

# eTex

## knitting technology

### Innovation, multimedial E-learning for textile industry

Projekt coordinator: Uwe Hoppe  
 Projekt coordinator (TUL): Assoc.prof. Dana Křemenáková, Ph.D.

Duration of this project:  
 1.10.2005 - 30.9.2007

Samples of pictures, photograph and pictures from animations of the e-learning:

#### Yarn faults I

Knitted fabrics rejection should be less than 1%. Yarn faults contribute to 25% of the rejections.

**Major yarn faults**

- Contamination (contaminations of length more than 20 mm should be nil in the yarn)
- thick and thin places
- Unevenness and periodicity
- Stiff yarn - Higher TPI (holes)
- higher friction
- high hairiness variation
- mixed properties of yarn - "Barre"
- Neps

#### Fibers characteristics II

**Acetate:** Silk-like, soft, and drapable. Relatively fast drying. Shrink and moth resistant. Sensitive to heat, silverfish, mildew, and acetone (nail polish remover).

**Acrylic:** Soft, warm, bulky properties resembling wool. Retains shape, dries quickly, and is wrinkle-resistant. Resists sunlight, mildew, and insects. Sometimes has the tendency to pill. Sensitive to heat.

**Modacrylic:** Soft, resilient, quick-drying, and flame-resistant. Resists mildew and moths. Sensitive to heat and acetone (nail polish remover), collects static electricity, may pill excessively, and is nonabsorbent.

## PROGRAM LEONARDO DA VINCI

**Content of this project:** teaching and explanation with pictures, photography, videos, animations, exercises, knitting faults, glossary, samples, tutorials and further readings with the following topics: yarn (dyeing, preparation), warp knitting (flat single and double needle bar), weft knitting (circular small, seamless, large; straight bar frame, and flat) and type of the structure and patterns.

#### 2.3. Leg

➤ All leg is knitted on the same number of needles.

➤ Necessary change of tube diameter is reached by adjusting of sinkers 5 position in direction of arrow 5 when stitch cams 3 are steady.

**The content of the learning program of TU of Liberec;** Textile Faculty deals with: **Knitting ability of yarn** (basic factors, unevenness, imperfections, friction and bending, yarn twisting), special yarn (anti-bacterial, antistatic) and yarn coloration; (Prof. Ing. Jiří Militký, CSc., Prof. Ing. Sayed Ibrahim, CSc.)

**Principles of hosiery technology** (welts, heels, and legs), hosiery standardization and materials, finalization of products, small diameter machines (knitting, pattern mechanism, yarn feeding, take-down system, controls mechanism, process monitoring, etc.); **Straight bar frame technology**, machines used, knitted structure and products. (Prof. Ing. Radko Kovář, CSc., Ing. Irena Lenfeldová, Ph.D., Ing. Martina Syrovátková).

#### Socks production

The foot and instep part of the sock is knitted again in a rotary way. The foot is usually in plain structure - such sock is more comfortable.



**From single cylinder machines:**

a. Separation in both direction is possible

b. The 1. course fixes the 2. - fast starting courses

V = face knitted stitch, - = float stitch

#### Lýtko

pracovní zámky - stahovače (pro rotační i vrtný chod) zataveny úplně

even needle, welt transfer, odd needle

#### Structure of reciprocated heel:

➤ Real position of wales and courses in the leg (blue, positioned as when knitting) and in the heel (green):

high speed camera