

# COMPUTER-AIDED POSITIVE THREAD FEEDER

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Project Manager: Dipl.-Ing. D. Reuchsel Duration: 07/95 - 09/96  
Authority responsible  
for the project: BMWi - Gewiplan  
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## **Starting situation**

The situation in the sector of flat knitting machines is reflected by a vast increase of pattern possibilities as far as the production of complete knitted pieces. But so there are varying lengths of the pieces which partly differ with more than 6 % from each other. These quality problems are partly faced by additional rows and so the efficiency is made worse resp. There are problems in ready-making of the knitted pieces because of the different vastness of the knitted pieces. If the manufacturers of flat knitted articles should get the possibility of a breakthrough in using technologies which are poor in ready-making, so we can assess, that the length constant of the pieces may not be more than  $\pm 1$  %.

## **Aim of the research work**

The aim of the project was to gather a concept for a positive thread feeder for flat knitting machines which can be used as a retrofit variation as far as a basic equipment at a flat knitting machine. This solution concept should be tested at first at a laboratory example and afterwards at a flat knitting machine with lifting sledge and under practically orientated circumstances. The attainable knitting quality should be improved in this way.

## **Result of the research work**

Basing on the known developments in technology, the marginal circumstances for working of a positive thread feeder at a flat knitting machine were analysed and the special requirements were formulated which are determined by knitting technology.

Additionally extensive theoretical and mathematical researches were done for working with the positive thread guide and the attainable efficiency.

A solution variation was gathered which is marked up by two kinds of operation. With a measuring method the determination of values about existing tread consumption at the machine is done. This measuring is done above the zone of a master piece or elements of it. Afterwards these values are re-enacted by a computer-aided thread feeder within the delivery method. The drive of the delivery wheel is made by a high-dynamic step motor.

After dimensioning and testing the single elements of the thread guide at a laboratory example with an integrated small circular knitting machine tests took place at a flat knitting machine DFA-1U (Elite-Diamant). The work was done with knitting speeds of around 1 m/s. The work was done with knitting speeds of around selected pattern was much better than the steadiness of a comparable knitted fabric which was manufactured without thread feeder.

## **Application and economical importance**

The knowledge won during gathering this research project are basics for a positive thread feeder for flat knitting machines. The reliability reached until now is still to improve. There must take place further tests under practically orientated circumstances to provide the evidence of acceptance for such a thread feeder.

The results reached until now allow the inference that it will be possible to offer solutions for the present quality problems and so to get reductions of the costs for manufacturing knitwear.

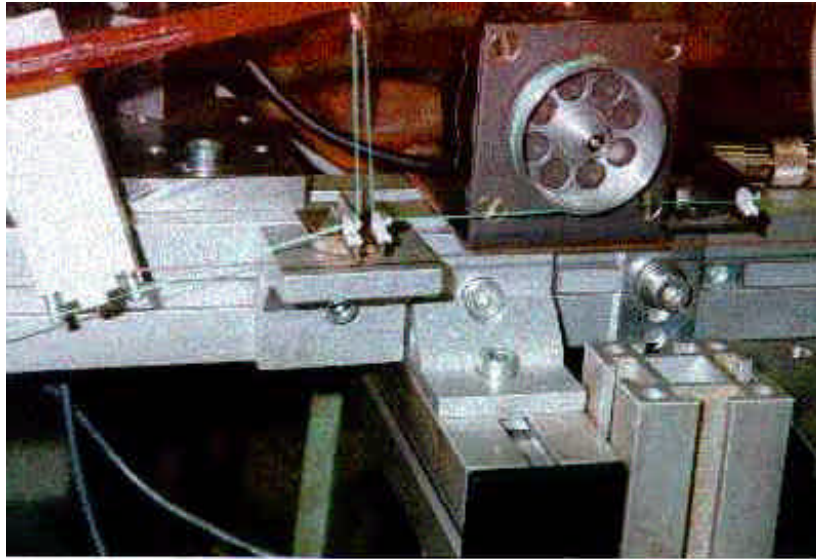


Fig. 1: Delivery wheel with step motor, thread tensioner

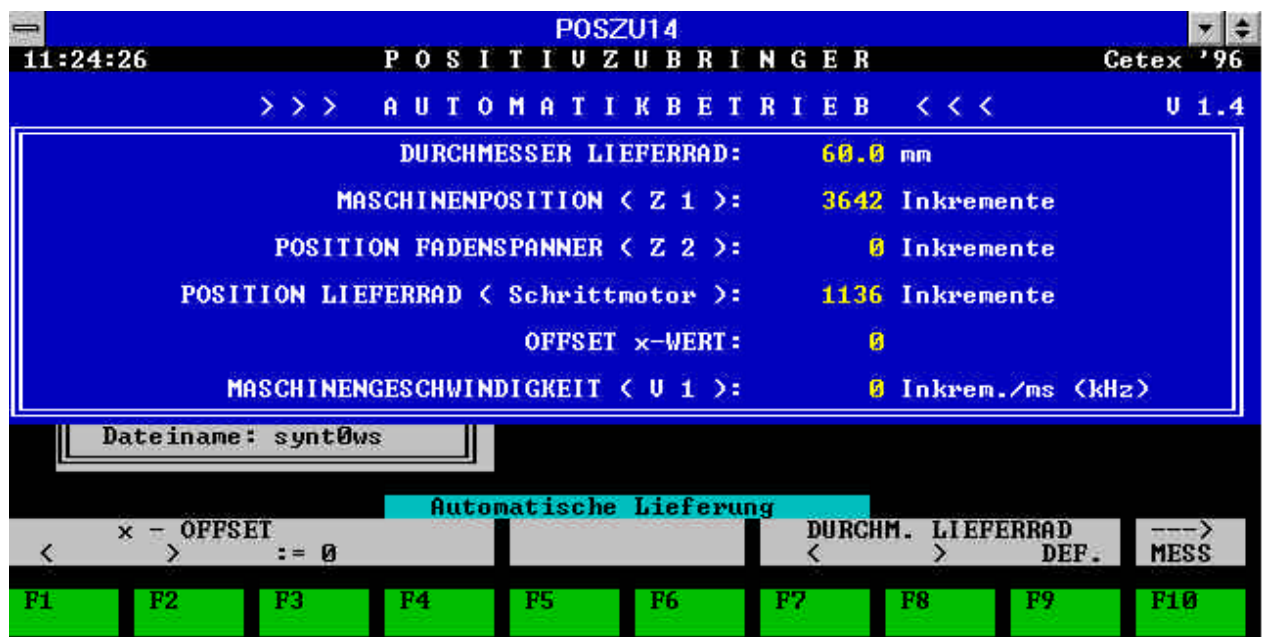


Fig. 2: Delivery mode