

## PharmaLine DC 100 for de-chlorination and disinfection of RO

In February 2019, Square Pharmaceuticals Ltd installed a PharmaLine DC 100 for de-chlorination. The unit is used for continuous de-chlorination and disinfection of RO feed water in the Pure Water Generator. The unit is sized for up to 1.5 m<sup>3</sup>/h with 2 log free chlorine reduction. Since commissioning the system, it has been working smoothly 24/7.

Before the installation of DC UV system, they were using a sodium meta bisulfite dosing system (SMBS) with an ORP control. The ORP-based SMBS system is generally not very reliable because of three reasons; ORP systems can show fluctuations and measurement errors. The SMBS concentration and the reaction time for removing free chlorine can be unstable. Moreover, because of SMBS dosing, the microbiological load (sulfate-reducing bacteria) can dramatically increase during medium to long-term periods.

Scaling formation on the RO membranes can reduce the lifetime of RO membranes. Using UV instead of SMBS has none of the above drawbacks.

### End user company profile

Square Pharmaceuticals Limited, the flagship company of Square Group, is holding the strong leadership position in the pharmaceutical industry of Bangladesh since 1985 and is now on its way to becoming a high-performance global player. It is the largest pharmaceutical company in Bangladesh and it has been continuously in the 1st position among all national and multinational companies since 1985.

### End user

Square  
Pharmaceuticals  
Ltd

### Industry

Pharmaceuticals

### Application

De-Chlorination



### Short term goals

The short term and most critical objective of installing a de-chlorination system is reducing the free chlorine load on the process and minimize direct and indirect down-time in production.

### Long term goals

To increase water quality of the system in terms of chemical and microbiological parameters in order to optimize the water treatment process.

### Challenges

The main challenge for Square was to remove free chlorine with alternative chemical free technologies for the protection of reverse osmosis and de-ionization in the pure water generation. Another challenge was to maintain a continuous flow with low frequency of system down time and optimized low running cost.

## Solution

A PharmaLine DC 100 unit was installed for de-chlorination in 2019. The UV system was installed before RO Feed to reduce the free chlorine in order to prevent RO and EDI membrane from the damaged with free chlorine as well as to prevent biofouling. The UV unit reduces free chlorine concentration from higher than 0.4 mg/ liter to untraceable level. Output of the system continuously measures free chlorine with a free chlorine kit in order to avoid the presence of free chlorine in the water.

## Results and Benefits

The Pharmaline DC 100 UV system is showing excellent performance for de-chlorination as per the specifications provided by Hanovia. Furthermore, even if the free chlorine level is more than double of 0.4 mg/ liter (which is the specified designed maximum concentration), the UV unit is still able to de-chlorinate the feed water. The output level of free chlorine is untraceable. The microbiological results are also much better and the RO system performance has got better since the UV installation.

## Costs

The operational cost is very favorable when comparing the alternative chlorine removal systems since you only have to change the lamp every 6 months. Also, it reduces down-time for production which indirectly reduces production costs. UV dechlorination provides distinct advantages over traditional technologies such as Activated Carbon Filtration or Sodium Metabisulphite dosing. These chlorine removal methods are prone to microbial contamination and require significantly more operator involvement and plant room space than UV leading to higher lifetime costs.

“The PharmaLine DC 100 de-chlorination system works very well without any problems. Since its commissioning, we found no performance problems with the UV system. Till now we are very happy with its performance. It is controlled by Central PLC. We only follow up on maintenance procedures for the system, which is just servicing the module every six months. In the future, we have the intention to replace all ACF/SMB-based dechlorination systems with the Hanovia DC UV system”.

**Mr. Abad Ali**  
Executive, Engineering Department  
Square Pharmaceutical Ltd



Energy savings



Improved water quality



RO system performance

