

D-13 SNOOT PUMPS

PUSH-PULL SNOOT PUMP SYSTEM FOR CONTINUOUS GALVANIZING



D-13 snout pumps are all-metal centrifugal pumps designed to maintain a "clean" galvanizing bath surface within the snout region to maximize sheet coating quality. Removing the top dross deposits out of the snout and away from the strip will increase your strip quality and lower maintenance costs on the line.

INSTALLING A METALLICS PUSH-PULL SYSTEM

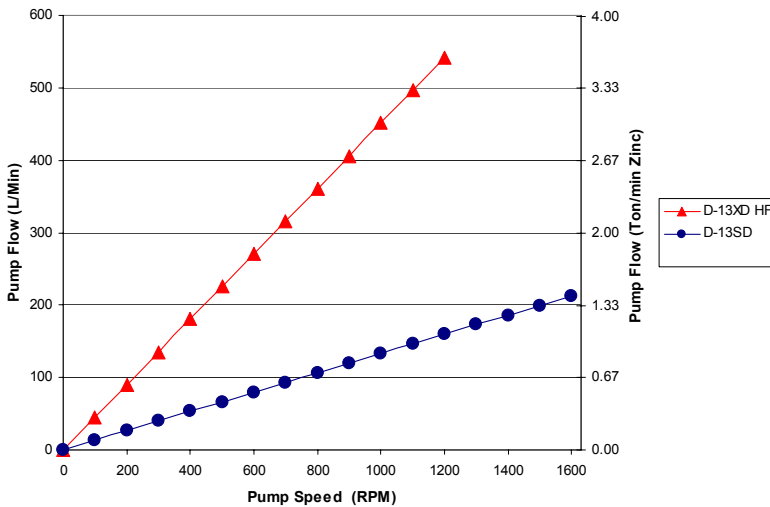
Pyrotek offers a variety of systems engineered to effectively remove unwanted dross and debris from the snout. Depending on the contaminant you wish to remove, the engineered system will include various combinations of the following pumps:

- D-13SD-MSA "Push" Pump
- D-13SD-MSA "Pull" Pump
- D-13XD HF-MSA High Flow "Pull" Pump

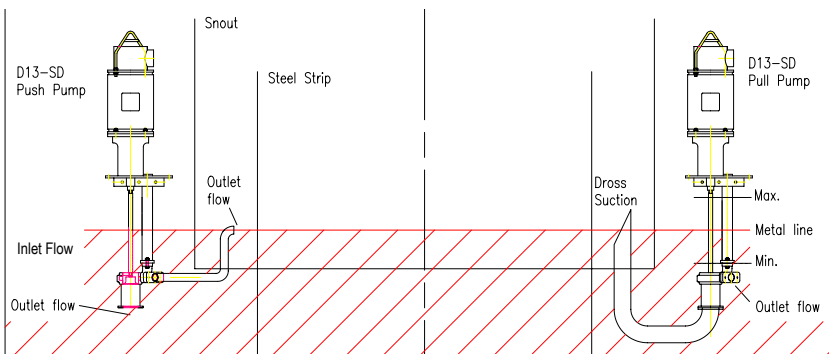
ADVANTAGES

- Enhances sheet coating finish for higher overall coil quality.
- Avoids top dross accumulation in the snout, preventing large masses from sticking to the sheet surface.
- Reduces the concentration of dross particles in the region of the submerged roll, minimizing dross pick-up and resultant sheet surface blemishes and defects.
- Removes "zinc dust" and other fine contaminants that develop during high-speed sheet coating processes.
- Removes oxide flakes, refractory and debris that typically fall into the snout following line stoppage, minimizing the number of scrap "clean out" coils.
- Removes debris from under the snout prior to line start up.

FLOW DATA COMPARISON



PUSH-PULL SYSTEM: IMPROVED COATING QUALITY BY REMOVING SURFACE DROSS



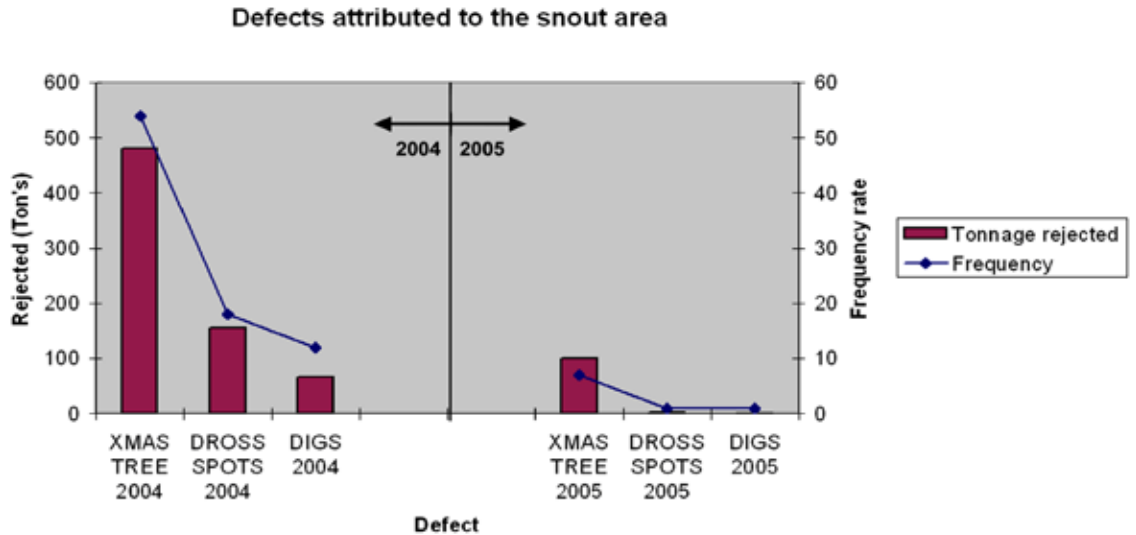
FEATURES

- Shaft, impeller, and casing made of highly corrosion resistant patented MSA2000 alloy for long component life.
- High operational reliability.
- Simple, rapid installation.
- Excellent durability to unintentional impacts.
- Easily adjustable zinc flow:
D-13SD - up to 1.4 tons / min
D-13XD HF - up to 3.5 tons / min
- All-metal construction provides easy submersibility in bath.
- Small, compact pump footprint design.
- Electric or air motor driven options.

CASE STUDY

During 2004, a dramatic increase of a defect called “micro dross” was reported on galvanized sheet produced at a CGL line in Europe. The surface of the zinc bath in the snout region was identified as a potential cause of this quality concern. Addressing this issue was vital to producing a high quality full finish product for use in the automotive market. After careful study, consultation and extensive water modeling, a Metallix snout pump system was installed and adjusted for maximum performance.

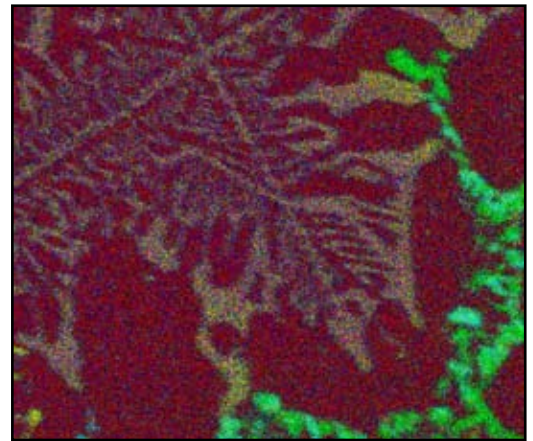
Following implementation and optimization of the push-pull system, a detailed quality audit was performed to identify the impact of the new dross management system on the reoccurrence of snout related defects. As a result, the frequency of the three main defect types (as defined by the customer) and the volume of rejected steel tonnage dramatically reduced after the installation of the dross removal pumps (see below).



Graph illustrating the difference in strip defects at the customer in the first 5 months of 2004, compared to the same period in 2005. Ref.: “Cleanliness Enhancement of the Bath Surface within a CGL Snout”, C. Phillips, N. Staples & M. Bright, 97th Annual Meeting, Galvanizer’s Association, October 2005; recipient of 2005 Outstanding Author Award, Galvanizer’s Association

METALLIX SUPERALLOY (MSA) MATERIAL

The patented Metallix Superalloys (MSA) are carbide-rich, iron-based superalloys specifically developed to resist molten metal corrosion while maintaining good mechanical properties and advanced wear resistance at elevated temperatures. The microstructure of MSA (see right) displays a very diverse and concentrated carbide grain structure which provides superior resistance to zinc/aluminum diffusion and dissolution.



MSA Micrograph

MATERIAL PROPERTIES

- Very low solubility in zinc / aluminum alloys.
- Minimized aluminum diffusion into the material.
- Low adhesion (non-wetting) of zinc / iron and zinc / iron / aluminum dross.
- High surface hardness.
- Dimensional stability at operating temperatures up to 1300°F (704°C).
- High thermal shock resistance.
- Economically viable.

Note: The physical and chemical properties listed represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.

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