Bacterial growth on surfaces in contact with water and other liquids (a phenomenon usually known as "biofilm") represents a major problem in most industrial applications. Indeed, this microbiological layer causes a number of issues, including corrosion, equipment failure, decreased performance and many more.

Biogas upgrading is the process that removes impurities (H_2S, siloxanes, trace compounds, etc.) and CO_2 from biogas, to obtain biomethane. Based on the significantly higher solubility of CO_2 in water compared to methane, particularly at lower temperatures, water scrubbing may be used for CH_4-CO_2 separation of biogas. The CO_2-rich water leaving the absorber is regenerated by flashing followed by recycling.

In this biogas upgrading plant (Fig. 1), no biocide treatment was applied to the water flowing through absorber and desorber, and some problems were observed in the packed beds. The technical staff of the plant supposed that these problems were caused by microorganisms, so an ALVIM Biofilm Sensor was installed in the desorber.
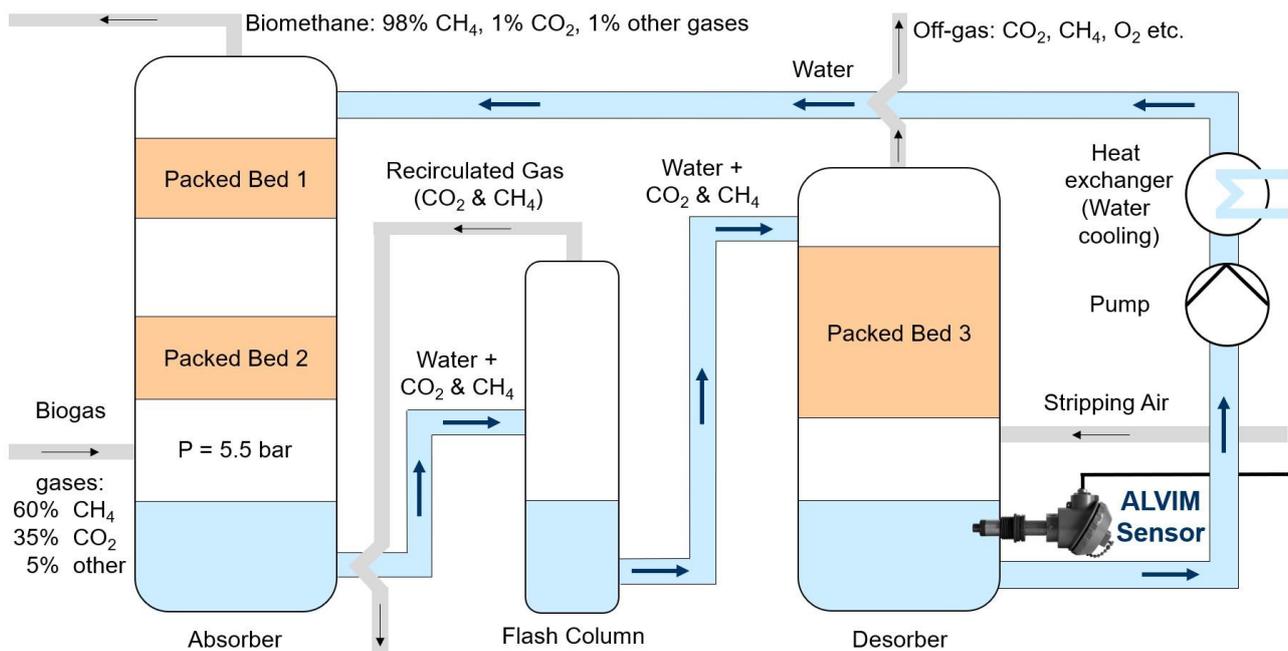

Figure 1: Scheme of absorber / desorber water loop of the biogas upgrading plant

After about a month, the ALVIM Signal showed a gradual increase, indicating biofilm growth (Fig. 2). The technical staff of the plant decided to apply a strong cleaning and biocide treatment. As it can be seen from the graph, the treatment completely removed biofilm – indeed, ALVIM Signal dropped down to the initial level.
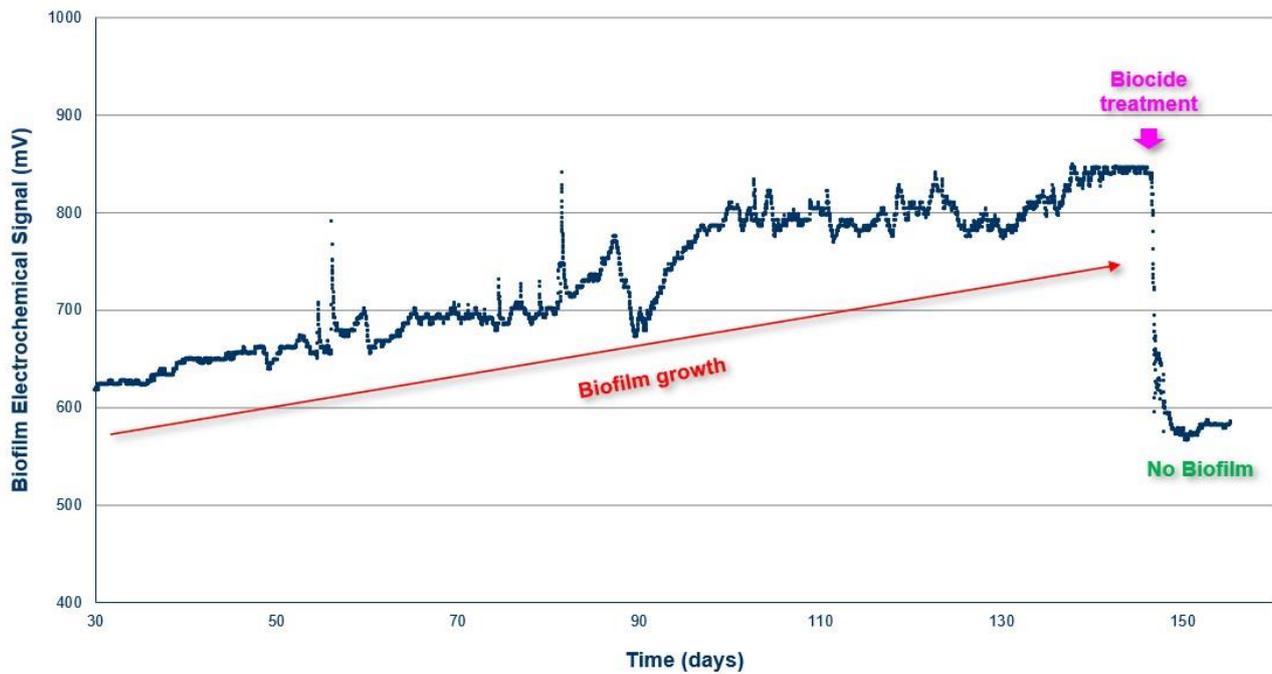
*Figure 2: ALVIM Signal indicating biofilm growth and, thanks to biocide treatment,
the complete removal of this microbiological layer*

Then, to limit a possible re-growth, a "routine" biocide treatment was applied, on a weekly basis. As it can be seen in Fig. 3, the treatment strongly limited microbiological proliferation.
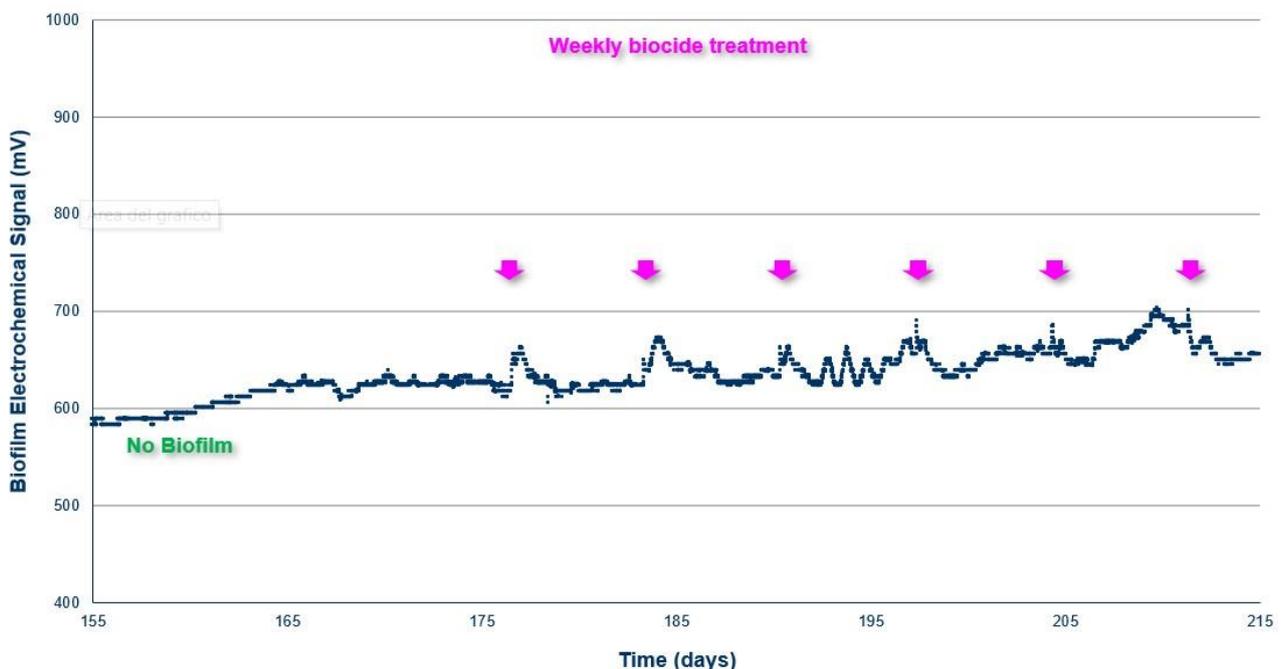

Figure 3: ALVIM Signal confirming the effectiveness of routine biocide treatment

Thanks to ALVIM Biofilm Monitoring Technology, it was thus possible both to **detect the early upset of biofilm**, and to **check the effectiveness of chemical treatments**, greatly improving the overall efficiency of the process.

Do you have a similar problem with biofilm? Contact our experts and ask for a free custom-tailored consultancy, you will receive further information about ALVIM products and services.

The ALVIM Biofilm Monitoring System is a reliable tool for the early detection of bacterial growth on surfaces, on-line and in real time, in industrial production lines, cooling water systems, etc.

The ALVIM Technology has been developed in collaboration with the Italian National Research Council, Institute of Marine Sciences, and it is currently used worldwide in many different application fields.

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