High Speed Glass Singeing

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New High Speed Glass Singer

PROBLEM

The concept of singeing glass started in the late 1960's. It was rather hit and miss for quite a while because the original fabric singer designs were not engineered for glass material. The main reasons these units were unsuitable for singeing glass were that everything commercially available was too low in heat and inappropriately designed to handle the special requirements of glass fabrics. The burners on these units did not have sufficient flame (BTU's) to singe glass, because they were really designed to singe cotton or blended fabrics. Some systems flamed at the fabric without a protective back up water cooled roll and one design even dragged the fabric over metal edges. Many units utilized ceramic-faced gas burners. It is surprising that some of these systems even worked for use on cotton fabrics. In an attempt to obtain a better singeing effect, initially for use on G75’s yarn fabrics, at least one fiberglass finisher made modifications to these standard textile units in order to increase the flame and improve fabric handling.

Even with modifications to the heat output of these designs, problems with creasing during singeing continued to occur, especially on light weight styles, that sometimes led to fabric splits. Singeing did help to reduce broken filaments on the fabric surfaces used in the electrical circuit board market during the late 1970's and early 1980's. Pre-preg laminators, however, found the little glass beads that could form on the unprotected fringed selvages of air jet woven glass fabrics were unacceptable. They contaminated the resin and worked back onto the fabric face, which produced defects in the final copper clad laminate surfaces. Methods of shielding these selvages were developed and attempts were made to solve other problems. A major improvement was made in controlling creasing by changing from small diameter rolls, in common use at the time, to larger diameter rolls which also gave improved resistance to bending of these rolls under the stress of open flames.

One company finally built their own singer designs using 8" diameter water cooled rolls, but found that the best results still required singeing during the caramelizing heat cleaning step along with a second singe on the finishing ranges. Although larger diameter rolls improved performance, some creasing still occurred on the caramelizer range trying to get certain styles of the hot fabric down onto the 8" rolls. One of the last big problems involved developing a method of singeing 50-inch width light weight fabrics on a finishing range without creases.

A major limitation of the best glass fabric singer designs, however, was that they could only perform up to about 70 to 80 yards per minute before broken filaments or stubble became pretty obvious. This made it imperative to continue to use the double singeing process, because processing generally involved speeds of about 95 ypm during caramelizing while finishing line speeds were limited to about 75 ypm.
SOLUTION

All of these problems were considered in the development of the new Lanly Four Burner Singer. This unit is designed such that there is sufficient dwell and flame BTU to singe all electrical glass styles with fiber glass yarn diameters from D900’s to G75’s satisfactorily in a single station. The Lanly Company has incorporated the best features of previous systems, integrated new burner technology and greatly improved material handling.

Design features include:

1. Much larger diameter fabric back up rolls. These rolls provide the best possible surface anchoring of the fabric to control creasing during the shock of high temperature flame impingement.
2. Larger roll diameters also provide a much longer dwell time of the flame in contact with each fabric surface for improved broken filament melting at higher speeds.
3. New burner implementation is unique compared to any other singer. The burners are a brand new design and deliver approximately 60% more available BTU’s than any other singer.
4. The new burner design incorporates a significantly wider face, which provides additional BTU dwell time in contact with the fabric surfaces.
5. The burner system is comprised of four burners to obtain an effective double singe, in one pass, at high speed.
6. Two of the four burners can be turned off to significantly reduce the flame (BTU’s) when running very light weight or delicate styles. This feature is also beneficial if, for any reason, the line must be run at a slower speed than normal.

The original finisher’s development of the fiberglass singer design was the best previously available singer for glass fabrics. The new Lanly singer provides a tremendous increase in available firepower. The Lanly singer design improves flame dwell time while providing greatly improved fabric protection under flame stress.

The result … More effective singeing, at a higher line speed, than any other singer in the world!