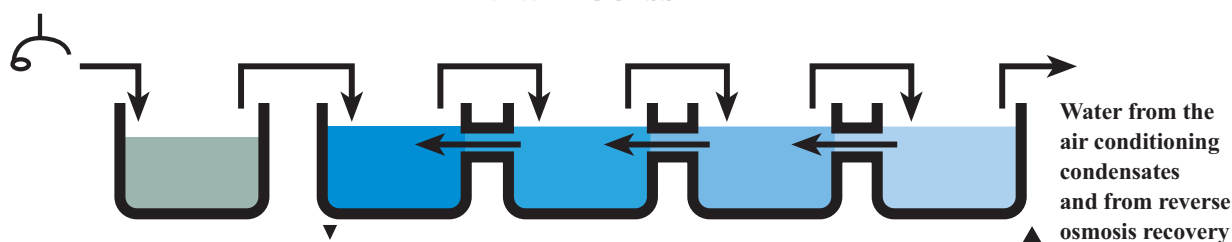
- Reuse of condensates from the air conditioning. The company extended the air conditioning installation to 8,000 m<sup>2</sup>. During the hottest months of the year, the system generates a large quantity of condensates in the circuit, giving rise to water of high quality (conductivity: 200 microsiemens). The company uses a tank to collect around 3,600 m<sup>3</sup> per year of water from all the machines. This water is conveyed and utilised for washes in the two galvanic lines.
- Replacement of the old equipment for producing demineralised water, which is based on ion exchange resins, with a reverse osmosis unit. The soundness of this approach lies in the low recovery rate (50%) of the installation, i.e., that the salt concentration of the final waste allows it to be used for cleaning parts, given its low conductivity (1,000 microsiemens).
- Replacement of the tight bath and two separate washes (cascade or counterflow) in the tinning line. By defining the wash quality necessary, the wash flow has gone from 1,200 l/h to 60 l/h. In addition, this water has been connected to a vacuum evaporator, so the distillate is reused to wash the parts and the concentrate (tin sulphate) to offset losses due to drag-out and evaporation.

## Diagrams

### OLD PROCESS



### NEW PROCESS



## Balances

### Material balance

	Old process	New process
Water consumption (m <sup>3</sup> /y)	14,970	7,120
Wastewater to be treated (m <sup>3</sup> /y)	12,000	6,200
Raw materials (kg/y)	10,800	8,100

### Economic balance

#### Savings

	Old process	New process
Water consumption (€/y)		12,933.78
Raw materials (€/y)		27,165.75
Wastewater management (€/y)		18,631.38
Labour (€/y)		5,769.72

#### Total savings (€/y)

64,500.63

#### Investments in facilities

	Old process	New process
Investment in water collection (€)		1,500
Osmosis equipment (€)		12,500
Evaporator (€)		42,000

#### Total investment

56,000

#### Payback period

10 months

## Conclusions

These actions have allowed the company to achieve savings of 52% in water and 25% in raw materials. The utilisation of this water has optimised the production processes, considering all the activities that take place at the industrial plant.

The recirculation of air conditioning condensates is a simple, inventive approach from the technical standpoint, which has led to considerable savings in water consumption.

**NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.**



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