KEISOKKI
CLASSIFAULT
model CFT TRI CHORD Flex

Yarn fault classifying system
What can CLASSIFAULT do?

Classification of conventional and foreign fiber faults

CLASSIFAULT TRI CHORD Flex classifies not only the conventional faults such as nep, slub, thick place and thin place but also foreign fibers, or contaminations, into a number of classes. Nepes and slubs are classified into 25 classes, thick places into 15 classes, thin places into 15 classes and foreign fiber faults into 25 classes. Since the class limits are freely defined, the users can create their own classifications.

Histogram analysis

Woven/knitted fabrics are rarely flawed with undesirable stripes or streaks, which are caused by slight mass deviations in the yarn. Though such slight mass deviations are realized as minutely thick and thin places, it is practically impossible to eliminate them by yarn clearer. However, it is possible to find such minutely thick and thin places remaining in the yarn. CLASSIFAULT TRI CHORD Flex does it with histogram analysis.

An authority says that a slight thickness variation, if it is equal to or more than the evenness CV% of the yarn, appears as a streak in the woven or knitted fabric. For example, if the evenness CV% of a yarn is 15%, thick and thin places of +/-15% and more appear as streaks in the woven or knitted fabric. The histogram analysis serves to reveal the minute faults.

On the latter pages, a short report of "Practical usage of histogram and individual data" shows an instance of a customer solving the streak problem.

CV% evenness

CLASSIFAULT TRI CHORD Flex with CV% sensor (option) measures yarn evenness in CV% while it classifies conventional and foreign faults.

Composition

Capacitive and optical sensors are available for conventional faults. For foreign matters, MicroEye (MCE) is supplied as an option.

With CV% sensor, CLASSIFAULT measures yarn evenness in CV%. The CV% sensor is optional.

Fig.1 Standard composition with all options
Practical usage of histogram and individual data table

One mill had a problem in their Nec 25 pure cotton yarn, which caused undesirable streak patterns in the woven fabric. They tested the yarn with their CLASSIFAULT-II, which was the preceding model, and then got the histograms shown in fig 4, 5 and 6. These histograms reveal thick and thin places exceeding +15%, -15% and +30%, respectively.

The histograms each show a long tail, which means that a number of thick and thin places that are very slight in mass variation but considerably long exist in the yarn. They adjusted the roving frames to repress the obstacles and then tested the yarn again on the CLASSIFAULT. As a result, the histograms shown in fig 7, 8, 9 and 10 were gained.
The histograms tell that the countermeasure pretty improves the yarn quality. However, strictly speaking, the tails of the histograms warp and swell a little. Thus, the yarn was not free from the problem yet. In addition, the individual data tables of thick 1, thick 2, thin 1 and thin 2 (see fig 11) tell that the position "4 P" has much more faults detected than the others.

The spinner checked and repaired the spinning frame. After that, the yarn was tested again on the CLASSIFault and the histograms shown in fig 12, 13, 14 and 15 were obtained, neither warping nor swelling at the tails. Of course, the complained streak patterns in the fabric disappeared perfectly.

The story described above was presented thanks to the kindness of the spinner. We deeply appreciate their cooperation.

The successful use of the histogram analysis was carried out a long time ago. However, it is still instructive and shining even today.
Class definition

![Fig.2 Classification for conventional faults](image)

![Fig.3 Classification for foreign matters](image)

**Note:** Class limits marked with ▲, ▼ and ▼ are defined by user. The class limits exemplified in the graphs are default.

**Conventional fault classification**

- **Slub:** 25 classes by 5 level limits of 0 to 4 and 5 length limits of A to E.
- **Thick place:** 15 classes by 3 level limits of TK1, TK2 and TK3 and 5 length limits of L1 to L5.
- **Thin place:** 15 classes by 3 level limits of TN1, TN2 and TN3 and 5 length limits of L1 to L5.

**Foreign matter classification**

- **Dark foreign matter:** 25 classes by 5 level limits of 0 to 4 and 5 length limits of DMA to DME.

**Technical data**

**Sensor for conventional faults:** select appropriate ones out of the following types
- Capacitive: CFT-SU10 / -SU12 / -SU18 / -SU24 / -SU30
- Optical: CFT-SU35

**Sensor for foreign matters:** MicroEye, or MCE (option)

**Sensor for CV% evenness:** capacitive CV% sensor (option)

**Maximum sensing positions:** 12 positions; on each position the sensors for conventional faults, foreign matters and CV% evenness can be fitted.

**Evaluation unit (EVU):** one EVU is provided for each sensing position.

**Bus bar:** EVUs are put in one or more bus bars together and the bus bars are connected to MPU.

**Main Processing Unit (MPU):** a console with Windows CE embedded. The MPU is connected to the Windows PC by LAN.

**Size of MPU:** 544 (W) x 295 (H) x 395 (D) mm

**Windows PC:** one PC set with English Windows installed is necessary. Display unit, keyboard, mouse and laser printer are also necessary.

**Winding speed:** 300 m/min to 1,500 m/min at every increment of 10 m/min

**Power supply:** 85 to 265 Vac, 47 to 63Hz