HatchTech
INCUBATION TECHNOLOGY

Innovatielaan 3
6745 XW De Klomp
The Netherlands

+31 318 512 511
info@hatchtech.com
hatchtech.com

P.O. Box 256
3900 AG Veenendaal
The Netherlands

Continuous disinfection with PCO during SetCare incubation

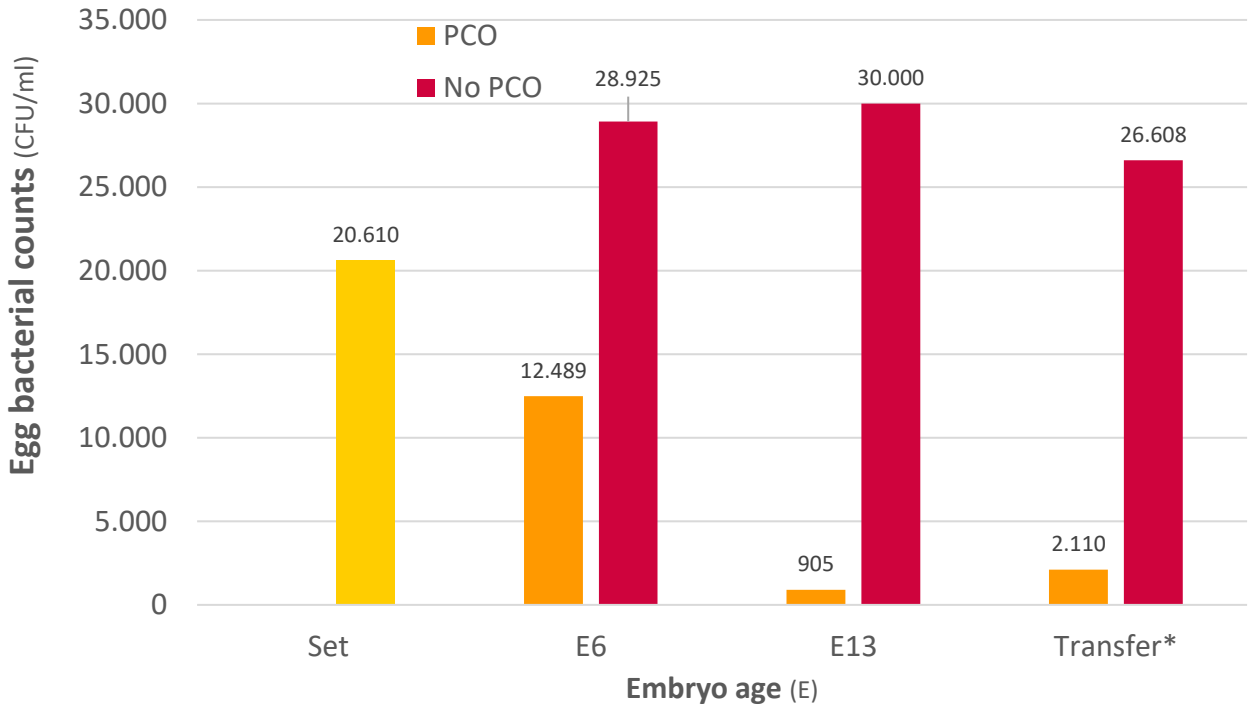
Author: dr Jan Wijnen

Date: March 2026

Recently, HatchTech launched a new 24-day incubation setter system called SetCare. In SetCare, eggs are very gradually warmed from storage to incubation temperature. This lowers the early embryo mortality, increases hatchability significantly, and advances chick quality in terms of body length and uniformity at hatch moment.

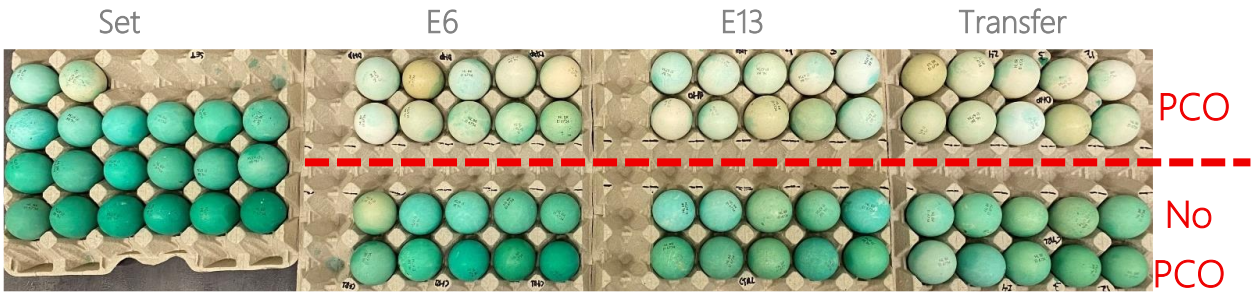
Amongst gradual warming and other technical features, SetCare also includes a PhotoCatalytic Oxidation (PCO) system. This PCO system disinfects the air and surfaces in the incubator from set until transfer and may replace egg disinfection methods that are often applied prior to incubation. The latter is dependent though on national regulations and current standard practices of the hatchery. With PCO, no chemicals are used. Alternatively, the PCO system transforms ambient oxygen into a continuous low-level supply of free radicals (e.g. gaseous hydrogen peroxide) that, in turn, break down the cell structure of bacteria, viruses, and fungi.

Research showed that PCO in SetCare is highly effective in reducing the bacterial load of hatching eggs during incubation. In the figure below, it can be seen that with PCO the bacterial levels are almost halved within 6 days after set, and remain at minimal levels until transfer. Without PCO, the bacterial levels increased and remained high during the entire setter phase. It is good to note that the so called 'rinse method' was used to sample the eggs, meaning that bacteria present in egg pores were included in the sampling. In other words, PCO seems to kill bacteria that are present in the pores of eggs, too.



*Transfer was at 21 days after set (E21) with SetCare incubation (total of 24-days incubation)

The continuous low level air disinfection does not seem to harm embryo development. Instead, higher hatchability rates are found. The amount of unhatched eggs, especially, is often found to be lower when PCO is applied. This can be explained by the fact that PCO removes the cuticle of the egg, as can be seen in the figure below. This likely improves gaseous exchange through the eggshell, advancing late term embryos that are limited in oxygen supply. The removement of the cuticle by PCO also increase egg weight loss between set and transfer by approximately 1%. Due to the cuticle removement, PCO can be considered for duck incubation (which require removal of their thick cuticle to be able to hatch) or incubation at high altitudes (to advance gas exchange).



Stained cuticles of hatching eggs at various time points during incubation either treated with PCO (top row) or without PCO (bottom row). A darker teal color indicates the presence of more cuticle.

HatchTech incubators are designed in such way that they can become completely airtight. A gas sealed phase of at least 3 days from set onwards is standard practice in HatchTech hatcheries. During this phase, relative humidity (RH) increases to high levels (approx. 85%) without condensation. This benefits the efficacy of PCO, because PCO is dependent on RH in the incubator. With help of UV-C light and a titanium dioxide coated honeycomb filter, water molecules are split into free radicals (OH + H). Additionally, PCO efficacy is dependent on the amount of air that is ventilated out of the incubator. Due to the high cooling capacity of HatchTech incubators via the patented radiators with their laminar airflow principle, HatchTech incubators are not dependent on cooling via large volumes of cold air (or via water spraying systems). As a result, air containing free radicals stays in the incubator long enough to allow optimal egg disinfection.