

CONTRIBUTION TO AN INCREASE IN THE OUTPUT OF STITCH FORMING MACHINES OPERATING WITH BARS

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Initial situation

The stress caused by noise and vibrations to persons working at bar-operated stitch forming machines in the textile industry is generally very high. In addition, the machines proper are impaired by machine vibrations. Therefore, the possibilities of an increase in output are usually limited.

Research target

The research target is to carry out systematic investigations into the noise conditions in work rooms where bar-operated stitch forming machines are running as well as investigations into the causes of those vibrations with the aim to derive measures of improvement.

Research result

Results in terms of an increase in output both directly and indirectly were obtained for two machine types:

A noise abatement box for the Maliwatt 14022 stitch-bonding machine was designed, constructed and tested. This box allowed to reduce noise by 6 dB(A) at the main operating stand and meets important safety requirements of EC-standards. In addition, climatic variations in the stitch-bonding area are reduced and with it the number of yarn breakages and needle breakages. The result is an increase in the effective output of the machine. The testing of the box under industrial conditions has commenced.

Measures to optimize the drive unit of the 5243/1-168 warp knitting machine were proposed. They allow to increase the output directly by an increase in speed. But even if the number of revolutions of the machine remains unchanged, a "machine running dynamically smoothly" will improve the quality of textiles (e.g., by improving the stitch pattern) as well as the output by reducing the number of yarn breakages and avoiding needle breakages.

Application and economic advantages

The noise abatement box can be employed by Malimo Maschinenbau GmbH in the series production of their machines without any transfer operations being necessary. This is also a contribution to greater chances of achieving the CE mark.

The partial results of the research subject in connection with the warp knitting machine will not be transferred to production as Kändler Maschinenbau GmbH in the meantime have stopped the development of warp knitting machines. The results, however, can be indirectly utilized for other bar-operated stitch forming machines of this company.

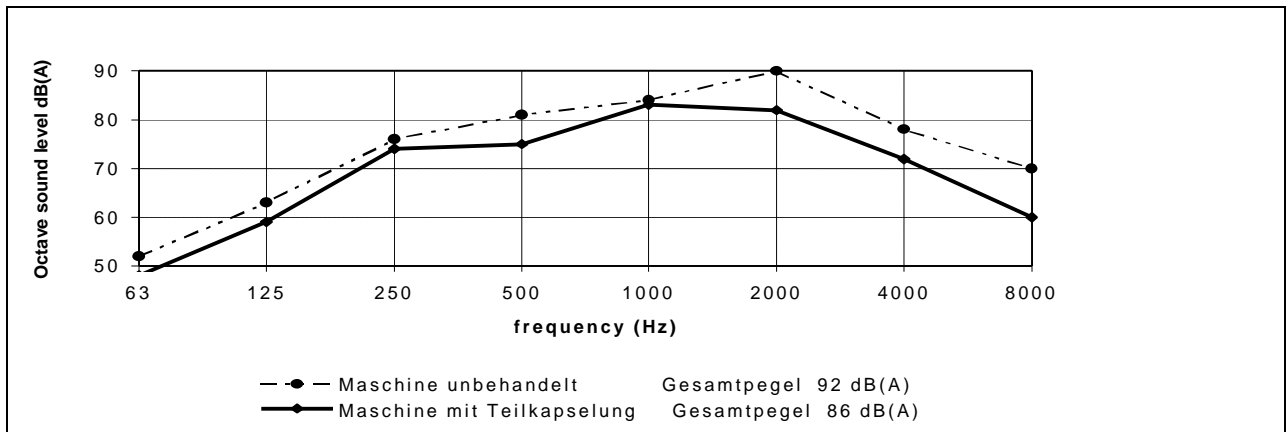


Fig. 1: Reduction of sound-pressure level in the front operating passage by means of partial capsuling at the Maliwatt 14022, knitting construction: pillar stitch, stitch length: 3 mm, medium: bonded fibre fabric

Maschine unbehandelt = machine untreated
 Maschine mit Teilkapselung = machine with partial capsuling
 Gesamtpegel = total level



Fig. 2: View with partial capsuling in the front operating passage



Fig. 3: View with partial capsuling in the rear operating passage with web lap