

Development of the Weaving Mechanism for the Pleated Fabrics

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Abstract:

Pleated fabrics represent one of the most important 3D-fabrics. They contain the wrinkles effect in the longitudinal or cross-direction or in the diagonal direction, and are formed as folds. These folds or pleats are laid at 90° up to the ground fabric. This type of woven structures is called also folded fabrics or Plissé. Their production methods are enclosed in three methods till nowadays, which are weaving, synthetic resin equipment and sewing. In the weaving method, only wrinkles effect in the longitudinal direction could be woven. On the other hand, this effect and the others could be achieved by the different production methods which are mentioned before. The main goal of this paper is development of some mechanical devices on the weaving machine. Through which, the performances of the woven pleated fabrics could be enhanced. The development's procedures have to secure the high quality of the woven pleated fabrics. Dimension stability, balanced structure and manufacturing economics are the desired characteristics of the research. These performances are difficult to be carried out by actual traditional weaving machines. From a practical point of view, it was found that these performances couldn't be achieved by the other production methods in spite of their additional operations after weaving. The development of the weaving machine enclosed in control of the warp tension in the distance between let-off device and the healds and also control of the movement of the take-up device. These developed operations have to be controlled by control-system program which has to be built in according to constants of the weaving machine.

Keywords:

Weaving mechanism
Pleated fabrics
Plissés, 3D-fabrics
Synthetic resin equipment
Wrinkles
Control device
Programing system
Servo-motor.

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