



Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie  
des Landes Nordrhein-Westfalen



EUROPÄISCHE UNION  
Investition in unsere Zukunft  
Europäischer Fonds  
für regionale Entwicklung

## Description of the “Doubleface” funding project for the “NRW patent validation” funding program

The project validates the patent “Method and knitting machine for the production of knitted fabric as well as the knitted fabric”. It describes a new type of yarn feed that increases productivity and pattern variety on flat and circular knitting machines.

In this process, three separate yarn guides knit in one system pass. The first yarn guide knits a plain fabric side (R/L) in the front needle bed, the second yarn guide knits a plain fabric side (R/L) in the rear needle bed. The third yarn guide is a conventional yarn guide. It knits in both needle beds (R/R) and connects both sides. This method ensures that up to three yarns knit in one system pass. In addition, a fourth weft thread can be inserted in the same carriage movement.

A standard thread guide (F3) is required. This is located in the standard position and places the thread in the needle hooks just above the thread cross. A plush thread guide (F1) is attached to the front needle bed. It places the thread guide in the hook of the needles of the front needle bed. As the plush thread guide is attached in front of the driven out needles of the rear needle bed, the thread is only picked up by the needles in the front needle bed. The same happens with a plush thread guide (F2) in the rear needle bed. As this plush thread guide is located behind the driven out needles of the front needle bed, the thread is only placed in the needle heads of the rear needle bed.

On the one hand, this process makes standard weaves, such as Milano Rib, more productive (one and a half times higher productivity), as separate smooth fabrics are produced simultaneously (in the same carriage movement/system) in the front and back needle beds. On the other hand, the process enables completely new, innovative structures to be knitted that have not been achievable to date. This opens up new applications and areas of use.

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