



## Deozonation: The Role of UV Photolysis in a Cell Culture Manufacturing Facility

**UV- PURE & SIMPLE**

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CSL Behring is a global specialty biopharmaceutical company that develops, manufactures and markets therapies to prevent and treat serious human disease. It has manufacturing facilities in Switzerland, Germany, USA and Australia, where it is headquartered. As would be expected, it is critical that every part of the manufacturing process is in compliance with relevant safety and quality specifications and all applicable regulations.

Fluidquip Australia recently supplied and currently are in the process of commissioning two Hanovia ultraviolet light (UV) deozonation systems for CSL Behring's newly constructed cell culture manufacturing facility, located at Broadmeadows in the northern suburbs of Melbourne, Australia. CSL Behring uses cell culture systems to manufacture complex biological molecules such as clotting factors for use as therapeutics by haemophiliacs. As part of this process, CSL Behring conditions the incoming town water such that it is suitable for use in the cell culture process. This conditioning process sees the town water treated with a succession of filtration steps including microfiltration (MF) and reverse osmosis

(RO). The resultant deionised water (WDI) is then sent to storage tanks from where it is distributed to a number of process loops. Prior to its distribution, the WDI is sanitised with ozone. Once sanitised, the WDI must then be deozonated prior to its final use to allow the water to be used safely. This is where the Hanovia UV systems come in. UV light is well known for its disinfection properties, but less well known is its ability to breakdown chemical compounds in a process known as "photolysis". In this case, the UV systems are able to effectively break down the ozone in the water. Importantly, the UV systems perform this function without adding any chemicals to the water - the entire process is completed solely by way of irradiation with UV light.

The first of the Hanovia UV systems deozonates the WDI. This WDI is then treated by a further electro-deionisation (EDI) process and then passes through a final ozone sanitation process prior to final deozonation by the second of Hanovia's UV systems. From here, the WFI is used in the preparation of CSL Behring's injectable biotherapies.

In supplying these systems, Fluidquip Australia ([www.fluidquip.com.au](http://www.fluidquip.com.au)) and Hanovia ([www.hanovia.com](http://www.hanovia.com)) worked together in customising Hanovia's standard UV design in order to meet CSL Behring's specifications.



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Some of the necessary customisations included:

- Specially positioned and sized triclamp vent in roof of the UV chambers.
- Exclusion of a drain stub at the base of the UV chambers so as to remove the possibility of any unsanitary "dead legs".
- Highly polished and hygienic internal surface finishes
- Material certifications, documented weld procedures and evidence of welder qualifications.
- FDA-approved seals and gaskets.
- Supply of SS316L support stands for the UV chamber.
- SS316L control cabinets.

In addition to these customisations, Fluidquip Australia provided commissioning support at the completion of the installation process. Fluidquip Australia looks forward to continuing its ongoing support of these UV systems for CSL Behring.

*More information on CSL Behring can be found at [www.cslbehring.com.au](http://www.cslbehring.com.au)*

*You can find out more about all aspects of UV disinfection, deozonation and photolysis by visiting [www.fluidquip.com.au](http://www.fluidquip.com.au)*

