



...Proven Descaling Technologies



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Overview

Kolene® molten salt bath systems provide continuous or batch descaling of all specialty alloys, including stainless steel, nickel and titanium. Salt baths will handle products ranging from thin foils to plate, coils, rod, tubing and shapes.

The Kolene molten salt descaling process reduces by up to 80% the oxide layer on stainless steel and specialty alloys exiting an annealing furnace or pickle line. The thin oxide layer remaining is quickly removed by a mild acidic pickling solution. This provides a superior product while significantly lowering processing costs.

Molten salt conditioning involves oxidation and solvency. Lower valence oxides are first converted to their high valence analogs. These new oxides combine with other bath constituents to form compounds soluble in the bath or during subsequent water rinsing.

Salt bath conditioning in the wire industry is increasingly important as the complexity of wire alloys changes and pollution controls become more restrictive. Initial investment can be recovered rapidly in time, savings, and efficiency.

Kolene DGS®, for stainless steels, superalloys, and titanium, is a premium oxidizing salt formulation for descaling, and simultaneous deglassing where applicable. An operating temperature range of 750°F - 950°F, combined with low viscosity and high reactivity, make DGS an ideal choice for descaling both wrought products and fabrications.

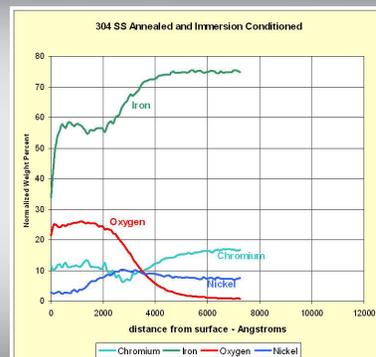
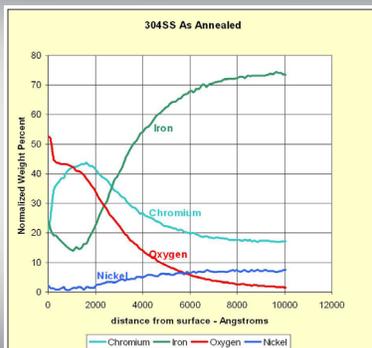
Kolene® No. 1, DGS®, and ALKO™ salts are shipped as beaded products. Most Kolene salts are also available in liquid form for use with the patented KOLIQUID® salt addition system.

- Custom-engineered systems for continuous or batch descaling.

- Reduced metal loss for higher yields.

- Proven chemistry for reliable operation.

- More than 70 years of molten salt bath metal descaling experience.



- Converts acid-resistant oxides to readily soluble compounds.
- Significantly reduces residual oxide thicknesses by up to 80%.
- Permits complete pickling with less acid time & lower temperatures.
- Preserves fine surface finish and luster.
- Allows faster line speeds.

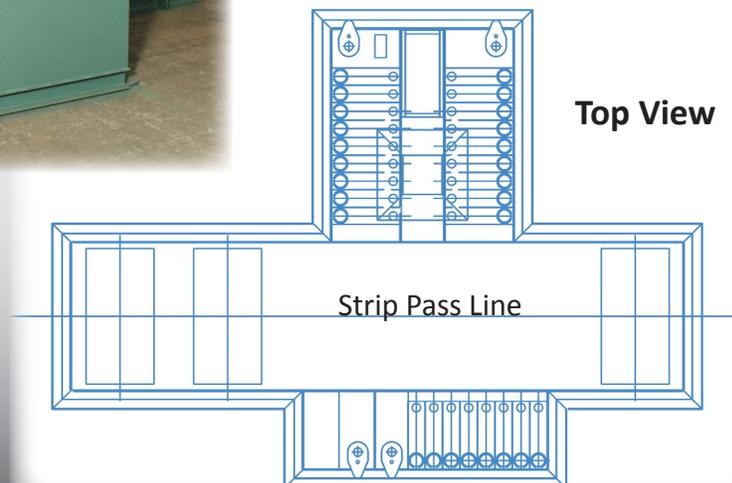
Continuous Strip

- The Kolene® molten salt descaling system provides continuous high-volume conditioning at line speeds common to most anneal and pickle lines.
- The bath is essentially self-regulating with minimal control required to ensure consistent performance.
- By-products are easily removed from the work bath without process interruption.



Process Equipment

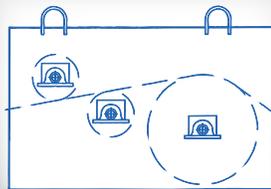
Unit designed for continuous alloy strip descaling.



Consumption Minimization

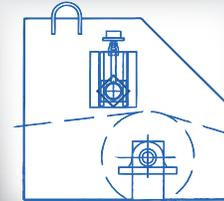
Wiper Roll

- Adjustable deflection capabilities.
- Aggressive wiping action.
- Minimal maintenance.



Steam Wipe

- Non contact wiping.
- Superheated steam wiping action.
- Built-in manual cleaning capabilities.
- Adjustable positioning.

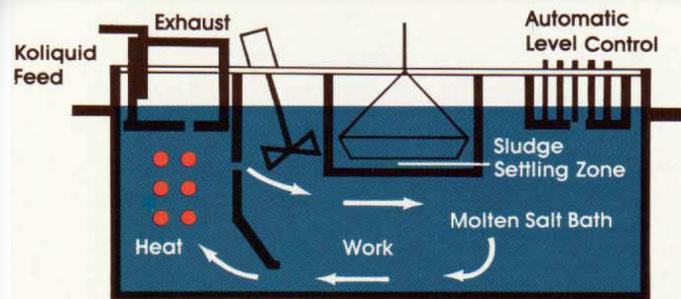


KOLIQUID™

The KOLIQUID™ System automates the Kolene molten salt bath descaling process by eliminating the need for manual bath monitoring and process chemical replenishment.

The system consists of an automated salt level monitoring unit, feed mechanism and bulk storage tank. When the system detects a low salt

level, fresh process chemicals are automatically added to the bath. These additions are necessary to compensate for the salt dragout on the work being processed and a minimal volume lost when the reaction by-products are removed. When the level of the bath is restored to its proper level, the feed system is automatically shut down while level monitoring continues. The salt bath is consistently maintained for optimum descaling by the automated process. Operating costs are reduced by eliminating drum storage requirements and the labor required for manual additions of salt.



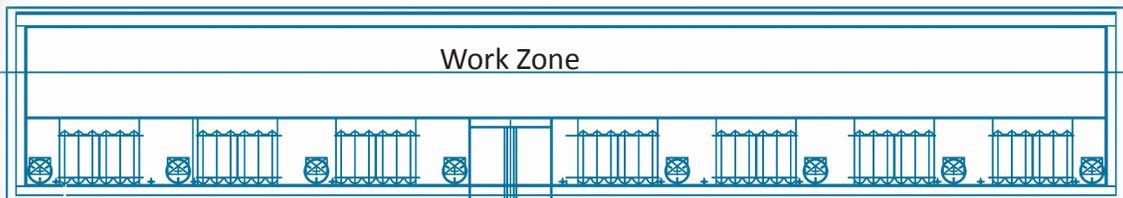
KOLIQUID™ Monitored Automatic Process

Alloy Long Products, Pipe, and Tube

Process Equipment

Unit designed for descaling of alloy pipe, tube and long products.

This system is capable of processing up to 60 foot lengths.



Top View

Units can be custom designed to meet any processing requirements.



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Stainless, Nickel Alloys and Titanium Wire

The primary function of molten salts in wire processing is the conditioning of heat treat and anneal scales. These scales are formed by the furnace treatments required in wire drawing and must be removed prior to further processing.



Partially Descaled Stainless Wire



- Process capable of descaling ultra fine to heavy gauge wire.
- Systems designed to process both batch coils and in-line multi-strand configurations.
- Improved product yield by reduced metal loss.
- Reduced environmental footprint.

Titanium Alloys

ALKO™ for titanium and other refractory metals, operates in an energy-efficient temperature range of 400° - 425°F. Complete oxide conditioning and simultaneous forming lubricant removal is accomplished using multiple, brief immersions in the ALKO salt. The result is a thoroughly descaled, uniform metal surface, ready for subsequent operations such as bright dipping or chemical milling.



Kolene offers proven processes for cleaning, conditioning, and descaling critical titanium components:

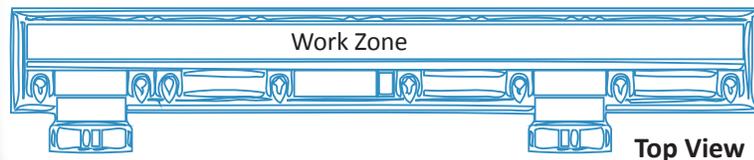
- Removes forming lubricants.
- Conditions hot forming and annealing oxides.
- Prepares heavy scales for pickling.
- Allows uniform chemical milling to be performed.



Process Equipment



ALKO
Cleaning process for lubricant removal and oxide conditioning of titanium helicopter spars.





For further information on Kolene® molten salt descaling technologies or to arrange sample processing, please contact Kolene Corporation.

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INNOVATIONS IN SURFACE TECHNOLOGIES
CHEMISTRY • EQUIPMENT • SERVICE

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