

# Sanitaryware Glaze

## How to save money every year by installing an Xtract Glaze Reclamation System.



**Many sanitaryware manufacturers around the world are using Xtract's advanced technology to meet the highest of process standards and efficiencies. They are consistently enjoying significant cost savings due to the recovery of glaze from their manufacturing process and contributing ultimately to a 'zero waste policy'.**

The Xtract Glaze Reclamation System extracts water from a dilute glaze slurry to produce a consistent high density glaze which is then re-used within the operation. An important aspect of the Xtract technology is to retain the particle size distribution and density such that the reclaimed glaze is identical to that of the virgin material and can therefore be simply blended prior to re-use, a major benefit to the manufacturing process.

### Overview

Glaze is a clay and silica based material which is processed on site from a mixture of mineral raw materials and water. The fired glaze is the glossy hygienic surface of sanitaryware which also provides the final colour. The glaze slurry is applied to the dry clay sanitaryware using manual, electrostatic or robotic spraying lines. As a result, the glaze is lost during the spraying process in the form of overspray. It is this overspray that is collected and processed by the Xtract system to achieve a zero waste objective.

Prior to the installation of an Xtract system, manual operatives would be deployed to scrape down the primary glaze from the sides of the spray booths and collect it into tubs or trays for reuse - an inefficient operation with health, safety and cost concerns.

With this manual method, it is only possible to reclaim the high-density portion of the recovered glaze, the low density spectrum is lost. However, an Xtract system also captures and retains the lower density glaze washings from glaze prep, the spray booth water curtains, the ventilation systems and the wash water from the equipment between shifts. This lower density slurry contains significant quantities of glaze particles which would normally be channelled into the site internal drains for processing by the waste water treatment plant, a significant loss and cost to the business, unless an Xtract system is utilised.

By installing an Xtract system, it is now possible to achieve significant cost savings of glaze, process quality water and a reduced demand on the waste water system. The water obtained from an Xtract system is of sufficient quality to be re-used in the manufacturing process before discharge to a municipal drain or river outlet.



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## Justification for an Xtract Glaze Reclamation System

The installation of an Xtract Glaze Reclamation System is justified by:-

- Payback - Less than 2 years
- The value of recovered waste glaze
- The value of reclaimed water
- Improved glazing quality
- Yield improvements
- Increased productivity
- Reducing the cost per piece to produce
- Zero Waste
- Environmental compliance

## Cost Savings and Benefits

There are many Xtract installations worldwide within the sanitaryware manufacturing sector delivering the real and tangible cost savings and process benefits detailed within this case study based on a typical 1.5 million piece per year manufacturing unit.

It is normal for Xtract's customers that, following commissioning and integration of the Xtract system, they immediately expect to achieve 100% glaze utilisation, which in this example equates to a saving of 100 dry tonnes of glaze per month together with 35 cubic meters per day of clean re-usable process quality water.



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## Environmental Benefits

- Mains water reduction - 1000 cubic metres per month.
- Clean water re-used in manufacturing, or water quality is satisfactory to discharge directly to the municipal drain / river at levels acceptable to the Environmental Agency.
- Opportunity to close or reduce the reliance on large settlement lagoons.
- Waste disposal, reduced by 140 wet tonnes per month.
- Overall energy reduction due to reduced glaze manufacture and reduced effluent treatment.
- Waste Water Treatment – Reduced Operating Cost
  - reduced solid loading.
  - clay based material available with no glaze contamination.
  - reduced use of chemicals and simplified operating procedures.

## Process Benefits

### Reclaim Glaze Quality

- Quality comparable with virgin glaze.
- "Xtract" process purely mechanical, no chemical additions, no loss of fines – chemical, physical and ceramic properties of glaze retained.

### Simple Re-use of Glaze

- Final product density is constant.
- reclaimed glaze is in slurry form - suitable for immediate re-use.
- Constant reclaim blend ratio (reclaim/virgin) total operational consistency.

### Process is Simple, Continuous and Automated

- 24/7 continuous operation as necessary.
- Operation is automatic and only requires operator for start up and shut down.

### Glazing operation

- Glaze overspray is not a process limiting consideration.

- Potential for faster spraying rate.
- Simplified robot programming.
- Glazing line availability increased to 98%.

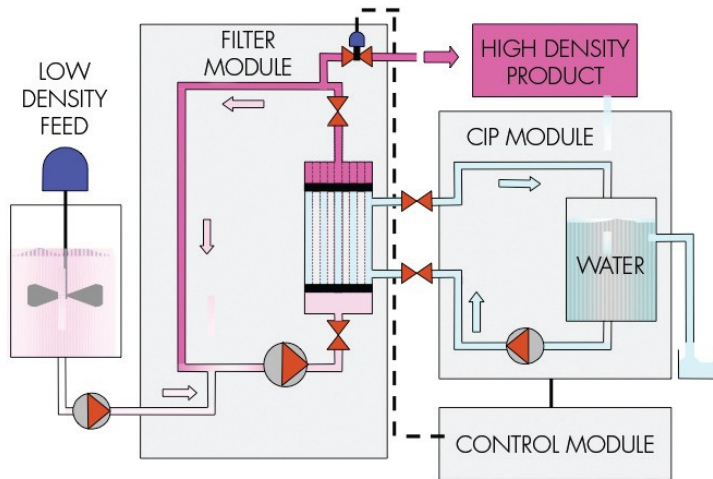
Rapid booth cleaning regime

- Increased availability of spray equipment.
- Increased production hours – increased capacity.
- Less downtime – reduced cost per piece.
- Opportunity to automate wash down.

Typical Xtract System

The Xtract System comprises three modules :

1. Filtration Module
2. Control Module
3. Clean in Place (CIP) Module



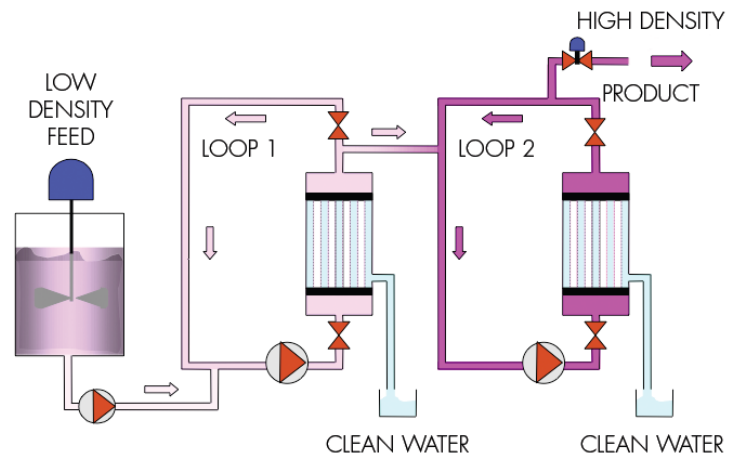
In operation, dilute washings are fed from the agitated storage tank to the Xtract system and are separated in the filter module (1) into clean water “permeate” and high density glaze “retentate”.

The Filtration Module (1) incorporates an Xtract filtration housing located in a re-circulation loop. Low density washings are then continuously pumped from the feed tank into the re-circulation loop where the de-watering of the washings occur.

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During this crucial process it passes through the filter where the density is raised to the required ‘final density’.

The reclaimed glaze is continuously discharged from the system via an automated control valve. This provides a consistent density glaze of for reprocessing. “Clean water” permeate is discharged from the system and fed either to drain or to the storage tank for recycling.



Xtract is the leading Ceramic Industry specialist in the design and manufacture of glaze and slip reclamation equipment, and also specialises in the reclamation of submicron viscous slurries from any industrial processes to improve efficiency and profitability.