

OxyGuard

Next Generation
Inert Gas Curing Systems



GEW precision control systems

gewuv.com

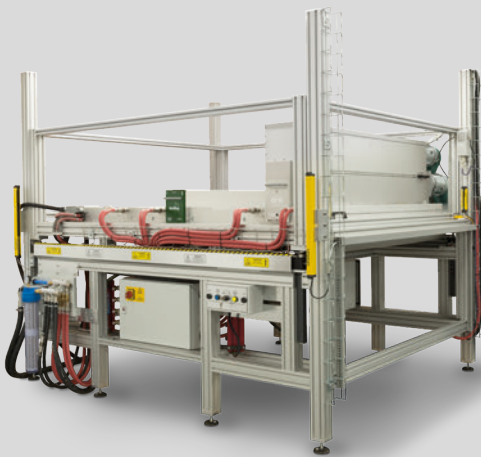
GEW
...engineering UV

OxyGuard inert gas curing

OxyGuard is GEW's next generation oxygen control system. It consists of an innovative new inert gas chamber and revolutionary control software for precision control of oxygen concentration. OxyGuard is ideal for low migration/odour printing, siliconisation and other high performance applications.

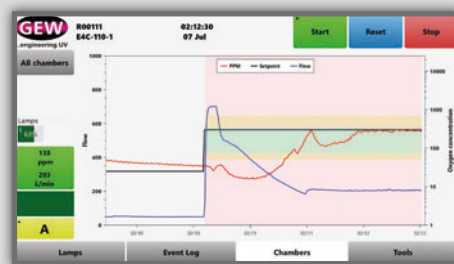
The benefits of OxyGuard

- Achieves precision oxygen ppm control with custom set points from 30-10,000ppm
- Closed loop control algorithm rapidly achieves set points and minimises inert gas usage
- Custom designed chambers support all GEW lamp models and widths, and any quantity of lamps per chamber
- Chambers can be on rollers, straight through web paths or mounted on conveyors
- A radically improved user interface makes operator monitoring and adjusting of the curing process easier than ever before
- Enhanced user-set alarm and warning outputs are available, to enable simple process compliance



Closed loop control

OxyGuard features a radically improved closed loop control functionality. Oxygen set points are rapidly achieved and maintained to within $\sim\pm 10\%$, even with different materials or coatings. Chamber O_2 concentration and flow rates are clearly displayed on the HMI. The innovative control ensures no spikes of oxygen concentration, even during rapid machine acceleration. User adjustable warning and error bands are graphically represented on the HMI and can be outputted via digital I/O if levels are exceeded for an adjustable time period.

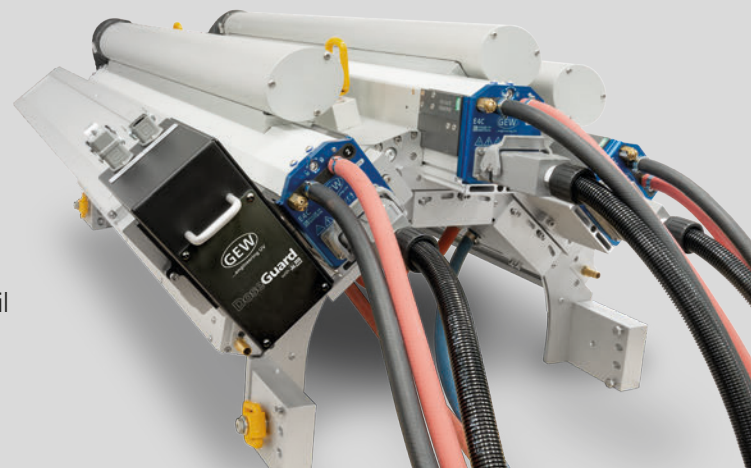


OxyGuard automatically monitors and maintains the oxygen level based on the customer set point, ensuring maximum efficiency.

Job reporting

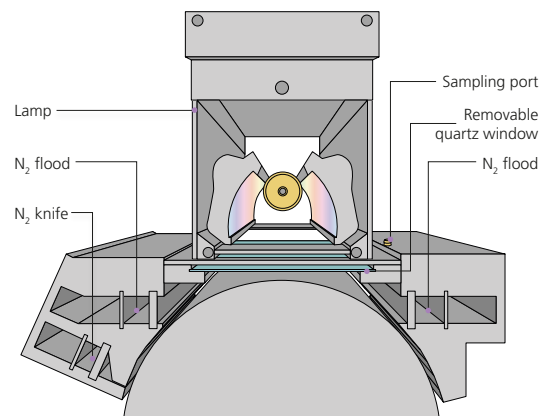
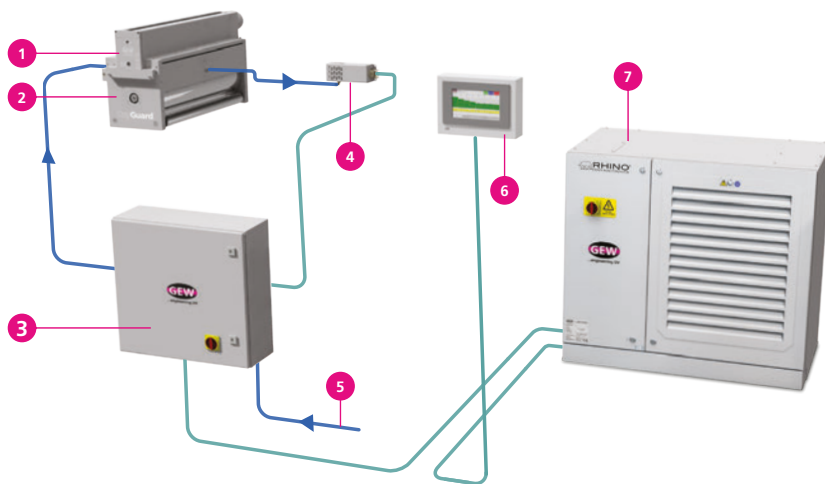
OxyGuard includes a means of recording live system curing performance data. Oxygen level (ppm), UV intensity and any warning and fault conditions that occur are recorded and timestamped.

For compliance or GMP (e.g. EC Regulation No. 2023/2006), data can be exported via GEW API for OEM integrations or via an email report, triggered via the HMI 'Job logging' function.



How it works

Ambient oxygen reduces the effectiveness of UV curing in many inks and coatings. The OxyGuard system overcomes this, by reducing oxygen concentration at the point of curing. A chamber, with inlet and outlet slots, is constructed around the material and an inert gas, usually nitrogen, is pumped in to displace the air and maintain a target oxygen level. A quartz window in the chamber allows the UV lamp to be mounted outside the chamber and shine through to irradiate the ink/ coating. Oxygen levels in the chamber are monitored by an oxygen sensor. A closed loop algorithm precisely adjusts the flow of inert gas to the chamber to maintain target oxygen ppm as the material moves through the chamber.



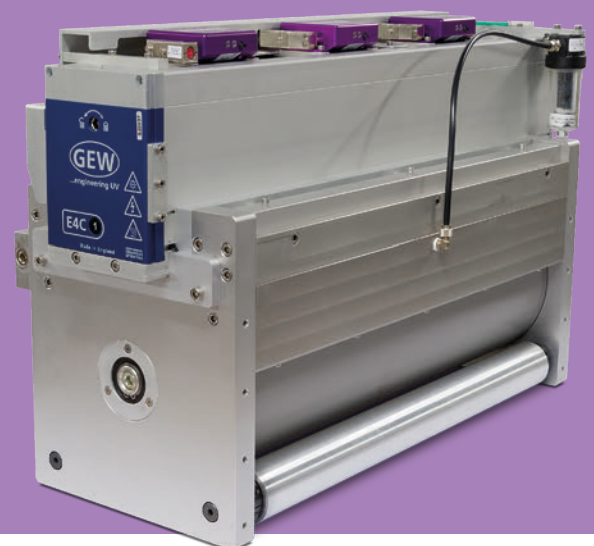
Example configuration shown on roller chamber. Many other mechanical configurations are available (e.g. flatbed conveyor).

KEY ELEMENT	DETAILS
1 UV lamphead	Compatible with all lamp models and any number of lamps.
2 Inert gas curing chamber	Available on rollers, straight through web paths or mounted on conveyors.
3 Inert gas control box	All-electronic control to monitor O ₂ concentration and regulate inert gas flow.
4 Oxygen analyser	Compact oxygen sensor mounted near chamber for rapid response.
5 Inert gas feed	Inert gas feed to control box c/o customer.
6 HMI touchscreen	GEW UV process control displays oxygen concentration and inert gas flow for each chamber.
7 RHINO Power Electronics	Ultimate efficiency electronic control is used to power the UV lamp and manage the OxyGuard system.

Specifications

N ₂ pressure required	8 bar
N ₂ flow requirement	Contact GEW
N ₂ purity required	99.999%
Compatibility	Any GEW mercury or LED lamp
Sensor calibration	Yearly
Set point range	30 - 10,000ppm
O ₂ alarms available	I/O output
Configuration	Roller or flatbed

Other inert gases can be used, contact GEW for details



Retrofits

Retrofits of OxyGuard control software to existing GEW RHINO/RLT nitrogen systems are possible without changing the physical chamber. This is a quick and easy route to improved process control and lower N₂ usage at a reasonable cost.



Relax... you're in safe hands

GEW Remote Monitoring Service



Remote Monitoring is an IoT technology included as standard on every GEW RHINO/RLT UV system, and is Industry 4.0 approved.

All such systems are continuously monitored to ensure they are operating at peak efficiency, 24/7/365.

This also enables GEW to provide the **fastest and most precise service response in the industry**.

System performance reports

The Event Log continually records system use and regular reports are generated for the customer, detailing energy usage, press productivity and system performance.

RHINO power

Compact, fail-safe power

RHINO and RLT power units can supply up to 12 UV lamps from one compact cabinet with a 1265mm x 800mm footprint.

The power supplies are designed to run in ambient temperatures up to 40°C and are protected from common mains power events (e.g. short-to-ground, mains dips) by a safe shutdown mode, for ultra-reliable operation.

5-year warranty available



Using GEW's embedded service package gives total confidence in the reliability of GEW power electronics, and minimises unplanned maintenance costs. **GEW is the only UV supplier to offer this level of warranty on the full system.**



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