USTER®
Think quality

USTER® *NEWS BULLETIN*

GOLDEN ANNIVERSARY ISSUE

December 2011

USTER® *NEWS BULLETIN*
Customer Information Service

Published by
Uster Technologies AG
CH-8610 Uster
Switzerland

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Foreword

For more than 60 years, Uster Technologies has played a pioneering role in the textile industry as a producer of instruments for the measurement of fiber and yarn characteristics. During that time, the company has been responsible for defining many of the important quality parameters for fibers and yarns, including yarn unevenness, thin places, thick places, neps, hairiness, yarn shape, density, dust and trash content etc. A further milestone was the development of a classifying system allowing disturbing faults to be analyzed for precise yarn clearing during production on automatic winding and OE rotor spinning machines. Uster Technologies has also carried out pioneering work in the testing of cotton fiber – an activity which started in 1949.

Today, with USTER® testing and monitoring systems, more than 100 quality characteristics can be determined, and the customer is able to select which of these parameters he uses to establish a quality management regime for manufacturing yarns of consistent quality.

Spinning mills, for example, can now access test data enabling them to forecast accurately how a specific raw material will impact on yarn quality characteristics, and on productivity, in terms of the yarn clearer cut rate needed to achieve this quality level.

Of course, a company engaged in pioneering work such as ours cannot make real progress without interacting with the wider textile community to explore the potential benefits of its developments. Typically, it might take years to gather enough information to analyze the full impact of a new idea. This process always starts within the extensive in-house laboratory and test equipment installations of Uster Technologies, before being extended to spinning mills for production trials.

The concept of broadening the spread of this intelligence to our entire customer base was originated in November 1961 with the publication of the USTER® *NEWS BULLETIN*. The fifth edition included another example of our innovative approach, in the form of the USTER® *STATISTICS* quality parameters – now acknowledged as the authoritative global benchmarks for objective reference and comparison.

Today, in this special edition to celebrate the 50th anniversary of the USTER® *NEWS BULLETIN*, it is fitting to remind our readers of the valuable contribution its articles have made throughout this illustrious history.

We are delighted to present this Golden Anniversary edition to our customers and trust it will reinforce our mutual faith in the value of good cooperation between those involved in textile testing and measuring technology, the development of production machinery, and the textile manufacturing business.

We would also like to take this opportunity to thank those customers and textile machinery manufacturers who have supported us by facilitating the necessary field trials before the successful introduction of our products to the market.

Dr. Geoffrey Scott
CEO
Uster Technologies AG

Editorial

Mechanical spinning was invented in England as early as the second half of the 18th century. The most successful technology was originally the spinning mule. When the ring spinning machine was invented in the USA in 1828, the spinning mule principle was gradually replaced by this new technology. Ring spinning is still the most important spinning technology today.

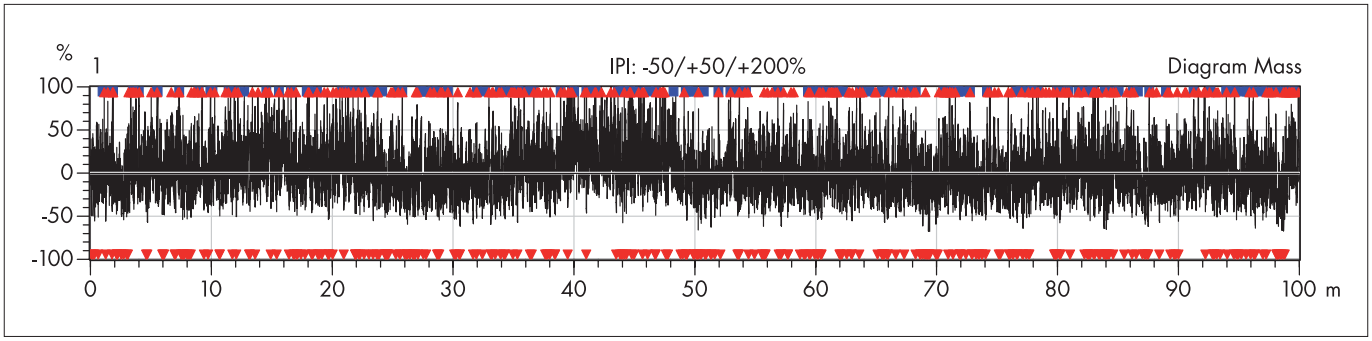
For a long time, until the end of World War II, there was little improvement in the yarn quality and productivity in spinning mills because, with a few exceptions, yarn measuring systems were not available. For this reason, the irregularity of yarns was very high and necessitated restricting machine speeds to a very low level.

By 1950, various electronic products were being developed for all kinds of non-textile applications, particularly for the amplification of signals and for wire-bound and wireless communication. This progress in electronics was also applied in the textile industry for measuring instruments, beginning with the USTER® Yarn Evenness Tester in 1948. The improvement of yarn regularity through the use of evenness testers has significantly increased productivity in spinning mills. Between 1948 and today, the number of machines needed to produce a given number of bobbins has drastically reduced. **Fig. 1** shows a 30 tex (Nec 20) 100% carded cotton yarn for weaving. The yarn in the upper diagram was spun in 1910 and yarn in the lower diagram was produced in 2010.

Over the ensuing years, there have been numerous electronic developments by Uster Technologies for quality analysis in laboratories and for on-line monitoring of the spinning process. These innovations have had important consequences for quality and productivity, such that Uster Technologies felt the need to inform its customers on a regular basis about new quality tools, practical experience with these tools and the benefits for the users and managers. This was the background to the introduction of the USTER® *NEWS BULLETIN*.

In this Golden Anniversary issue, readers will find an abstract of each USTER® *NEWS BULLETIN* and a contextual reference to the textile industry at that time, illustrating how the importance of sensor and monitoring technology has grown in parallel with increased automation of the spinning process over the years.

Yarn production 1910 / CVm = 28.0%



Yarn production 2010 / CVm = 13.2%

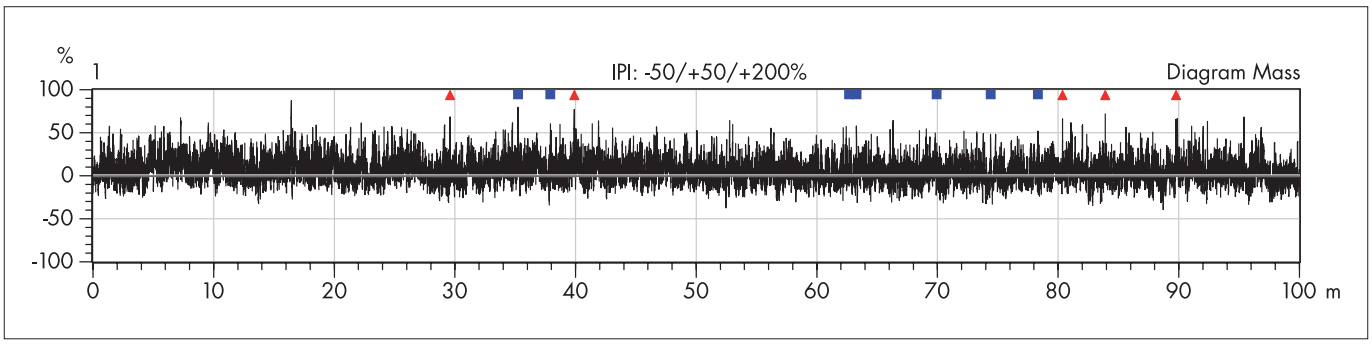


Fig. 1 Yarns produced in 1910 and 2010, cotton 100%, 30 tex, carded

The idea of the USTER® *NEWS BULLETIN*

In common with almost everything in our company, USTER® *NEWS BULLETIN* is a tradition with a long history. The very first issue, UNB No.1, was inaugurated by Mr Hans Locher, the first CEO of Uster Technologies, back in November 1961. His vision was very clear:

"… The decision to publish this Bulletin was taken in order to ensure that the over 3,000 users of our equipment would be kept informed of our future developments. Further, it will be our aim to offer advice as to the best use of our present equipment and also inform users of any improvements in this equipment or development of new instruments. Our service to customers will also be mentioned, as for example, the issue of new 'USTER® *STANDARDS*'.

All in all, we hope, with the Bulletin, to offer to customers a further service in order to ensure their continued confidence in our equipment."

The same pioneering spirit behind the concept of the USTER® *NEWS BULLETIN* was also responsible for the development of 'USTER® *STANDARDS*' at that time – well-known today as USTER® *STATISTICS* – along with most of the terms, definitions and instruments used now to refer to quality in textiles.

In the course of the past 50 years, USTER® *NEWS BULLETINS* have fulfilled a number of different functions:

- As a reference point, in times when information was not as available or accessible as today
- As a support mechanism when technology was changing rapidly
- As the trigger for a high degree of experimentation
- As the inspiration for optimization and further developments
- As the voice of authority in times when there were no standards

Most, if not all, textile professionals in spinning mills, will have learnt from the USTER® *NEWS BULLETINS*. It has been a vital element in promoting progressive forward thinking and creating the values required to bring prosperity to the industry and personal satisfaction to those involved.

It remains as true today as it was 50 years ago – albeit for different reasons – that it is not enough merely to provide the equipment to measure a quality parameter: it is essential to show how to use the equipment, to access and interpret its data and apply it to gain maximum value.

That is a role Uster Technologies is committed to continuing in the industry today, as strongly as in the past. Proudly celebrating this great anniversary sends out a clear message that the pioneering spirit is still alive…!

Linking the past with the present – and the future

In keeping with the pioneering spirit, we continue the tradition of USTER® *NEWS BULLETINS* – while also trying to provide even more. While the USTER® *NEWS BULLETINS* focus on showing optimized use of an USTER® solution, there is also another series of publications, called Special Application Reports, which highlight spinning mill challenges and suggest best-practice solutions for them.

To date, together with the 48 USTER® *NEWS BULLETINS* published, we have a library of 114 Special Application Reports dealing with the whole spectrum of spinning mill applications. There are between three and six Special Application Reports published every year, covering topical issues as they emerge and dealing with them in a language that spinning managers can understand and relate to.

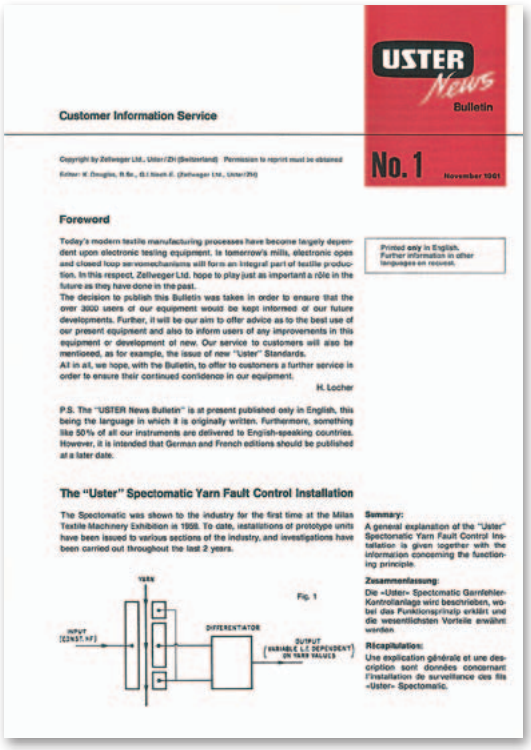
All these reports are available upon request from our Textile Technology department (textile.technology_ch@uster.com), and a small collection is available on-line at our website (www.uster.com, Knowledge, Textile Know-how).

We in Textile Technology are very proud to say, with feeling, that "we can see further than others because we are standing upon the shoulders of giants", to paraphrase the saying made famous by Sir Isaac Newton. Our aim is not only to listen to the customers but also to understand them and their needs. The Special Application Reports are the essence of this understanding and a sharing of our know-how.

We hope you enjoy reading this Bulletin…

USTER® *NEWS BULLETIN* NO 1

Publication: November 1961
Languages: EN/DE/FR



USTER News Bulletin

Customer Information Service

No. 1 November 1961

Foreword

Today's modern textile manufacturing processes have become largely dependent upon electronic testing equipment. In tomorrow's mills, electronic open and closed loop servomechanisms will form an integral part of textile production. In this respect, Zellweger Ltd. hope to play just as important a rôle in the future as they have done in the past.
The decision to publish this Bulletin was taken in order to ensure that the over 3000 users of our equipment would be kept informed of our future developments. Further, it will be our aim to offer advice as to the best use of our present equipment and also to inform users of any improvements in this equipment or development of new. Our service to customers will also be mentioned, as for example, the issue of new "Uster" Standards.
All in all, we hope, with the Bulletin, to offer to customers a further service in order to ensure their continued confidence in our equipment.

H. Locher

P.S. The "USTER News Bulletin" is at present published only in English, this being the language in which it is originally written. Furthermore, something like 50% of all our instruments are delivered to English-speaking countries. However, it is intended that German and French editions should be published at a later date.

Printed only in English. Further information in other languages on request.

The "Uster" Spectomatic Yarn Fault Control Installation

The Spectomatic was shown to the industry for the first time at the Milan Textile Machinery Exhibition in 1958. To date, installations of prototype units have been issued to various sections of the industry, and investigations have been carried out throughout the last 2 years.

Summary:
A general explanation of the "Uster" Spectomatic Yarn Fault Control Installation is given together with the information concerning the functioning principle.

Zusammenfassung:
Die «Uster» Spectomatic Garnfehler-Kontrollanlage wird beschrieben, wobei das Funktionsprinzip erklärt und die wesentlichsten Vorteile erwähnt werden.

Récapitulation:
Une explication générale et une description sont données concernant l'installation de surveillance des fils «Uster» Spectomatic.

Fig. 1

USTER® *NEWS BULLETIN* NO 2

Publication: June 1962
Languages: EN

USTER News Bulletin

Customer Information Service

No. 2 June 1962

Printed only in English. Further information in other languages on request.

An invitation is extended to all our customers and potential customers to visit our new showroom, where all our apparatus and machinery can be examined under running conditions and any questions answered by our technical staff.

Zellweger Limited
Uster/Zurich
Switzerland

Wir laden alle unsere jetzigen und zukünftigen Kunden ein, den neuen Ausstellungspavillon in Uster zu besuchen, wo alle unsere Geräte und Maschinen im Betrieb gezeigt werden. Erfahrene Ingenieure und Techniker stehen hierbei zur Verfügung, um die auftretenden technischen Fragen zu beantworten.

Nous invitons tous nos clients présents et futurs à visiter le nouveau pavillon d'exposition en nos usines à Uster. Tous nos appareils et machines y sont montrés en état de fonctionnement et des ingénieurs et techniciens expérimentés vous attendent pour répondre à toute question technique.

Invitiamo tutti i nostri clienti presenti e futuri a visitare il nuovo padiglione d'esposizione nelle nostre officine di Uster. Tutti i nostri apparecchi e macchine vi sono esposti in stato di funzionamento e degli ingegneri e tecnici competenti vi attendono pronti a rispondere a qualsiasi domanda tecnica.

Invitamos a todos nuestros clientes presentes y futuros a visitar el nuevo pabellón de exposición en nuestros talleres de Uster. Todos nuestros aparatos y máquinas pueden verse en funcionamiento e ingenieros y técnicos expertos están a su disposición para contestar cualquier pregunta técnica.

The USTER® *SPECTOMATIC* Yarn Fault Control Installation

In 1960, Uster Technologies installed the first yarn clearers on manual winding machines. The product was named USTER® *SPECTOMATIC*. The USTER® *NEWS BULLETIN* No. 1 described the functioning principle of the first clearer and the benefits for customers.

Uster Technologies started to sell the first Evenness Tester for yarns in 1948. With this instrument, the unevenness of yarns could be recorded with an ink plotter. From 1948 to 1961, the capability of this instrument was extended to measure rovings and slivers as well. In addition, three analyzing instruments were developed. The Integrator was designed for the calculation of unevenness, the Spectrograph was for the detection of periodic yarn faults, and the Imperfection Indicator counted the number of thin places, thick places and neps. This entire instrument group was explained in the USTER® *NEWS BULLETIN* No. 1.

Functional check, adjustment and calibration of the USTER® Evenness Testing Equipment

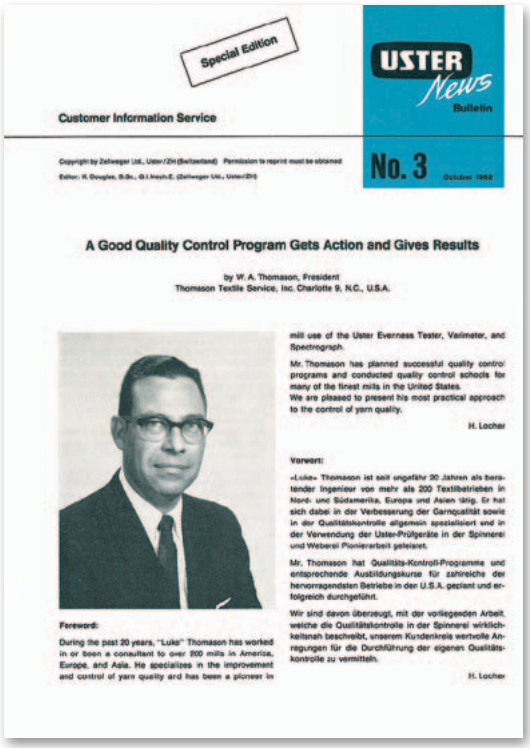
The first USTER® analog computer for yarn evenness measurement determined a statistical value for the unevenness, the irregularity U according to the definition of a German mathematician (Sommer). This was explained in this Bulletin.

Variations in technology were increasingly being calculated by means of the coefficient of variation. In the USTER® *NEWS BULLETIN* No. 2 the new calculation method for unevenness, the coefficient of variation CV, was presented.

The USTER® Evenness Testing System was now being used more and more for comparison of data between mills. Such comparisons required a calibration of the system in the field. For this purpose, a calibration tape was developed, and the handling of this tape was presented in this Bulletin. In addition, a method for calibrating the strength testers was shown.

USTER® *NEWS BULLETIN* NO 3

Publication: October 1962
Languages: EN



USTER® *NEWS BULLETIN* NO 4

Publication: August 1963
Languages: EN

A good quality control program gets action and gives results

After 14 years of evenness testing and two years after utilizing the entire evenness testing system, it was time to provide instructions on how to use the Evenness Tester for quality improvement in a spinning mill and to explain best practice. Uster Technologies provided a platform with USTER® *NEWS BULLETIN* No. 3 for Luke Thomason, who had long experience in supporting spinning mills, particularly in the United States.

For the first time, a detailed list of sources for yarn faults was submitted to our customers. In addition, the Bulletin answered the 5 questions: Why should you control quality? What should be controlled? Who should control quality? When should you control quality? Where should you control quality?

Mr Thomason explained in this Bulletin how the quality in a mill could be increased by using modern laboratory systems.

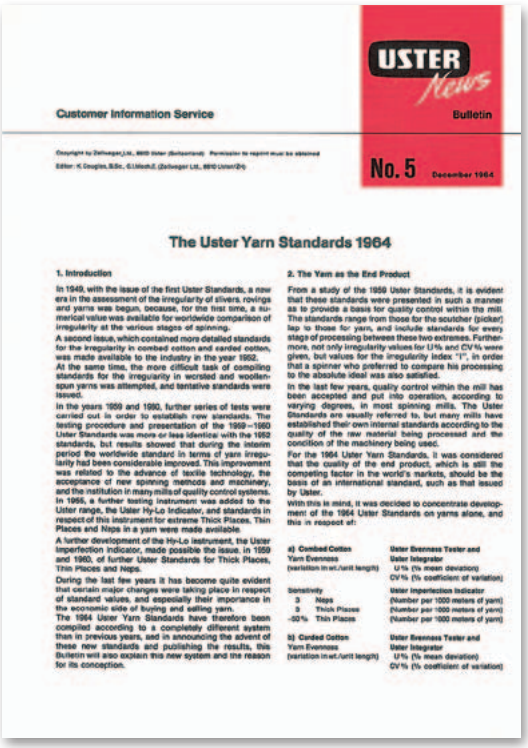
The USTER® Test Winder

With the introduction of the first clearers on winding machines, quality control managers in spinning mills faced a new problem: how to select the clearer settings without knowing what kind of disturbing yarn faults were present in the yarn. A first attempt to visualize disturbing yarn faults was described in the USTER® *NEWS BULLETIN* No. 4. Uster Technologies proposed using a short manual winding machine with 4 to 10 winding positions.

It was recommended to install the first generation of clearers, the USTER® *SPECTOMATIC*, on this machine. During the test, the detected yarn faults were removed and compared with the Uster Visual Yarn Fault Standards. These standards were photographs of disturbing yarn faults on blackboards. It was the first attempt to classify disturbing yarn faults by a visual method with the aim of setting the clearers on the winding machine accordingly. The textile technologists of Uster Technologies had started to establish the statistical basis for seldom-occurring yarn faults.

USTER® *NEWS BULLETIN* NO 5

Publication: November 1965
Languages: EN/DE/FR



USTER® *NEWS BULLETIN* NO 6

Publication: December 1965
Languages: EN/DE/FR

The USTER® Yarn Standards 1964

The first USTER® *STATISTICS* were published by a German textile magazine, Melliand, in 1957. The Statistics were printed as numeric values and were called Uster Standards. The USTER® *NEWS BULLETIN* No. 5 presented the second publication of these standards, in graphical form. For the first time the 5 lines 5%, 25%, 50%, 75% and 95% were introduced. The graphs were called Uster Yarn Standards 1964.

The Bulletin covered the evenness and imperfections of combed cotton, carded cotton and worsted yarns. In the same Bulletin, the first figures for yarn strength were published for carded cotton yarns produced with American Upland cotton.

Uster Technologies offered 8 Uster Visual Yarn Fault Standards for cotton (slubs, fly, piecings). The application of these Standards was explained.

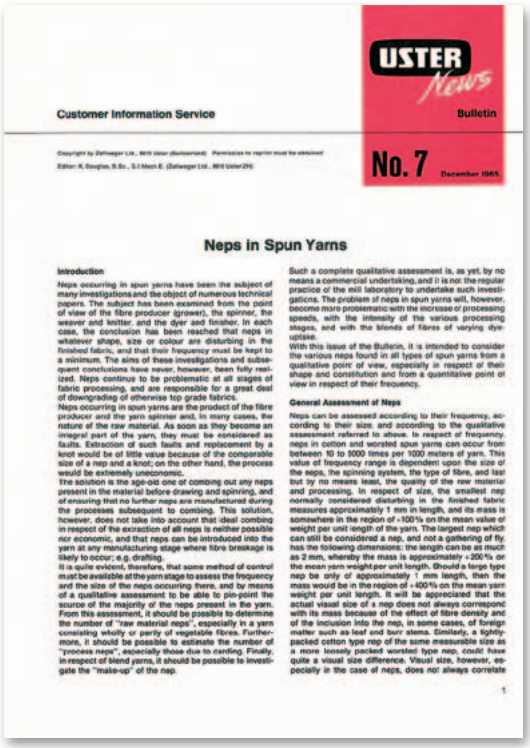
The analysis of faults in yarns

This Bulletin dealt with the analysis of yarn faults. A trigger system was developed for the USTER® Evenness Tester, the Imperfection Selector, with the purpose of stopping the yarn when a thick or thin place was detected. For seldom-occurring events, the Uster Test Winder was recommended. Afterwards, the fault was extracted, analyzed and classified into frequent events, seldom-occurring events and special faults. In addition, the Imperfection Selector was used for the development of the first USTER® Visual Nep Standards. These visual standards for cotton were published in USTER® *NEWS BULLETIN* No. 5.

The visual standards for worsted yarns were published in USTER® *NEWS BULLETIN* No. 6.

USTER® *NEWS BULLETIN* NO 7

Publication: December 1965
Languages: EN/DE/FR



USTER® *NEWS BULLETIN* NO 8

Publication: August 1966
Languages: EN/DE/FR

Neps in spun yarns

The USTER® *NEWS BULLETIN* No. 7 dealt with neps in spun yarns. For this purpose, neps were extracted with the Evenness Tester and visually classified into fiber neps and seed-coat neps in cotton yarns. A second step investigated blended yarns, to discover the type of fiber components more likely to cause the formation of neps. Textile technologists dyed the neps, using a dyestuff which resulted in different colors for natural and synthetic fibers. The following blended yarns were investigated and illustrated in this Bulletin: wool/viscose 60/40%, cotton/polyamide 50/50%, cotton/acrylic 35/65%, cotton/polyester 33/67% and cotton/viscose 67/33%.

In 1965, filament yarns were also becoming more and more important. Recommendations were provided on how to measure filament yarn strength with a modern strength tester.

USTER analyzed

The USTER® *NEWS BULLETIN* No. 8 described the trademark 'Uster analyzed'. To qualify for this trademark, customers had to show that they had an USTER® Evenness Tester and an USTER® Strength Tester. The trademark was based on an agreement between Uster Technologies and the customer. Qualifying customers were allowed to use the trademark on their letterheads, and on packaging material for relevant products.

Companies were not audited for 'Uster analyzed' compliance at that time, but had to sign an agreement setting out their obligations and those of Uster Technologies.

USTER® *NEWS BULLETIN* NO 9

Publication: October 1966
Languages: EN/DE/FR


Customer Information Service

USTER News Bulletin

No. 9 October 1966

Standard values for the irregularity of synthetic yarns and blend yarns of natural fibres with the synthetics

Provisional issue

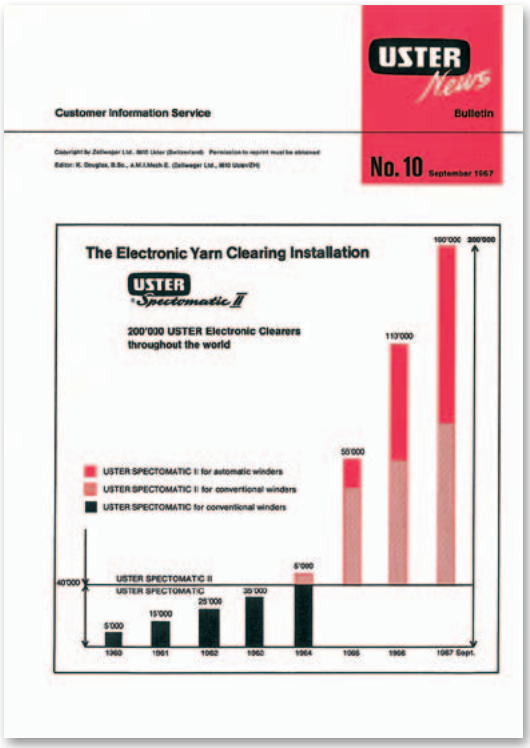
Issued by: Rhodiaceta Limited, Lyon, and Zellweger Limited, Uster.

1. Introduction

2. Standard values for synthetic yarns and for blend yarns of the synthetics with the natural fibres

USTER® *NEWS BULLETIN* NO 10

Publication: September 1967
Languages: EN/DE/FR



Standard values for the irregularity of synthetic yarns and blended yarns of natural fibers with synthetics

In the early Sixties synthetic fibers have penetrated more and more into textile yarn manufacturing, particularly for the production of blended yarns.

The USTER® *NEWS BULLETIN* No. 9 was the first publication of 'USTER® *STANDARDS*' for the irregularity of synthetic and blended spun yarns. The Standards were published for polyester/cotton, polyester/wool, acrylic 100%, polyamide 100% and polyester/viscose yarn.

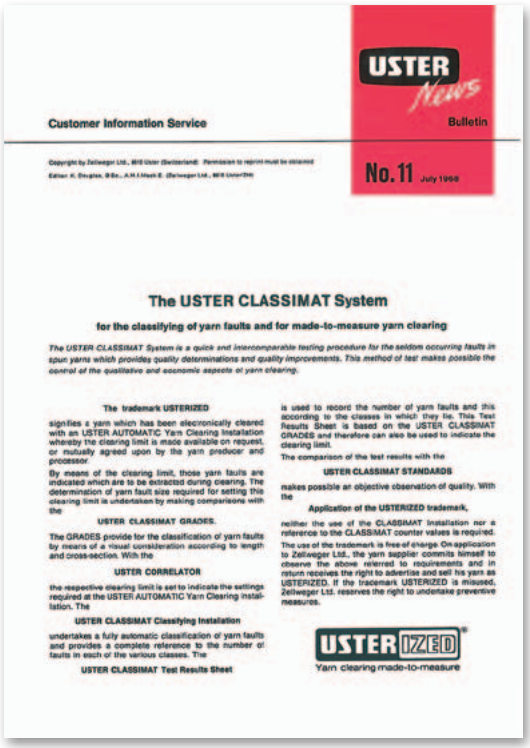
The Electronic Yarn Clearing Installation

In the early Sixties, the first automatic winding machines were introduced onto the market. For these machines, a second generation of clearers was developed at Uster Technologies, the USTER® *AUTOMATIC*. The USTER® *NEWS BULLETIN* No. 10 explained the historic development of the yarn clearer from a mechanical slub catcher to a sophisticated monitoring system. The Bulletin also outlined various statistical investigations aimed at understanding the statistics behind seldom-occurring faults.

In the years 1960 to 1964, 40,000 Spectomatic clearers were sold. With the rapid introduction of automatic winding machines onto the market, sales of the second generation of clearers increased dramatically from 1964 to September of 1967, during which period some 160,000 USTER® Automatic clearers were sold. This sales history was detailed in this Bulletin.

USTER® *NEWS BULLETIN* NO 11

Publication: July 1968
Languages: EN/DE/FR/I/E


USTER News Bulletin

Customer Information Service

No. 11 July 1968

The USTER CLASSIMAT System

for the classifying of yarn faults and for made-to-measure yarn clearing

The USTER CLASSIMAT System is a quick and interconnectable testing procedure for the seldom occurring faults in spun yarns which provides quality determinations and quality improvements. This method of test makes possible the control of the qualitative and economic aspects of yarn clearing.

The trademark USTERIZED

signifies a yarn which has been electronically cleared with an USTER AUTOMATIC Yarn Clearing Installation whereby the clearing limit is made available on request, or mutually agreed upon by the yarn producer and processor.

By means of the clearing limit, those yarn faults are indicated which are to be extracted during clearing. The determination of yarn fault size required for setting this clearing limit is undertaken by making comparisons with the

USTER CLASSIMAT GRADES.

The GRADES provide for the classification of yarn faults by means of a visual consideration according to length and cross-section. With the

USTER CORRELATOR

the respective clearing limit is set to indicate the settings required at the USTER AUTOMATIC Yarn Clearing Installation. The

USTER CLASSIMAT Classifying Installation

undertakes a fully automatic classification of yarn faults and provides a complete reference to the number of faults in each of the various classes. The

USTER CLASSIMAT Test Results Sheet

is used to record the number of yarn faults and this according to the classes in which they lie. This Test Results Sheet is based on the USTER CLASSIMAT GRADES and therefore can also be used to indicate the clearing limit.

The comparison of the test results with the

USTER CLASSIMAT STANDARDS

makes possible an objective observation of quality. With the

Application of the USTERIZED trademark,

neither the use of the CLASSIMAT Installation nor a reference to the CLASSIMAT counter values is required.

The use of the trademark is free of charge. On application to Zellweger Ltd., the yarn supplier commits himself to observe the above referred to requirements and in return receives the right to advertise and sell his yarn as USTERIZED. If the trademark USTERIZED is misused, Zellweger Ltd. reserves the right to undertake preventive measures.

USTERIZED

Yarn clearing made-to-measure

USTER® *NEWS BULLETIN* NO 12

Publication: March 1969
Languages: EN/DE/FR/I/E


USTER News Bulletin

Customer Information Service

No. 12 March 1969

I. A Further Explanation of the USTER Yarn Standards 1964

The USTER Yarn Standards 1964 were issued with the USTER News Bulletin No. 5 in December 1964 and an explanation of the method of presentation was provided. Since this time, it has come to our notice on many occasions that these Standards tend to be incorrectly interpreted. For this reason, it is intended, with the following, to provide a further explanation of the USTER Yarn Standards 1964 and to pin-point the difficulties which have arisen.

With earlier USTER Standards, limits were set in order to signify whether a yarn was "even", "average" or "uneven", and a differentiation was made between two or three nominal fibre qualities. This refers to a direct quality grading but only in terms of the spinning process and not the processes subsequent to this. It could be that the evenness of a spun yarn for a particular end product is suitable enough, whereas a fabric requiring a very even texture would demand a top quality yarn of exceptional evenness; a yarn can be "even" for one particular type of fabric and only "average" or "uneven" for another.

To the weaver and knitter concerned with the buying of yarn, however, the price factor rather than the quality of the raw material is of maximum importance. A "good" yarn at a low price indicates that the spinner has produced a quality yarn under rationalized spinning conditions with probably an average quality raw material. A "poor" yarn at a rather high price could denote spinning without quality control procedures to produce a yarn from high priced raw material. Furthermore, it is to be expected that a yarn spun in one country could be "even" by the standards of that country, whereas in another country this same yarn would be set in the "average" or "uneven" range.

When a comparison is being made with the USTER Standards, the values available provide only a measurement of absolute evenness. The USTER Yarn Standards 1964

Fig. 1. A modern quality control laboratory.

are a statistical analysis of world-wide experience values of evenness and the number of thin places, thick places and neps in yarn. The type of raw material, the fibre fineness, the sequence of the spinning processes, the raw material price, etc., were knowingly not referred to.

The USTER Yarn Standards 1964 provide no evaluation of the quality of the spinning process. When assessing the spinning process, the fibre fineness must be taken into consideration. A finer fibre should provide a more regular yarn so that the "goodness of spinning" can only be determined with respect to the index of irregularity "I" (see chapter II).

Furthermore, it must also be taken into consideration that when assessing the properties of any particular spun yarn, no single characteristic such as evenness or neppiness can determine the quality of the yarn. The quality can only be determined when all the important physical properties of the yarn are available.

The USTER® *CLASSIMAT* Systems

Since the earliest sales of yarn clearers, Uster Technologies had been seeking ways to simplify the clearing operation. In the years 1964 to 1968, the company developed a classifying system, allocating seldom-occurring disturbing faults in 16 classes. It was an important step forward in yarn clearing. With such analyzing instruments, quality control specialists in spinning mills could determine the clearing curve and a cut forecast. To simplify the classification, 'Grades' were produced to interpret the fault sizes in each class in the language of the customers. Grades were actually photographs of typical faults in each class, enabling the customer to make an informed choice about the faults to be eliminated. The USTER® *NEWS BULLETIN* No. 11 described this classifying system, and its applicability not only to spinning mills but also to yarn buyers to check any remaining disturbing yarn faults.

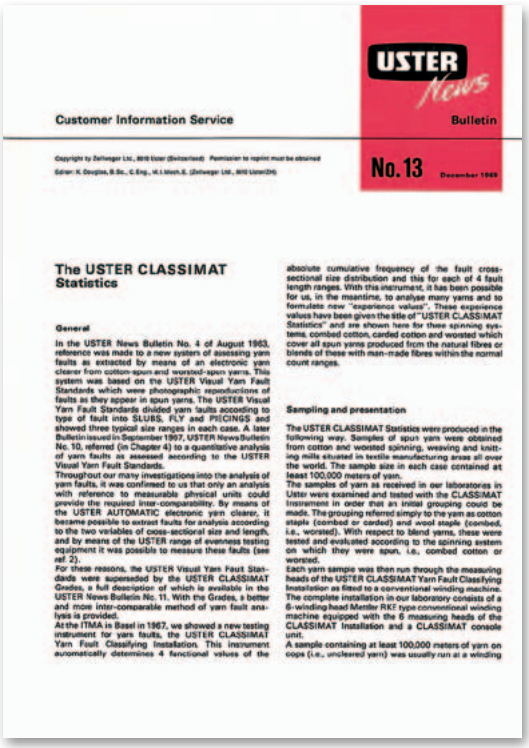
A further explanation of the USTER® Yarn Standards 1964

Uster Technologies developed the so-called USTER® Calculator, a slide rule for various calculations in connection with evenness testing. This Bulletin explained the calculation of the limiting irregularity and the index of irregularity with the USTER® Calculator.

Many questions were arising with the USTER® *STATISTICS* benchmarks. Therefore, it was deemed necessary to answer those most frequently raised concerning the application of these benchmarks in the spinning mill. The Bulletin also explained how the statistical data was calculated and for what purpose the Statistics were made, to avoid wrong interpretations.

USTER® *NEWS BULLETIN* NO 13

Publication: December 1969
Languages: EN/DE/FR/I/E



Customer Information Service

USTER News Bulletin

No. 13 December 1969

The USTER CLASSIMAT Statistics

General

In the USTER News Bulletin No. 4 of August 1963, reference was made to a new system of assessing yarn faults as extracted by means of an electronic yarn cleaner from cotton-spun and worsted-spun yarns. This system was based on the USTER Visual Yarn Fault Standards which were photographic reproductions of faults as they appear in spun yarns. The USTER Visual Yarn Fault Standards divided yarn faults according to type of fault into SLUBS, FLY and PIECINGS and showed three typical size ranges in each case. A later Bulletin issued in September 1967, USTER News Bulletin No. 10, referred (in Chapter 4) to a quantitative analysis of yarn faults as assessed according to the USTER Visual Yarn Fault Standards.

Throughout our many investigations into the analysis of yarn faults, it was confirmed to us that only an analysis with reference to measurable physical units could provide the required inter-comparability. By means of the USTER AUTOMATIC electronic yarn clearer, it became possible to extract faults for analysis according to the two variables of cross-sectional size and length, and by means of the USTER range of evenness testing equipment it was possible to measure these faults (see ref. 2).

For these reasons, the USTER Visual Yarn Fault Standards were superseded by the USTER CLASSIMAT Grades, a full description of which is available in the USTER News Bulletin No. 11. With the Grades, a better and more inter-comparable method of yarn fault analysis is provided.

At the ITMA in Basel in 1967, we showed a new testing instrument for yarn faults, the USTER CLASSIMAT Yarn Fault Classifying Installation. This instrument automatically determines 4 functional values of the absolute cumulative frequency of the fault cross-sectional size distribution and this for each of 4 fault length ranges. With this instrument, it has been possible for us, in the meantime, to analyse many yarns and to formulate new "experience values". These experience values have been given the title of "USTER CLASSIMAT Statistics" and are shown here for three spinning systems, combed cotton, carded cotton and worsted which cover all spun yarns produced from the natural fibres or blends of these with man-made fibres within the normal count ranges.

Sampling and presentation

The USTER CLASSIMAT Statistics were produced in the following way. Samples of spun yarn were obtained from cotton and worsted spinning, weaving and knitting mills situated in textile manufacturing areas all over the world. The sample size in each case contained at least 100,000 meters of yarn.

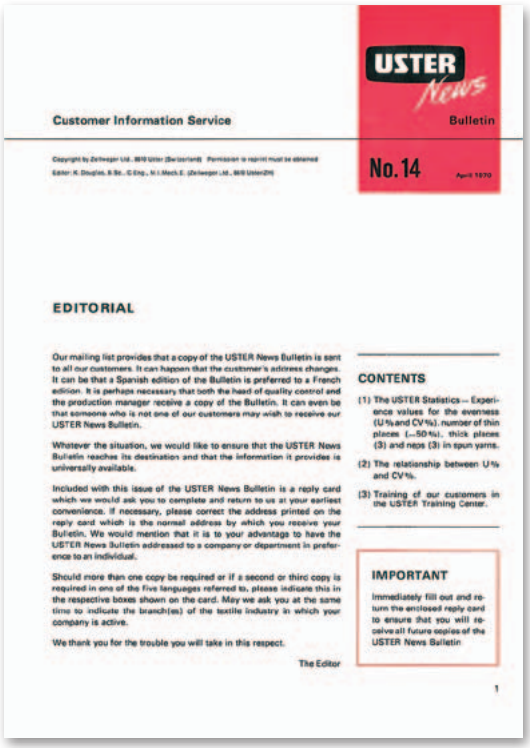
The samples of yarn as received in our laboratories in Uster were examined and tested with the CLASSIMAT Instrument in order that an initial grouping could be made. The grouping referred simply to the yarn as cotton staple (combed or carded) and wool staple (combed, i.e., worsted). With respect to blend yarns, these were tested and evaluated according to the spinning system on which they were spun, i.e., combed cotton or worsted.

Each yarn sample was then run through the measuring heads of the USTER CLASSIMAT Yarn Fault Classifying Installation as fitted to a conventional winding machine. The complete installation in our laboratory consists of a 6-winding head Mettler RKF type conventional winding machine equipped with the 6 measuring heads of the CLASSIMAT Installation and a CLASSIMAT console unit.

A sample containing at least 100,000 meters of yarn on cops (i.e., uncleared yarn) was usually run at a winding

USTER® *NEWS BULLETIN* NO 14

Publication: April 1970
Languages: EN/DE/FR/I/E



Customer Information Service

USTER News Bulletin

No. 14 April 1970

EDITORIAL

Our mailing list provides that a copy of the USTER News Bulletin is sent to all our customers. It can happen that the customer's address changes. It can be that a Spanish edition of the Bulletin is preferred to a French edition. It is perhaps necessary that both the head of quality control and the production manager receive a copy of the Bulletin. It can even be that someone who is not one of our customers may wish to receive our USTER News Bulletin.

Whatever the situation, we would like to ensure that the USTER News Bulletin reaches its destination and that the information it provides is universally available.

Included with this issue of the USTER News Bulletin is a reply card which we would ask you to complete and return to us at your earliest convenience. If necessary, please correct the address printed on the reply card which is the normal address by which you receive your Bulletin. We would mention that it is to your advantage to have the USTER News Bulletin addressed to a company or department in preference to an individual.

Should more than one copy be required or if a second or third copy is required in one of the five languages referred to, please indicate this in the respective boxes shown on the card. May we ask you at the same time to indicate the branch(es) of the textile industry in which your company is active.

We thank you for the trouble you will take in this respect.

The Editor

CONTENTS

(1) The USTER Statistics – Experience values for the evenness (U% and CV%), number of thin places (–50%), thick places (3) and neps (3) in spun yarns.

(2) The relationship between U% and CV%.

(3) Training of our customers in the USTER Training Center.

IMPORTANT

Immediately fill out and return the enclosed reply card to ensure that you will receive all future copies of the USTER News Bulletin

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The USTER® *CLASSIMAT STATISTICS*

At this time, the level of know-how about disturbing yarn faults had increased substantially with the introduction of yarn fault classifying systems. It had become obvious that seldom-occurring yarn faults also followed statistical rules, but for a proper analysis sufficient yarn lengths had to be measured. This awareness paved the way for benchmarks.

A first attempt was undertaken to publish USTER® *STATISTICS* for the classifying system USTER® *CLASSIMAT* with the USTER® *NEWS BULLETIN* No. 13. With these Statistics, customers with a classifying system could compare their own level of classified faults with world standards. A second part of this Bulletin dealt with taking samples in spinning mills and with the establishment of a quality control system.

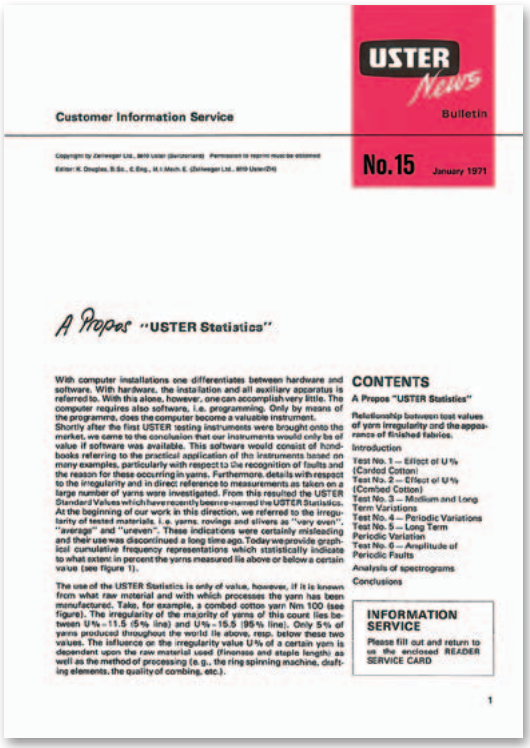
The properties and mill operation of electronic yarn clearers

In this Bulletin, the second series of graphical benchmarks for cotton, wool and blended yarns were published and the designation 'USTER® *STANDARDS*' was changed to 'USTER® *STATISTICS*'. Some standards organizations had claimed that Uster Technologies was not entitled to establish standards. The change of designation, therefore, was a compromise. Since 1970, all benchmarks published by Uster Technologies are referred to as 'USTER® *STATISTICS*'.

This Bulletin also presented the first benchmarks for quality characteristics of yarns with cotton, worsted and blended yarn.

USTER® *NEWS BULLETIN* NO 15

Publication: January 1971
Languages: EN/DE/FR/I/E


Customer Information Service

USTER News Bulletin

No. 15 January 1971

A Propos "USTER Statistics"

With computer installations one differentiates between hardware and software. With hardware, the installation and all auxiliary apparatus is referred to. With this alone, however, one can accomplish very little. The computer requires also software, i.e. programming. Only by means of the programme, does the computer become a valuable instrument. Shortly after the first USTER testing instruments were brought onto the market, we came to the conclusion that our instruments would only be of value if software was available. This software would consist of handbooks referring to the practical application of the instruments based on many examples, particularly with respect to the recognition of faults and the reason for these occurring in yarns. Furthermore, details with respect to the irregularity and in direct reference to measurements as taken on a large number of yarns were investigated. From this resulted the USTER Standard Values which have recently been re-named the USTER Statistics. At the beginning of our work in this direction, we referred to the irregularity of tested materials, i. e. yarns, rovings and slivers as "very even", "average" and "uneven". These indications were certainly misleading and their use was discontinued a long time ago. Today we provide graphical cumulative frequency representations which statistically indicate to what extent in percent the yarns measured lie above or below a certain value (see figure 1).

The use of the USTER Statistics is only of value, however, if it is known from what raw material and with which processes the yarn has been manufactured. Take, for example, a combed cotton yarn Nm 100 (see figure). The irregularity of the majority of yarns of this count lies between U% = 11.5 (5% line) and U% = 15.5 (95% line). Only 5% of yarns produced throughout the world lie above, resp. below these two values. The influence of the irregularity value U% of a certain yarn is dependent upon the raw material used (fineness and staple length) as well as the method of processing (e.g., the ring spinning machine, drafting elements, the quality of combing, etc.).

CONTENTS

A Propos "USTER Statistics"

Relationship between test values of yarn irregularity and the appearance of finished fabrics.

Introduction

Test No. 1 — Effect of U% (Carded Cotton)

Test No. 2 — Effect of U% (Combed Cotton)

Test No. 3 — Medium and Long Term Variations

Test No. 4 — Periodic Variations

Test No. 5 — Long Term Periodic Variation

Test No. 6 — Amplitude of Periodic Faults

Analysis of spectrograms

Conclusions

INFORMATION SERVICE

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1

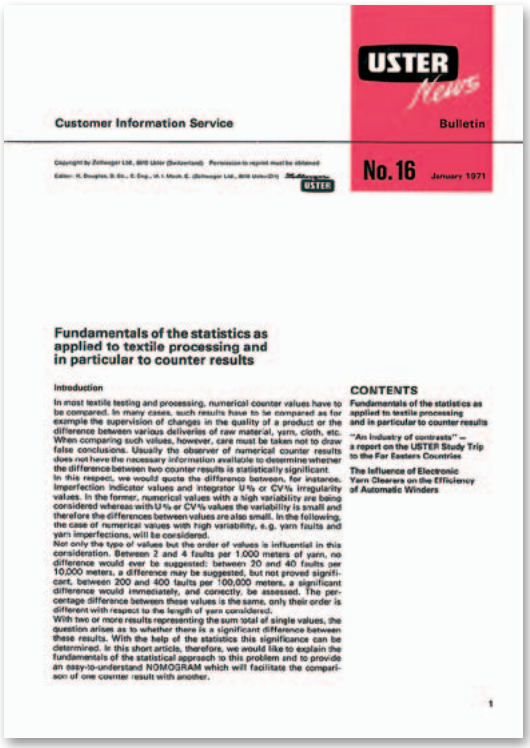
A propos USTER® *STATISTICS*

The Bulletin explained more about how USTER® *STATISTICS* should be used and what kind of fiber characteristics influenced the yarn characteristics. It was an attempt to correct the possible misuse of USTER® *STATISTICS*.

With the progress in textile manufacturing and textile measurement, customers were increasingly interested in the relationship between faults in yarns and the appearance of fabrics. The USTER® *NEWS BULLETIN* No. 15 compared results from the Evenness Tester with the appearance of fabrics. The Bulletin also provided 'rules of thumb' for the sizes of spectrogram peaks which indicated fabric defects that would be easily recognizable by the human eye.

USTER® *NEWS BULLETIN* NO 16

Publication: January 1971
Languages: EN/DE/FR/I/E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USTER News Bulletin

No. 16 January 1971

Fundamentals of the statistics as applied to textile processing and in particular to counter results

Introduction

In most textile testing and processing, numerical counter values have to be compared. In many cases, such results have to be compared as for example the supervision of changes in the quality of a product or the difference between various deliveries of raw material, yarn, cloth, etc. When comparing such values, however, care must be taken not to draw false conclusions. Usually the observer of numerical counter results does not have the necessary information available to determine whether the difference between two counter results is statistically significant. In this respect, we would quote the difference between, for instance, imperfection indicator values and integrator U% or CV% irregularity values. In the former, numerical values with a high variability are being considered whereas with U% or CV% values the variability is small and therefore the differences between values are also small. In the following, the case of numerical values with high variability, e. g. yarn faults and yarn imperfections, will be considered.

Not only the type of values but the order of values is influential in this consideration. Between 2 and 4 faults per 1,000 meters of yarn, no difference would ever be suggested; between 20 and 40 faults per 10,000 meters, a difference may be suggested, but not proved significant, between 200 and 400 faults per 100,000 meters, a significant difference would immediately, and correctly, be assessed. The percentage difference between these values is the same, only their order is different with respect to the length of yarn considered.

With two or more results representing the sum total of single values, the question arises as to whether there is a significant difference between these results. With the help of the statistics this significance can be determined. In this short article, therefore, we would like to explain the fundamentals of the statistical approach to this problem and to provide an easy-to-understand NOMOGRAM which will facilitate the comparison of one counter result with another.

CONTENTS

Fundamentals of the statistics as applied to textile processing and in particular to counter results

"An Industry of contrasts" — a report on the USTER Study Trip to the Far Eastern Countries

The Influence of Electronic Yarn Clearers on the Efficiency of Automatic Winders

1

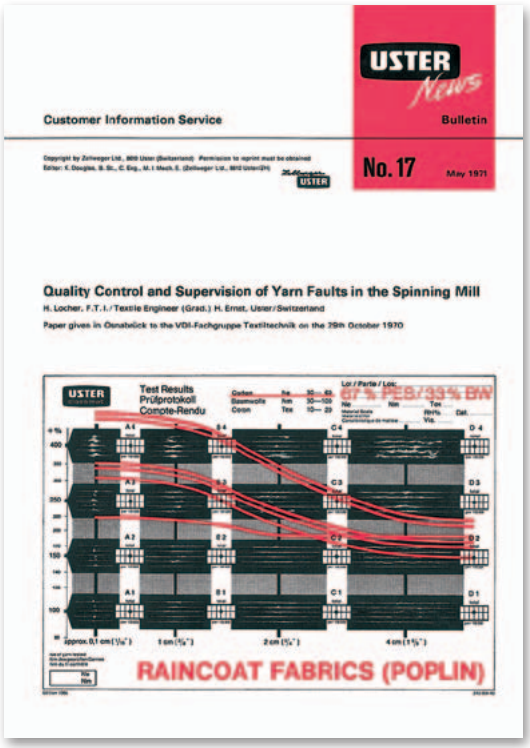
Fundamentals of the statistics as applied to textile processing and in particular to counter results

The establishment of quality management systems was still based on sample testing in 1971. Therefore, the handling of data including statistical calculation had become a growing issue. This Bulletin dealt with statistically significant differences between two test results, based on imperfection counts.

The second part of the Bulletin focused on the efficiency of winding machines when using yarn clearers. It detailed how clearing could influence the efficiency of winding machines, since the reduction of disturbing faults automatically tended to lower the efficiency of the machine.

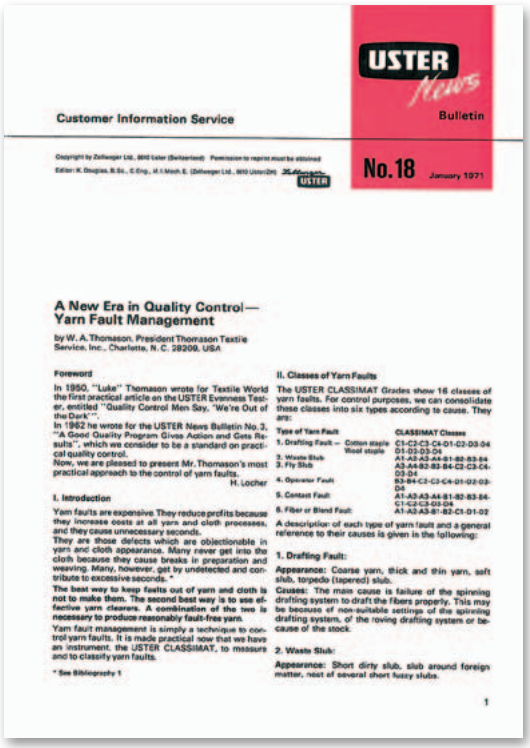
USTER® *NEWS BULLETIN* NO 17

Publication: May 1971
Languages: EN/DE/FR/I/E



USTER® *NEWS BULLETIN* NO 18

Publication: January 1971
Languages: EN/DE/FR/I/E



Quality control and supervision of yarn faults in the spinning mill

By 1971, Uster Technologies already had significant experience in the use of modern USTER® quality tools in spinning mills. This was the result of various customer contacts and efforts to solve quality problems together with customers. It was an obvious step to use this know-how in USTER® *NEWS BULLETIN* No. 17 to spread this experience to more customers. The Bulletin described practical cases in spinning mills, showing how evenness testing and tests with classifying systems could be used to improve quality. It also provided hints for spinning mills to avoid yarn faults.

A study was also published to illustrate the deterioration of quality characteristics with higher card production.

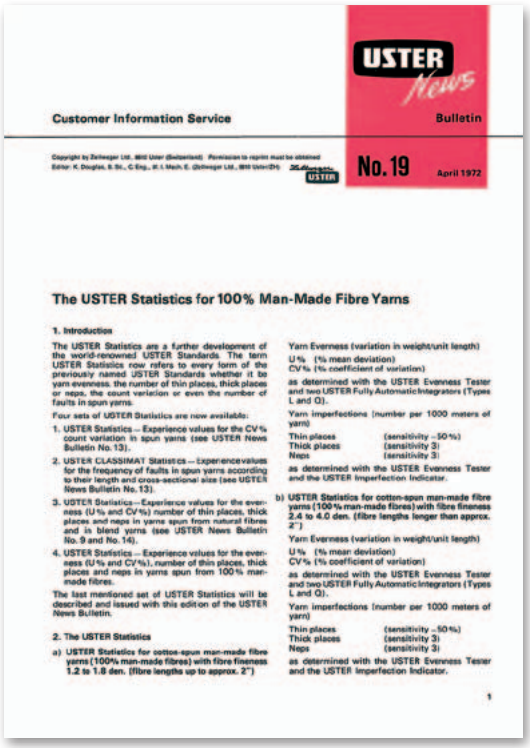
A new era in quality control – Yarn Fault Management

The American quality control specialist who earlier had contributed to USTER® *NEWS BULLETIN* No. 3, Luke Thomason, was now invited to write the USTER® *NEWS BULLETIN* No. 18.

Mr Thomason had gained an enormous amount of experience as a quality consultant to the textile industry in the United States in using the USTER® off-line and on-line systems. He analyzed this know-how and submitted detailed proposals to the textile community on how to organize preventive maintenance. The main focus was the avoidance of disturbing faults. He particularly recommended two steps: as a first task the spinning mill had to establish a permanent preventive maintenance system to avoid disturbing yarn faults; the second task required the mill to eliminate the remaining faults by using yarn clearers. He illustrated his study with some impressive photographs of areas in spinning mills which particularly contributed to disturbing faults.

USTER® *NEWS BULLETIN* NO 19

Publication: April 1972
Languages: EN/DE/FR/I/E



USTER® *NEWS BULLETIN* NO 20

Publication: July 1972
Languages: EN/DE/FR/I/E

The USTER® *STATISTICS* for 100% man-made fiber yarns

The first part of this USTER® *NEWS BULLETIN* was particularly dedicated to USTER® *STATISTICS* for 100% synthetic spun yarns. There was no differentiation by the fiber raw material, but only by fiber fineness. The fibers were split into two fiber fineness categories: between 1.3 and 2 dtex; and between 2.6 and 4.4 dtex.

In the second part, numeric USTER® *STATISTICS* were given for the first time for slivers and rovings. The figures were collected for carded and combed cotton.

The third part of the Bulletin dealt with the influence of the winding process on yarn quality and the clearing of carpet yarn.

USTER® Card Control Installation

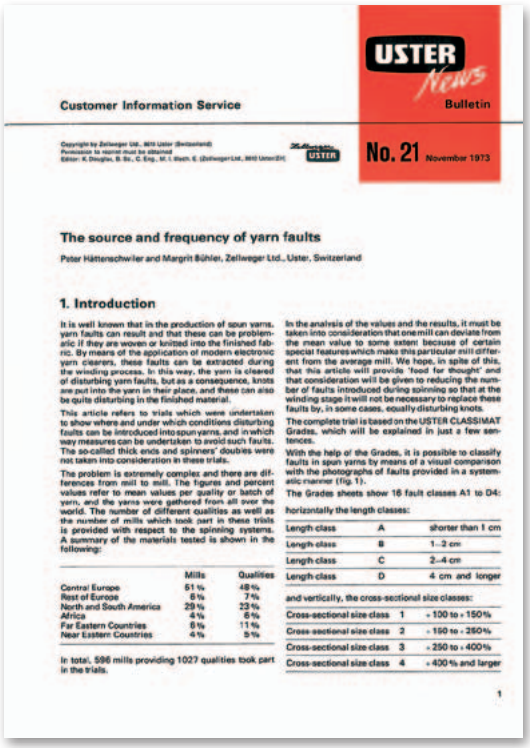
Uster Technologies had started installing autoleveling systems on finisher drawframe in 1962, using American machines (made by Saco-Lowell). The aim was to keep sliver variation within close limits.

When the blowroom was automated in the early Seventies with chute feed systems, the mass variation of card sliver increased, and this had to be corrected with an autoleveling system on the carding machine.

This Bulletin described the application of a monitoring and autoleveling system on the card. For this purpose, a new sliver sensor – the active-pneumatic measuring trumpet – was introduced to solve the autoleveling problems.

USTER® *NEWS BULLETIN* NO 21

Publication: November 1973
Languages: EN/DE/FR/I/E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USTER News Bulletin

No. 21 November 1973

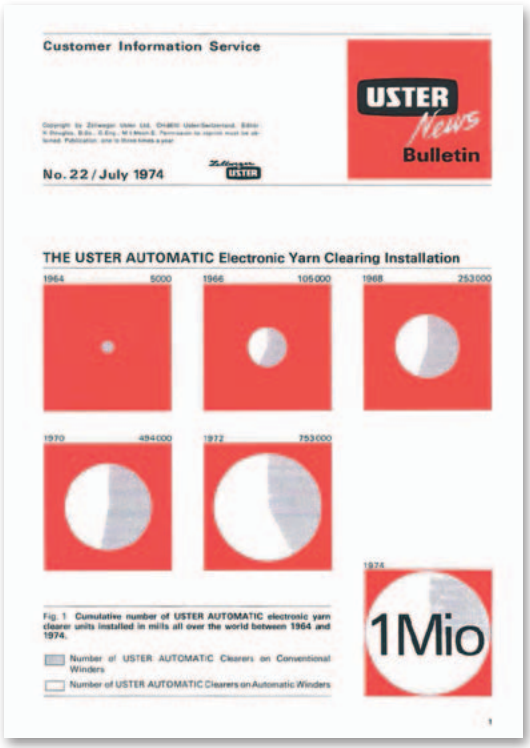
The source and frequency of yarn faults

Peter Hätteschwiler and Margrit Bühler, Zellweger Ltd., Uster, Switzerland

1. Introduction

USTER® *NEWS BULLETIN* NO 22

Publication: July 1974
Languages: EN/DE/FR/I/E



The source and frequency of yarn faults

The purpose of this Bulletin was to illustrate the origin of disturbing faults in spinning mills, with particular emphasis on ring spinning machines. Processes were suggested to avoid the formation of such faults.

The Bulletin started with an analysis of yarn faults of different lengths and thicknesses, which were extracted with a classifying system. These faults were separated into different categories. In a second step, the frequency of each fault was determined. The frequency indicated what kind of faults had to be treated with the highest priority. All the faults were attributed to yarn guiding elements on the ring spinning machine.

The USTER® *AUTOMATIC* Electronic Yarn Clearing Installation

By 1974, total sales of USTER® yarn clearers had reached one million. This was a good reason to publish this Bulletin and to publicize the clearer know-how collected up to this point, with 70% of winding machines now being equipped with clearers.

In 1974 already 70% of the clearers were installed on automatic winding machines.

Of particular interest was the study of the complaints in cotton and worsted yarn spinning mills, the illustration of fabric faults and a survey of yarn formation processes. The Bulletin also explained on what kind of winding machines the clearers could be installed, while the first graphic USTER® *STATISTICS* for the classifying system were established.

USTER® *NEWS BULLETIN* NO 23

Publication: August 1975
Languages: EN/DE/FR/I/E

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USTER CORPORATION

4404 Chesapeake Drive, Charlotte, N.C. 28216

USTER News Bulletin

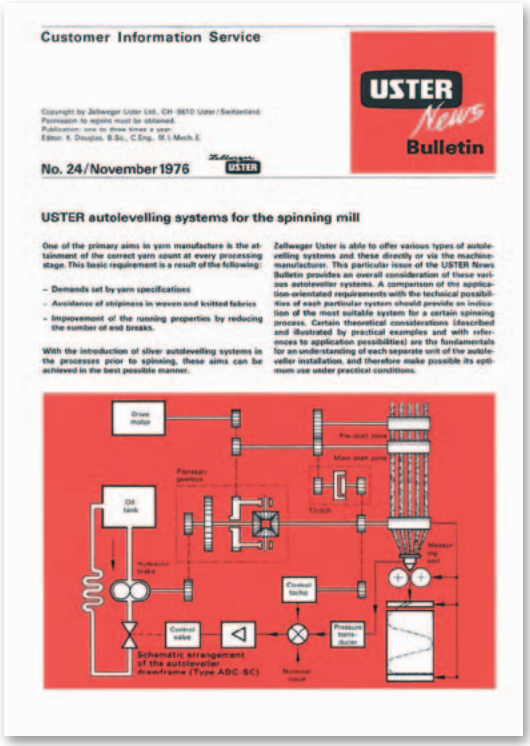
No. 23/August 1975

The USTER Statistics 1975

1. Introduction

USTER® *NEWS BULLETIN* NO 24

Publication: November 1976
Languages: EN/DE/FR/I/E



Customer Information Service

USTER News Bulletin

No. 24/November 1976

USTER autolevelling systems for the spinning mill

The USTER® *STATISTICS* 1975

This Bulletin presented the first collection of all USTER® *STATISTICS* developed to date. In 1975, it included statistics for slivers, rovings and yarns for various raw materials, statistics for classifying systems, and, for the first time, statistics for open-end rotor yarns, yarn strength and elongation.

A comparison with previous USTER® *STATISTICS* revealed that yarn evenness improved significantly between 1964 and 1975.

USTER® autolevelling systems for the spinning mill

By 1976, Uster Technologies had 14 years of experience in installing autoleveling systems, first on drawframes and later on cards. In USTER® *NEWS BULLETIN* No. 24, the know-how gained over this period was published for customers. The Bulletin covered both cards and drawframes and explained the difference between long-term and short-term card autoleveling.

The first part discussed the influence of count variation on the appearance of fabrics and the limits of count deviation which could be recognized by the human eye.

In the second part, the application of autoleveling systems on drawframes was explained, showing for example, the reaction of the machine when sliver was missing.

The third part dealt with the options for autoleveling systems on cards and discussed how much the unevenness of slivers could be improved.

USTER® *NEWS BULLETIN* NO 25

Publication: November 1977
Languages: EN/DE/FR/I/E

Customer Information Service

USTER News Bulletin

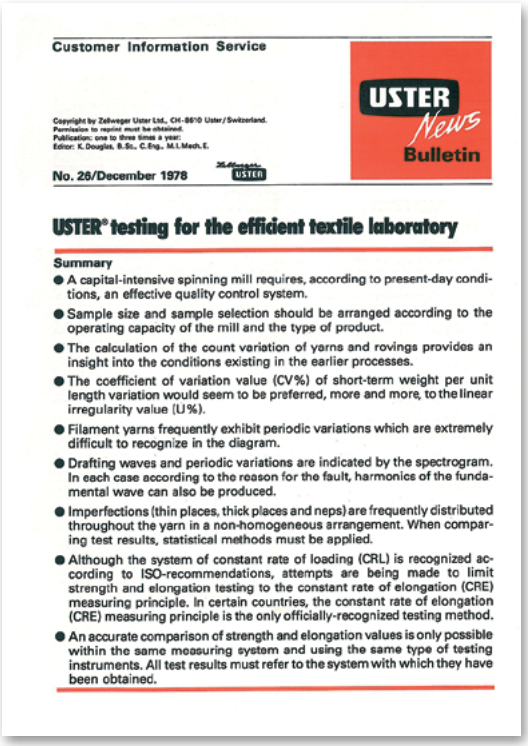
No. 25/November 1977

Variations in yarn count

1. Introduction

USTER® *NEWS BULLETIN* NO 26

Publication: December 1978
Languages: EN/DE/FR/I/E



Customer Information Service

USTER News Bulletin

No. 26/December 1978

USTER® testing for the efficient textile laboratory

Summary

- A capital-intensive spinning mill requires, according to present-day conditions, an effective quality control system.
- Sample size and sample selection should be arranged according to the operating capacity of the mill and the type of product.
- The calculation of the count variation of yarns and rovings provides an insight into the conditions existing in the earlier processes.
- The coefficient of variation value (CV%) of short-term weight per unit length variation would seem to be preferred, more and more, to the linear irregularity value (U%).
- Filament yarns frequently exhibit periodic variations which are extremely difficult to recognize in the diagram.
- Drafting waves and periodic variations are indicated by the spectrogram. In each case according to the reason for the fault, harmonics of the fundamental wave can also be produced.
- Imperfections (thin places, thick places and neps) are frequently distributed throughout the yarn in a non-homogeneous arrangement. When comparing test results, statistical methods must be applied.
- Although the system of constant rate of loading (CRL) is recognized according to ISO-recommendations, attempts are being made to limit strength and elongation testing to the constant rate of elongation (CRE) measuring principle. In certain countries, the constant rate of elongation (CRE) measuring principle is the only officially-recognized testing method.
- An accurate comparison of strength and elongation values is only possible within the same measuring system and using the same type of testing instruments. All test results must refer to the system with which they have been obtained.

Variation in yarn count

In the mid-Seventies, Uster Technologies started the development of a yarn count measuring system. This Bulletin was fully dedicated to yarn count measurement and the application of a count measuring system in a spinning environment.

Of particular interest was the noted intensity of visual stripes with increased count variation and count deviation.

USTER® testing for the efficient textile laboratory

In the first part, this Bulletin described how to take samples in spinning mills for laboratory testing. The second part dealt with various practical evaluations of diagrams and spectrograms. The third part discussed statistical evaluations in textile laboratories. It explained the statistical treatment of laboratory test results – such as the calculation of the mean, the confidence interval, the calculation of normally-distributed test results and the application of the Central Limit Theorem in cases where the test results followed a Poisson distribution.

The fourth part of the Bulletin was a further contribution to strength testing. It described the effect of humidity and clamp speed changes on yarn strength and explained the principles of strength testing (constant rate of load CRL versus constant rate of elongation CRE).

USTER® *NEWS BULLETIN* NO 27

Publication: August 1979
Languages: EN/DE/FR/I/E

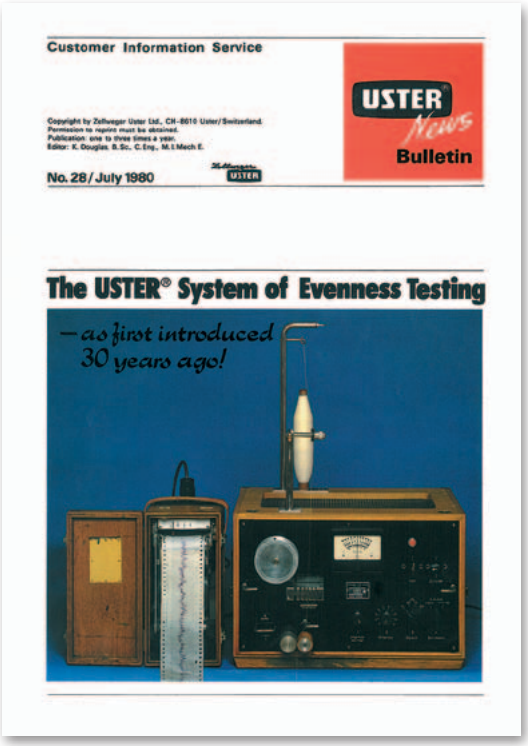
The detection of end breaks in ring spinning

In a ring spinning mill, thousands of spindles have to produce the same quality every day. If a defect occurs or components are worn, the spindle affected will produce a yarn of inferior quality. Such defects have to be recognized as soon as possible. For this purpose a data system was developed with a travelling sensor on the ring rail, in order to recognize spindles which were out of tolerance (too many end breaks and slow spindles). In addition, the data system had to detect the end break level on the machines and pinpoint individual spindles with excessive end breaks.

This data system and the experience gained in various spinning mills were described in this Bulletin.

USTER® *NEWS BULLETIN* NO 28

Publication: July 1980
Languages: EN/DE/FR/I/E

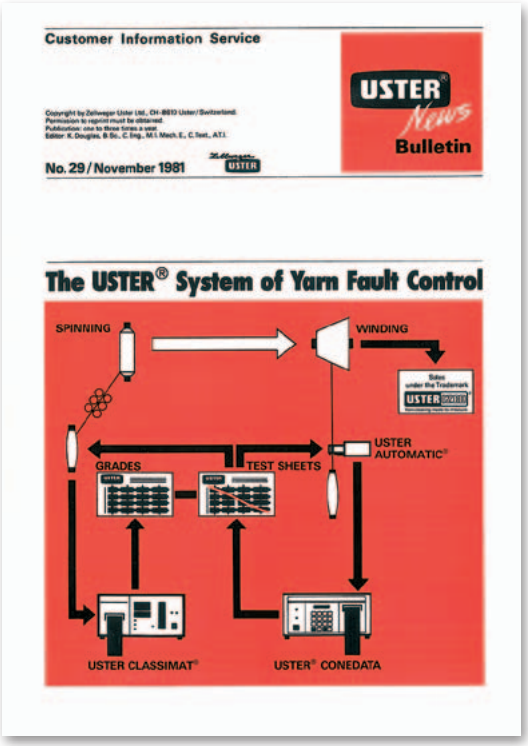


The USTER® System of Evenness Testing

The USTER® *NEWS BULLETIN* No. 28 covered various aspects of laboratory and on-line testing. In the first part, the capabilities of manual and automatic evenness testers were compared for spun and filament yarns. The second part described a measuring system for raw silk and raw silk quality reports. The third part explained the application of a hand-held evenness tester for use at production machines, particularly cards and drawframes. The fourth part was a comparison between capacitive and gravimetric methods to determine the count of slivers, rovings and yarns. The fifth part explained the confidence interval of irregularity.

USTER® *NEWS BULLETIN* NO 29

Publication: November 1981
Languages: EN/DE/FR/I/E



The USTER® System of Yarn Faults Control

This Bulletin was dedicated to yarn clearing. After 20 years of yarn clearing, Uster Technologies had a long experience with this on-line system by 1981. The Bulletin gave an analysis of various aspects of yarn clearing and analyzed eliminated yarn faults. It was the first attempt to establish USTER® *STATISTICS* for the number of cuts. Of particular interest was a study dealing with the type of faults and their origins for a unit length of 100 km.

Clearer systems had helped spinning mills to understand what kind of yarn faults were critical, how yarn clearing could affect productivity and how yarn clearing was always a balance between quality and productivity.

In this Bulletin a data system was described through which the head of a winding department received, for all the machines, various data which was not available at the level of the clearing system (efficiency, number of cuts of the entire lot, productivity data, etc.).

USTER® *NEWS BULLETIN* NO 30

Publication: August 1982
Languages: EN/DE/FR/I/E

Autolevelling systems at carding and drawing from a technological point of view

The USTER® *NEWS BULLETIN* No. 30 was a comprehensive collection of practical experience with long-term, medium-term and short-term variation on cards. It also described autoleveling systems for drawframes and the status of such systems at that time.

The Bulletin explained the functioning principle of the sensors used for measuring the mass of the sliver at the output of the card and at the input and output of the drawframe.

The paper also submitted various recommendations regarding the kind of regulation which should be applied for a given arrangement of machines.

USTER® *NEWS BULLETIN* NO 31

Publication: December 1982
Languages: EN/DE/FR/I/E

USTER® *NEWS BULLETIN* NO 32

Publication: October 1984
Languages: EN/DE/FR/I/E

USTER® *STATISTICS* 1982

In 1982, new USTER® *STATISTICS* were published, providing a collection of benchmarks for 10 different yarn types.

Uster Technologies had developed two measuring systems for strength testing, the CRL and the CRE principles. CRL stands for Constant Rate of Load, in which the load applied on the yarn specimen increases with the test time, so there is a linear relationship between load applied and test period. CRE stand for Constant Rate of Extension, in which there is a linear relationship between the extension of the clamps and the test time.

The USTER® *STATISTICS* were presented for both principles in this Bulletin. The CRL principle was said to be unsuitable for filament yarn tests, which meant that the CRE principle was more important these days.

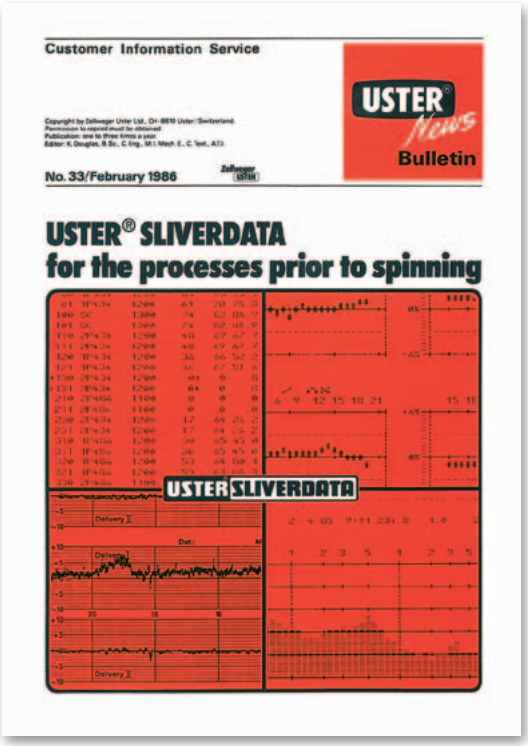
Quality assurance with various spinning systems

In 1981, a new yarn strength tester generation had been introduced onto the market. This product had enormous capabilities to analyze yarns. The first three years' experience with this measuring system was described in this Bulletin. The second part of the Bulletin described a system which could measure the unevenness of rovings after the rubbing aprons in worsted yarn manufacturing. The third part contained recommendations for autoleveling systems in short staple spinning mills.

The data system for ring spinning machines had already been on the market for five years in 1984. The experience gained during this period was described in this Bulletin. In addition, the first USTER® *STATISTICS* for this data system were published.

USTER® *NEWS BULLETIN* NO 33

Publication: February 1986
Languages: EN/DE/FR/I/E



USTER® *SLIVERDATA* for the processes prior to spinning

With the dramatic increase of productivity in spinning preparation from 1950 to 1980, there was a requirement for an on-line monitoring system on either cards or drawframes – since a deviation or a defect on these machines could adversely affect the quality of tons of sliver within a very short time.

A data system was developed to monitor the irregularity and count deviation of slivers. The experience with this system gained in practical tests was analyzed in this Bulletin.

USTER® *NEWS BULLETIN* NO 34

Publication: February 1987
Languages: EN/DE/FR/I/E

Product quality assurance at automatic rotor spinning machines

The first automatic OE rotor spinning machines were introduced onto the market in 1982. This event was the catalyst for the monitoring of each production position on this machine.

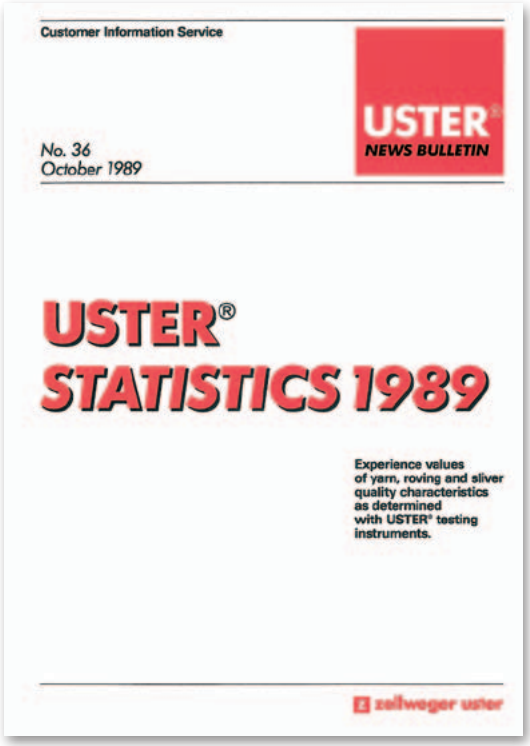
Uster Technologies had devised a clearing system for rotor spinning machines and used the experience and the quality know-how from this for a publication in the USTER® *NEWS BULLETIN* No. 34. This Bulletin also contained the first USTER® *STATISTICS* for the data system which was used for this machine.

USTER® *NEWS BULLETIN* NO 35

Publication: October 1988
Languages: EN/DE/FR/I/E

USTER® *NEWS BULLETIN* NO 36

Publication: October 1989
Languages: EN/DE/FR/I/E



The third generation of evenness testers

In 1987, the third generation of evenness testers was launched onto the market. This system was designed with various additional test options compared to the previous generation. These included the printout of the irregularity index; the variance-length curve; several spectrograms or variance-length curves on the same data sheet; the hairiness and hairiness variation; and the count.

It was a completely new concept on the basis of digital circuits. The ink recorders of previous systems were replaced by a printer. The entire hardware for signal evaluation was reduced to one single unit.

Test programs could be stored and recalled whenever the same yarn was measured again.

Presented for the first time was a new hairiness measuring system with high reproducibility, and with which periodic hairiness variations could be detected.

USTER® *STATISTICS* 1989

The USTER® *NEWS BULLETIN* No. 36 presented the USTER® *STATISTICS* of 1989.

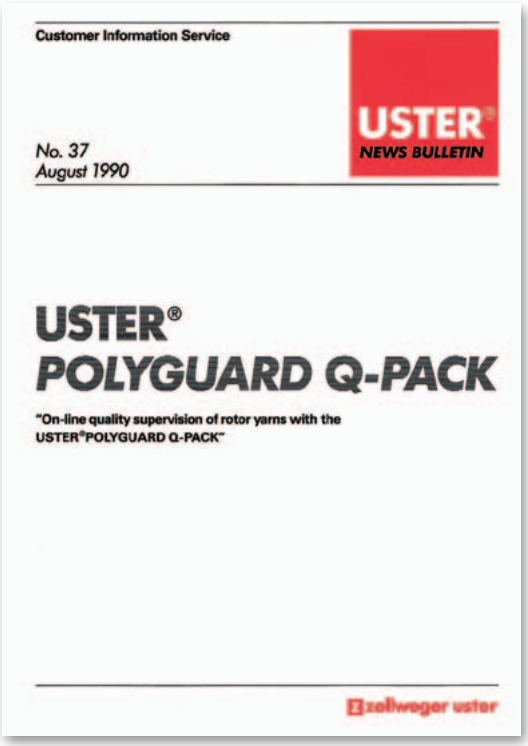
With the introduction of a new evenness tester in 1987, various new quality characteristics could be determined. These included the coefficient of variation at various cut lengths; the index of irregularity; the hairiness; and the hairiness variation.

This Bulletin provided benchmarks for 15 different yarn types, slivers and rovings.

It also illustrated for the first time how the evenness of yarns had been improved over a period of 40 years.

USTER® *NEWS BULLETIN* NO 37

Publication: August 1990
Languages: EN/DE/FR/I/E

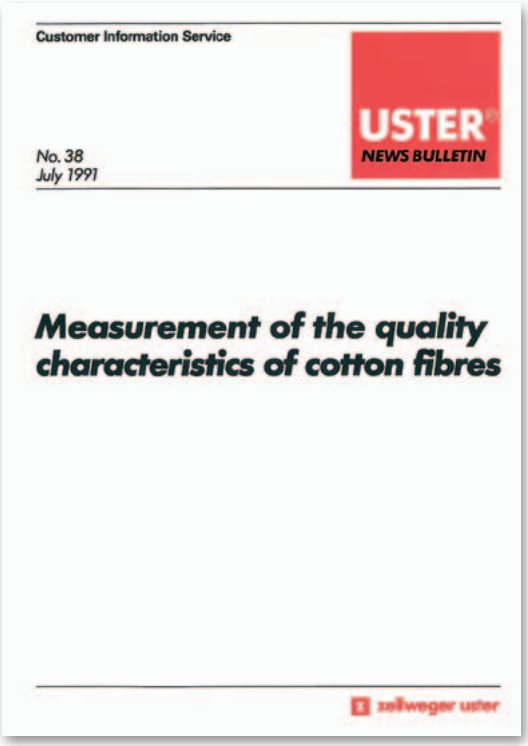


USTER® *POLYGUARD Q-PACK*

The first on-line system for open-end rotor spinning machines was introduced in 1984. During the period 1984 to 1990, Uster Technologies collected considerable experience on its application in mills. This was particularly true for the Q-Pack, software which allowed the determination of the irregularity and periodic mass variations at each spinning position. This information was presented in the USTER® *NEWS BULLETIN* No. 37. The Bulletin also described the origin and frequency of off-quality yarns related to worn or defective parts, as identified by means of the Q-Pack.

USTER® *NEWS BULLETIN* NO 38

Publication: July 1991
Languages: EN/DE/FR/I/E



Measurement of the quality characteristics of cotton fibres

Uster Technologies started to sell fiber testing systems in 1991. The purpose of fiber testing in spinning mills was explained in this Bulletin. All the experience collected in the field was presented in this document. Both systems for fiber testing, the fiber bundle as well as the single fiber testing system, were explained in USTER® *NEWS BULLETIN* No. 38.

In this Bulletin the difference between fiber bundle and single fiber testing systems was discussed. The single fiber testing system had a reproducible measuring technology to detect the number and size of neps in cotton. Therefore, studies showed how the number of neps increased in the blowroom and how the card and the comber could reduce the number of neps. The first benchmarks showing how the number of neps changed throughout the entire spinning process were presented.

USTER® *NEWS BULLETIN* NO 39

Publication: August 1993
Languages: EN/DE/FR/I/E

Quality Management in the Spinning Mill

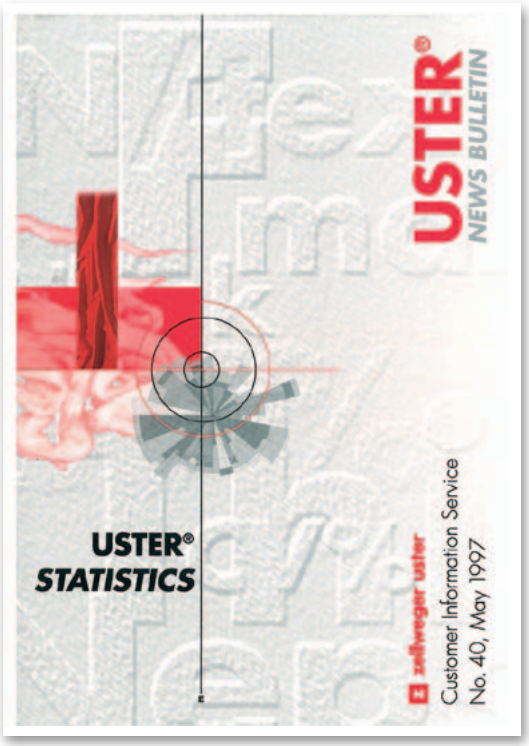
In 1993, the spinning mills, particularly in the West and Japan, already had various quality control tools in the laboratory and on the machines. It was appropriate, therefore, to devote a Bulletin to entire quality management in spinning mills. The USTER® *NEWS BULLETIN* No. 39 was an attempt to see the mill as an entity and to discuss the basics of quality management for the first time.

The Bulletin started with fundamental principles of quality management and explained how far away spinning mills were from agreements and understandings between partners.

Furthermore, studies were shown concerning the required accuracy of measuring systems as a basis for agreements between yarn producer and yarn buyer. The Bulletin also discussed continuous quality improvement in a mill, based on practical figures, with the objective of zero deviation.

USTER® *NEWS BULLETIN* NO 40

Publication: May 1997
Languages: EN/DE



USTER® *STATISTICS* 1997

With this Bulletin, the USTER® *STATISTICS* 2007 were published.

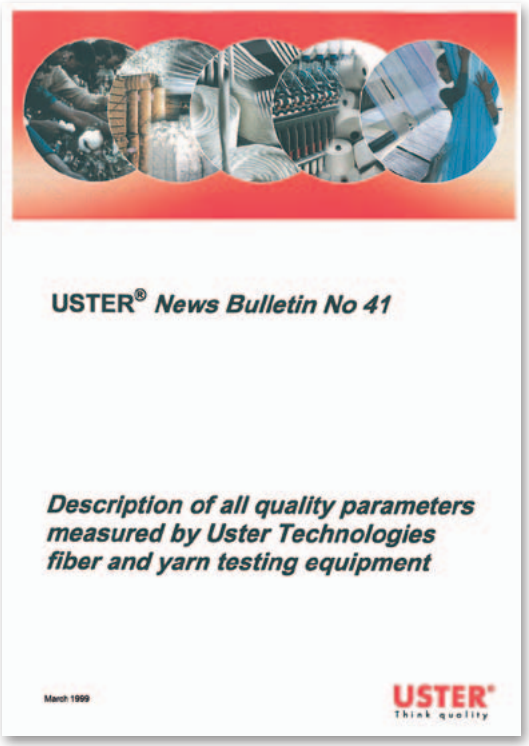
Uster Technologies started to sell fiber testing systems in 1991. Data collected from the years 1991 to 1997 was used for the first publication of Uster Fiber Statistics with this Bulletin. The Fiber Statistics were separated into fiber properties, fiber processing and fiber-to-yarn statistics.

The USTER® *STATISTICS* 2007 provided benchmarks for 15 different yarn types.

This enormous data base also offered more and better information about its scope and application, the restrictions, and the origin and interpretation of the samples.

USTER® *NEWS BULLETIN* NO 41

Publication: March 1999
Languages: EN/DE



Description of all quality parameters measured by Uster Technologies fiber and yarn testing equipment

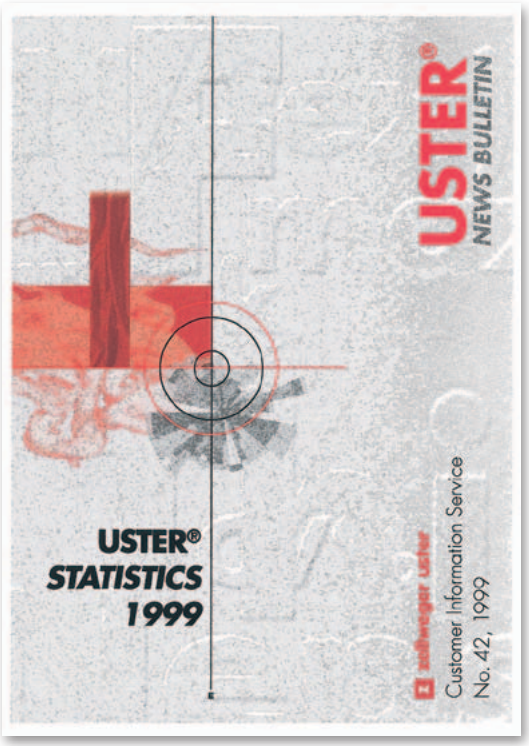
This Bulletin comprised a description of all quality parameters measured by the laboratory systems of Uster Technologies.

Uster Technologies had introduced a wide range of laboratory instruments by this date and in response to various inquiries a project was started to list all the various quality parameters within the USTER® *NEWS BULLETIN* series.

The paper provided a quick reference guide and explained the meaning of each parameter.

USTER® *NEWS BULLETIN* NO 42

Publication: June 1999
Languages: Languages: EN



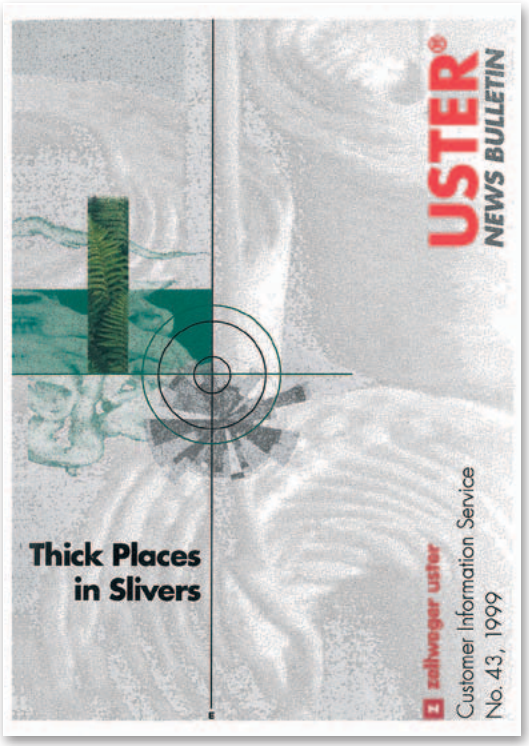
USTER® *STATISTICS* 1999

The USTER® *NEWS BULLETIN* No. 42 dealt with USTER® *STATISTICS* for slivers. For this Bulletin various experience values of the data system for spinning preparation were evaluated.

To obtain statistically significant sliver results, it was necessary to take individual test samples of slivers from different regions. The transportation of cans from customers to our laboratory in Uster (Switzerland) proved to be too complicated. Comparison tests, however, had shown that the results of the USTER® on-line sensor for slivers and the capacitive sensor in the laboratory had generated identical results. Therefore, Uster Technologies had access to a large database for spinning preparation in preparing this document.

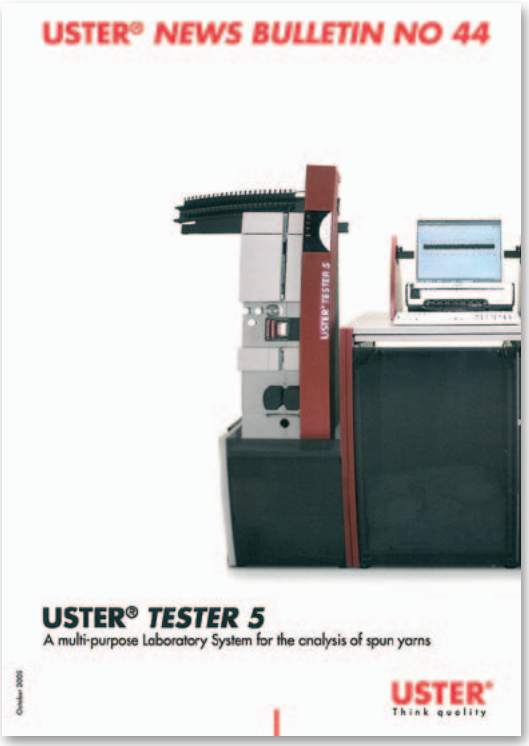
USTER® *NEWS BULLETIN* NO 43

Publication: September 1999
Languages: EN/DE



USTER® *NEWS BULLETIN* NO 44

Publication: October 2005
Languages: EN/CN



Thick places in slivers

The data system for spinning preparation allowed the recognition of thick places in slivers – the result of fiber fragments and trash in the sliver. Such particles were accumulated near sliver guiding elements of cards and the drawbox of drawframes and were embedded in the sliver from time to time. The Bulletin described the origin of such thick places and the requirement for sensors with very small inertia to detect such thick places at speeds up to 1200 m/min. In subsequent processes, the thick places generated by fiber fragments produced end breaks either at the roving frame or the ring spinning machine or persisted as disturbing thick places in the yarn.

The Bulletin explained the formation and the frequency of such thick places and suggested how they could be avoided by preventive maintenance.

USTER® *TESTER 5* – A multi-purpose Laboratory System for the analysis of spun yarns

In 2005, the fifth generation of evenness testers was launched onto the market – the USTER® *TESTER 5*. This instrument also had various additional features compared to the previous generation. The USTER® *NEWS BULLETIN* No. 44 described the features of this multi-purpose laboratory system with six sensors.

With the introduction of the fifth generation of evenness testers, it was time to look at evenness testing from a different angle. Yehia El-mogahzy, a professor of textile engineering at Auburn University, who had long experience as a consultant to the textile industry, wrote the first chapter and analyzed the options to characterize yarns with all the sensors available at the introduction of this measuring instrument.

USTER® *NEWS BULLETIN* NO 45

Publication: July 2008
Languages: EN/CN

Think Quality – Opportunities to improve the quality in the textile supply chain

This Bulletin explained the current quality picture in spinning mills, highlighting the 'missing' information, and demonstrated ways to improve the situation.

The Bulletin first explained the quality tools which Uster Technologies could offer to the textile industry.

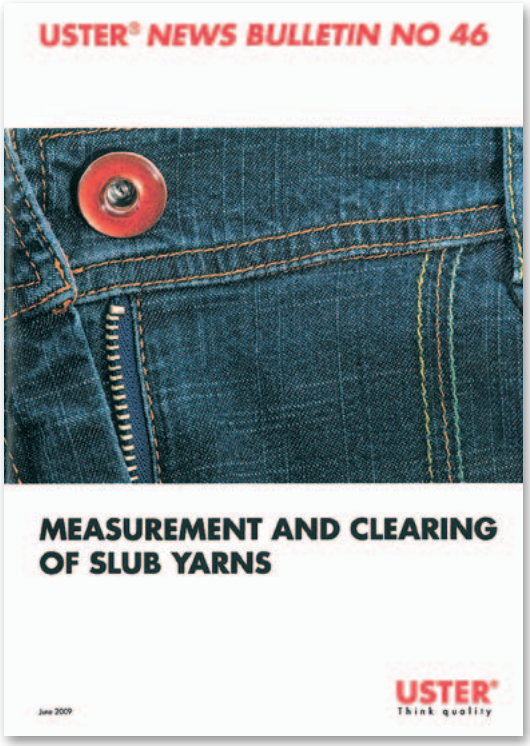
A second step outlined the remaining quality problems in spinning mills which are most frequently mentioned by mill managers.

In the following chapters, solutions to the remaining quality problems were submitted.

In the last chapter, the role of the laboratory in a modern spinning mill was explained.

USTER® *NEWS BULLETIN* NO 46

Publication: June 2009
Languages: Languages: EN/CN



Measurement and clearing of slub yarns

In the textile industry, the use of slub yarns to produce particular effects in fabrics is increasing. In 2008, a software package was launched, as a feature of the evenness tester, to measure the length, the size and the distribution of slubs.

The measuring technology for slub yarn evaluation was described in this Bulletin.

After many years without adequate tools to measure slub yarns, the new software had allowed a systematic analysis of slubs. Such analyses were particularly important when dealing with yarn buyers, to create new slub yarns or to make amendments to existing yarns. Without reliable figures, such discussions would be very difficult.

USTER® *NEWS BULLETIN* NO 47

Publication: July 2010
Languages: EN/CN

Origin of fabric defects and ways to reduce them

This Bulletin described the origin of fabric defects and provided recommendations on how the defects could be avoided. Various practical tests were made in spinning mills and the evaluations were illustrated and described in this Bulletin.

For this Bulletin, the fabric faults most frequently involved in claims were collected and investigations were made in spinning mills to discover how such faults could occur.

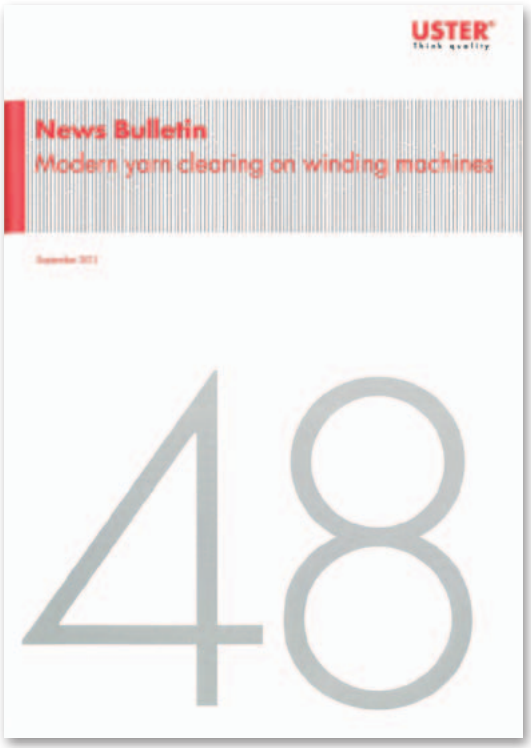
Afterwards, yarns were produced with characteristic faults, processed into a fabric and photographed.

In the second part of the Bulletin, fabric faults were shown after a longer period of usage, to explain the origin of pilling.

A separate chapter explained the most frequent faults produced by weaving and knitting machines.

USTER® *NEWS BULLETIN* NO 48

Publication: September 2011
Languages: EN/CN



Modern yarn clearing on winding machines

Uster Technologies developed a completely new yarn clearer generation and introduced the product onto the market in 2010. The new clearer had numerous additional features compared to the previous generation. These included: more transparent settings of the clearing curve; better foreign fiber detection; and separation of foreign fibers and vegetable matter.

These features were described in the USTER® *NEWS BULLETIN* No. 48.

The Bulletin first described the development of modern yarn clearing and the two main tasks of the clearer: the elimination of disturbing yarn faults and the on-line monitoring of quality characteristics, resulting in the ejection of outlier bobbins at the winding machine.

Separate chapters dealt with the separation of real foreign fibers and vegetable matter to reduce costs, the handling of splices and cost considerations in yarn clearing.

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