

# **THE IMPORTANCE OF DIAGNOSTIC EVALUATION OF THE COTTON FIBRE , TO THE TEXTIL VALUE CHAIN**

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Chairperson ,Ladies and Gentleman ,thank you for allowing me to share my experience with you in particular in regard to the importance of Cotton Instrument testing.

Although there is general consensus that instrument testing of Cotton is superior to traditional handclassing ,since it provides more important information to the spinner ,there is still too much resistance to the inclusion of vital data in the trading mechanism ,and to use such data with the aim to improve the fibre performance and with it the yarn.

It is my intention to highlight the negative aspects the neglect of attention to specific Cotton parameters ,which only can be detected through instrument testing, have on the Textile value chain.

While we all realise that nature plays a major role in the creation of this fibre ,other than what is the case with man-made fibres, who have all predictable properties, it is even more important that the spinner buys Cotton fibre according to what he requires , in enabling him to spin a specific yarn count range ,using a specific spinning technology .

If the ginner is able to meet those parameters a meaningful price /benefit ratio must come into play.

A spinner who intends to compete in today's and tomorrow's dynamic trading environment needs not only to know about colour, trash, staple length and micronaire, but also about strength, maturity, short fibre content and elongation. Each of these properties, if not within the pre-determined parameters will not allow the spinner to meet the quality requirements of his customer, being either a weaver or a knitter. If he for any reason still risks to start the spinning -process, being aware of undesirable properties, he takes a chance which has the potential to end in a non conforming yarn with undesired consequences.

Let me now highlight the negative impact non conforming fibre parameters can have on the Textile value chain, but first there is another reason why instrument testing must become a must.

Ginners, traders and spinners could in the past rely on highly experienced Cotton graders, this breed of Cotton Fundis is now difficult, if at all to find. But even the best grader cannot provide the data required by today's industry. Bright young people will be able to learn and acquaint themselves with the operational requirement for an HVI system, or AFIS as well as other instruments within a short period of time.

It is clear that instrument test results are dependable and give worldwide comparable data, provided correlation exercises are taken in regular intervals.

Let me now paint you a specific scenario, using conventional carded ring-spun yarn, (if combed or compact yarn needs to be produced

even more stringent parameters ought to be applied ).It is therefore vital , that the spinner has at his disposal , instrument based data

Its not the spinner who demands high quality standards , it's the downstream consumer . It goes even this far that retailers start to set Quality standards.

## **KNITTING**

For a knitter,yarn ought to have an **acceptable moisture content**, **elongation** which easily withstands the loop-forming process ,the yarn needs to be sufficiently waxed and a **high breaking strength** is a must.To give you an idea about forces yarn has to withstand,in the olden days some 50 years ago circular weft knitting machines used to run at 12 rpm and an operator had to look at most after 2 machines,today machines run at 50 rpm and the operator has to look after 3-4 machines .Hence every yarn break has now a major impact on productivity and with it on Quality.

**Excessive Neps** in a carded yarn may destine the final product to the lowest quality category ,with monetary losses on the finished fabric being as much as 50 %

**Also an excessive short fibre content** has a negative environmental impact ,with high dust levels in the knitting room,but worse such knitted fabric clogs up filters in the dyeing vessel ,resulting in a possible reduction of the liquor exchange and thereby causing uneven dyeing with the final product showing an ugly fuzzy surface.

Let me at this stage elaborate a bit more on the effects of excessive short fibre content ,by highlighting the difference between carded and combed yarn.The quality of carded yarn is directly affected by excessive neps after the carding process,such yarns are usually used in cheap tea shirts and cheap household textiles.

If a better quality is required either combed or compact yarn is used. During the combing process neps and short fibres are removed ,if however a poor fibre has been used the fibre loss can be 18-19% whereas on excellent raw materials the fibre loss can be as low as 12-13% during the combing process , this would mean that on poor fibre input up to 6% fibre loss would take place and to make matters worse the resultant yarn would lack body and may still show excess thin and thick places.

**Furthermore a strong variation of the micronaire distribution** within the bale laydown at a spinners fibre preparation plant will in all likelihood result in the feared fault category of **Barre'** ,

furthermore an insufficient amount of fibres in the cross-section of a yarn will lead to poor yarn strength ( thick and thin places )and changed reflectance values caused by micronaire variation in the finished dyed fabric ,will as alluded before, lead to a Barre' appearance , being horizontal stripes in repetitive patterns.

Another potential source of finished dyed fabric faults ,is **FIBRE IMMATURITY**

Due to the fact that in general knitted fabric ,as compared to woven fabric is not causticised or mercerised ,immature fibres show up as small none or poorly dyed streaks, or in the case of seed fragments caused by poorly maintained gins as un-dyed spots

**CONTAMINATION**, is a capitel on which books can be written.

The ITMF's annual contamination report clearly indicates that no or little progress has been made over the past many years. During the spinning committee's annual Cotton assessment tours ,we continue to observe poor harvesting, and storing condition, hence Gods

wonderful creation of a beautiful un-contaminated, nep free and crystal white flower, is relegated to severe downgrading in quite a few places, even before the major mechanical processing of the fibre begins.

While spinners have invested millions of Dollars in foreign fibre removal systems into their production lines, from blowrooms to draw frames and winding, the often invisible contaminants who split up into micronaire fine particles during processing, still find their way into the finished fabric where it is very difficult if at all possible to be removed.

While the expensively installed preventative system remove a fair portion of the foreign fibres, what's left is still enough to reject sometimes thousands of garments.

Unless major improvements in all the so far stated defect categories are made, Cotton knitted garments may progressively be replaced with manmade cellulosic fibres, which do not feature most of the before mentioned challenges.

Again known fibre performance data, ahead of the spinning process, will go a long way to improve the quality outcome of the yarn.

## **WEAVING**

Many of the potentially yarn problems faced by the knitters have similar impacts on woven substrates.

Weavers need yarns with even a greater evenness, with a minimum of thin and thick places, excellent elongation and breaking strength, this is underlined by the fact that today's weft insertion speeds at 800-1000 picks per minute (or 1600 to 1800 meters per minute) is 10 to 12

times faster than what was the case in the 1960's. It means that the yarn is pulled off the packages at 7-8 times per second if two feeders are used hence the yarn is subjected to enormous stress and frictional forces. Only the best spun yarns can be used.

In warp direction the yarn has to endure, after having been wound from bobbins on to packages at speeds of 1200m/min. and more, warping speeds of 1200m/min. plus and then be exposed to huge stresses during the sizing process, where the yarn even on the most modern machines is stretched of up to 5% while being immersed into the hot liquid of either PVA or organic starches and then being dried at high surface temperatures before being wound onto a weavers beam. During this process any neps which have accumulated on the surface of the yarn are now locked into a rigid position, once the warp is in the weaving machine thousand of ends are rubbed against each other during the shed building process, this not only results into excessive fibre shedding but also leads to breaks and so called nests on the surface of the woven substrate. Those are just some of the potential production interruption, all which can be minimised if the spinner receives fibre which is within the requested parameters and the spinner on the bases of measured fibre results, **optimises the spinning process.**

## **WORKING CAPITAL**

**Working capital management** is the cornerstone of managing a company successfully. Inventories must reduce.

10-15 years ago it was an acceptable practice to hold between 12-20 weeks of stocks, this is no longer feasible, stocks should not exceed 6-8 weeks, in the manmade sector stocks are not higher than 4 weeks, in our company we never exceeded man-made fibre stock by more than 2 weeks.

Obviously in the past ,large Cotton stocks allowed flexibility in regard to preparing a suitable lay in the blow room,hence none conforming fibre deliveries were not the end of the world.

With low stocks however one cannot any longer accept non-conforming fibre ,a unsuitable delivery will force the spinner to use the fibre and therefor produce a yarn which will then be rejected by the customer ,or huge claims may be the result.

Business culture has changed ,and we need to do everything possible to change the way we in the Cotton Industry have done business in the past.

### **Ladies and Gentlemen,**

In conclusion,I hope I have been able to give you a brief overview into the problems the textile industry faces if a process is started whereby up front insufficient details of the fibre properties are known.

We are all acutely aware that if we are not able to make Cotton a better performing fibre , our market share amongst other textile fibres will continue to erode until the fibre becomes irrelevant.

We in Africa need to grow Cotton as a means of putting food onto the tables of millions,but in order to safeguard the potential which exists in Africa ,we need to invest more in the education of growers ginnerers and even spinners.It is not enough to organise walk -abouts in a Cotton textile mill, but we need to establish training courses whereby on a regular bases young daughters and sons of current growers and ginnerers are properly taught , and thereby made aware of what is needed to improve yarn performance on the bases of fibre instrument testing the performance of the Cotton fibre.

We need to install pride and a sense of love for Cotton,because only if we love what we do ,will we respect the systems and procedures which ought to be in place to enhance Cotton growing ,harvesting ,ginning and spinning.

Remember – there cannot be improvements in processing , without measuring and there cannot be progress, without seeing what damage a none conforming process can cause,because seeing is believing.

Unless instrument testing becomes the norm and test results are used to improve yarn quality, all the before mentioned problems will continue to throw a shadow over the fibre we all love so much.

Ladies and Gentlemen thank you for listening