

# Innovative recycling water system

## Automotive | Case Study

### The Client

The Renault plant in Tangier, Morocco, which commenced operations a few years ago has become a global benchmark in terms of environmental excellence. Renault-Nissan and Veolia have designed an innovative system for recycling water in a closed loop — “zero industrial liquid discharge” which halves the water consumption per vehicle produced, resulting in savings of 1,200 to 1,500 m<sup>3</sup> per day.

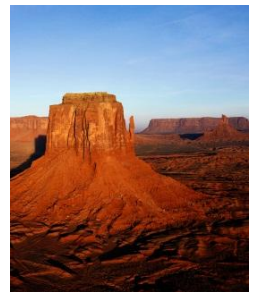
In addition to “zero discharge”, the site’s environmental performance is enhanced with “zero carbon and zero emissions”, for example the recycling rate for the plant’s waste, such as steel scraps, is 98%.

### Key Figures

- Reduction of 135,00 metric tons of CO<sub>2</sub> annually
- Saving of 1,200 to 1,500 m<sup>3</sup> per day

### The Client’s Needs

Working with the Moroccan government to build sustainable industries, Renault-Nissan set out to build the world’s most sustainable car production plant and the first with zero carbon emission and zero industrial liquid discharge.



The Renault plant produces nearly 200,000 vehicles per year, with a maximum capacity of 60 vehicles per hour and the aim of the partnership between Renault-Nissan and Veolia was to meet the site’s thermal energy requirements without emitting any carbon.

The paint department, with its booths and bake ovens, is the most energy-intensive in the plant and represents approximately 70% of the site’s thermal energy consumption. It is here where the efforts to improve sustainability will have the highest impact.

### The Solution

Together, Renault-Nissan and Veolia embarked on constructing the world’s first zero carbon emission and zero industrial liquid discharge car manufacturing plant that involved reducing the facility’s consumption by leveraging Veolia’s expertise and co-engineering with Renault-Nissan on manufacturing processes.

As cars move from the bodywork to the paint workshop we see the effectiveness of the energy solutions jointly put forward.

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Veolia carefully scrutinized all of the workshop's energy consumption stations and after incorporating several changes into the processes, the paint booths now consume 35% less energy than those in an equivalent production plant.

The process developed in the workshop requires a hot water system to be maintained at a constant temperature, along with the production of water at 120°C under high pressure, required for heating the paint ovens. To reduce the plant's environmental footprint energy production using olive cake, a renewable energy source with a neutral CO<sub>2</sub> balance was used.

Veolia set up a production unit on the site, made up of three biomass boilers with a combined thermal power of 18MW and designed to cover 100% of the plant's thermal needs in producing the hot water needed for the plant's industrial processes.

A sustainable CHP system using renewable biomass as the primary energy source was selected to provide the thermal energy requirement of the site. In total this measure eliminated an estimated 135,000 tonnes of CO<sub>2</sub>

### Results

In total, through the energy efficiency measures put in place and the use of biomass, Renault avoids emitting 135,000 metric tons of CO<sub>2</sub> annually.

Since it opened the plant has significantly increased its capacity and according to Marc Nassif, CEO of the Renault group in Morocco *"production in 2016 was 274,000 vehicles, i.e. 50,000 vehicles more than in 2015."* This facility and the automobile sector has become the kingdom's leading exporter, which demonstrates that increasing production is compatible with controlling environmental impact. Nassif continued stating *"You should bear in mind that 60% of the energy used on the site comes from wind power and 40% from biomass based on olive cake"* and *"We are demonstrating that the 'zero emissions, zero carbon' concept is possible. With the industrial facilities we have in Tangier, we are at practically 96-97% carbon-free energy."*

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