

HYDROPATH ITALIA

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GRAND HOTEL TERME DI COMANO HYDROFLOW C100 + P60 (x2)

DATE: 07/2020

CUSTOMER: GRAND HOTEL TERME of COMANO

LOCATION: TRENTO

APPLICATION: LEGIONELLA PREVENTION ON HOT WATER

ANTI-SCALING, ANTI BIOFILM AND LEGIONELLA PREVENTION TREATMENT IN HOT WATER SYSTEM

Background

This particular application of the Hydropath Hydroflow system concerned a tourist complex in the Province of Trento, with 55 rooms spread over 4 floors. The hotel in question has had problems related to the presence of Legionella in its water network for the entire two-year period of 2018-2019.



There were obvious signs of the presence of biofilm (organic / bacterial matrix) inside the pipes of the water network. This was evident in the light of the regular analyses. In various samplings, high Legionella contamination values were found (in the order of $10^3/10^4$ CFU / L), alternating with samplings within the bacteriological limits (up to 10^2 CFU / l). Even following sanitization interventions, the contamination was only temporarily reduced until proliferation re-occurred, as evidenced by another analysis above the limits.

In other words: at various times a presence of Legionella bacteria was detected inside the water system of the building, a sanitization with chlorine and / or high temperature was carried out, but then after a few months the Legionella returned to a level over the limits. This situation was the constant trend prior to the installation of the Hydroflow systems.



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Application of Hydropath systems

A 6-month test was carried out with 3 Hydropath devices installed. During the trial period, the customer had the opportunity to visually verify the effectiveness of the Hydropath treatment and analytically measure the bacterial load present (or not) inside the plumbing system.

Specifically, the following units were installed: 1 HydroFlow C100 device on the main mains water supply pipe, to carry out an anti-limescale action on the entire water circuit, and 2 HydroFlow P60 devices installed on the 2 domestic hot water delivery manifolds at the outlet of the boilers, to carry out an anti-limescale and antibacterial action on the domestic hot water circuit, with anti-legionella prevention.

Following the start of the Hydropath treatment (which took place in November 2019), the facility was open for only about a month then, due to normal seasonal closure and then prolonged Lockdown due to the Covid-19 epidemic, it has remained closed to the public. However, we advised the hotel to leave the recirculation of the hot water system running, in order to let the water flow and the Hydroflow devices work to clean / remove material from inside the system.

During this period of closure, the analyses showed levels well above the allowed limits of Legionella in the domestic hot water circuit, while there was no evidence of contamination in the water arriving from the water mains (sample taken from the general cold water supply pipe). It was therefore evident that the high levels of bacterial contamination present were caused by a cleaning and removal effect that the Hydroflow systems carried out on the biofilm adhered to the inside of the pipework.

For this reason the values reached very high levels ($10^4/10^5$ UFC / L), much higher than the contamination "events" encountered during the previous year. All the organic material that over time had grown inside the pipes and caused intermittent bacterial peaks found in various analyses, was detached from the pipes and circulated in the water.

A high temperature shock was then carried out (a measure suggested in the 2015 Legionella prevention and control guidelines), bringing the temperature of the water leaving the boilers to around 70/80 ° C to reduce the risk of contamination. The domestic hot water system was then emptied and refilled with "fresh" water.

Results obtained with Hydropath treatment

Today we can affirm that the process of removing encrusting and organic material that was adhered inside the pipes of the hot-water system has been successful; in fact the microbiological results reported later were more than satisfactory.

Both a first result with internal analysis by means of slides for bacterial load assessment (on 04/03/2020) and the official certified analysis carried out by the Accredited Laboratory on 29/06/2020, showed a bacterial presence that was well within the limits.

[Legionella <10 UFC / L in all samples / Total bacterial load at 37 ° C max 18 CFU / L]

The maintenance plumber, who looked after the plant for years, carried out the cleaning process. He stated that the boiler and heat exchangers have never been so clean and neither had the pipes, filters and shower heads present throughout the hot water system.

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Considerations

- The bacterial colonies that always appeared periodically before the application of Hydropath, were detached from the inside of the pipework in an initial phase (closed structure, without water exchange), which caused an increase in the bacterial load circulating in the pipes; then following continuous treatment with Hydropath devices combined with high temperature cycles such as sanitization, the bacterial load was reduced to near zero.
- The Hydropath devices installed (n.1 Hydroflow C100 + n.2 Hydroflow P60) will prevent any type of new problem of both mineral encrustation and bacterial development inside the treated plant.

(below photo report of the jet breaker and boiler bottom, index of internal cleaning of the system + summary table of the analytical values found)

PHOTOGRAPHIC DOCUMENTATION



Photo 1, 2

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Photo 3

Photo 4, 5

DATE	DESCRIPTION	PHOTO	REFERENCE MICROBIOLOGICAL PARAMETERS
2018 -2019	Situation prior to treatment with Hydropath		Periodically levels of 10^3 CFU / L
02/21/2020	Initial process: closed structure cleaning with active DHW recirculation circuit ("concentration effect").	1, 2	$10^4/10^5$ CFU / L
Thermal Shock + Total purge + Reintegration			
03/04/2020	After Reintegration	3	$<10^1$ CFU / L
06/17/2020	Partial purge + make-up	4, 5	$<10^1$ CFU / L



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Update October 2020

The customer confirms that 7 months after the last thermal shock the bacterial load present in the plant remained around the same low parameters detected in March, and certainly always within the legal limits; this shows that the prevention of Legionella growth by Hydropath Technology is continuing in a consistent manner.