

## EffiSpin: control system for spinning mills

*Efficiency: a key factor to be competitive*

### How to do it

With all the restrictions that surrounds us, a company can be competitive, only, if they can optimise all their resources. Getting the maximum efficiency is the key factor to achieve the planned objectives.

That is why, Pinter Fani has developed EffiSpin, a global solution for the management of the production that gives all the tools necessary to achieve higher efficiency standards.

### EffiSpin: Individual Monitoring Technology

Nowadays getting information is not a problem, the important thing is getting the relevant and important information and above all at the right moment to the right person. These premises define the basic architecture of EffiSpin:

- Getting a detailed knowledge of the productive micro-processes and transform it into a powerful managing tool
- Installation of devices that simplify the production work specially oriented for the machines and workers.

### The origins

EffiSpin is the new concept in optimisation of the production that gathers the knowledge and experience of Pinter and Fani in the spinning sector for more than 75 years, in a continuous process of improvement and innovation. Today, EffiSpin lays the technological foundations for the future development of the spinning industry. In the present competitive environment the survival depends on the excellency of the management and the maximum use of resources.



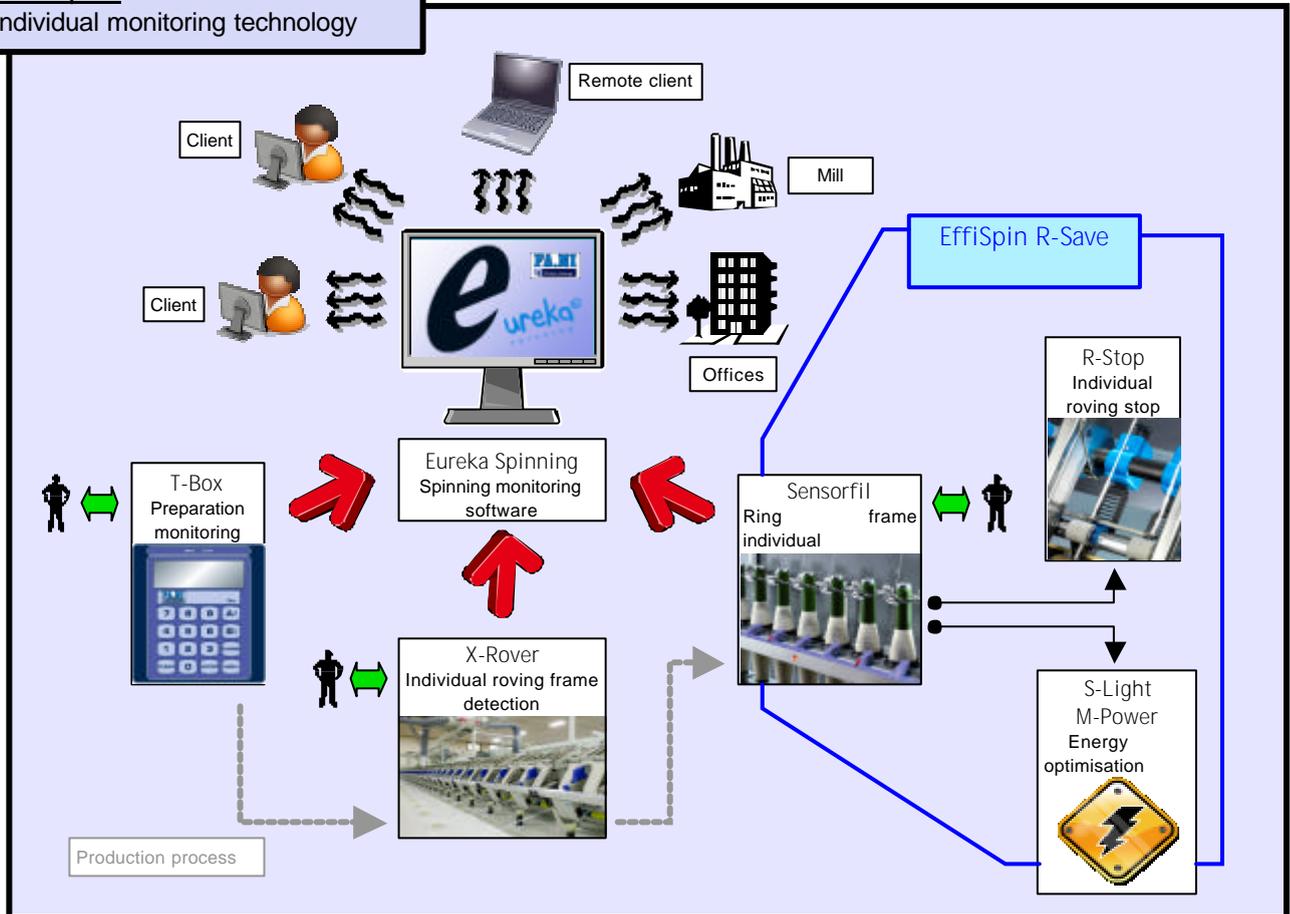
Sensorfil

## An overall look

The complete system: this is how EffiSpin works and how interacts with its surroundings

### EffiSpin

Individual monitoring technology



## Main features of EffiSpin

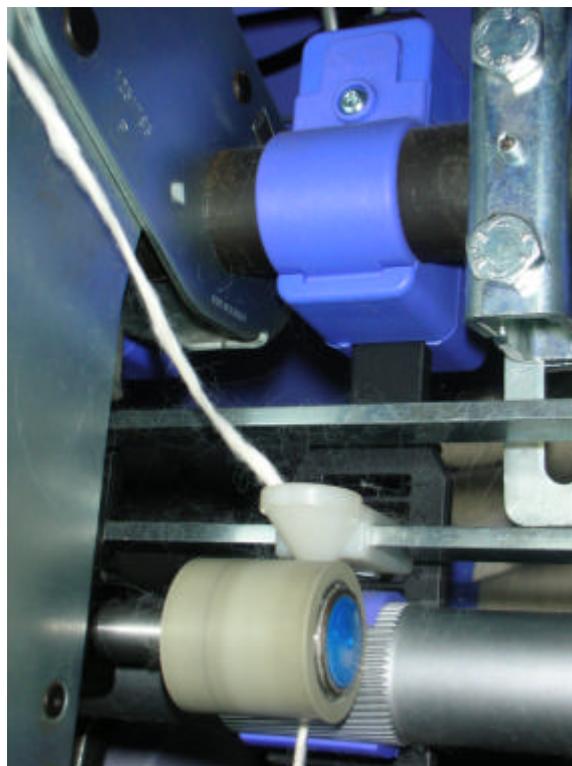
EffiSpin is based on a continuous interaction between the systems and different levels of involved people. It is not only a monitoring system, but a whole new productive organisation. It simplifies the work at the machine, saves energy and labour costs and supplies a detailed information of what is going on during the process. From the raw material until the ring frame. From the worker at the machine until the general manager. This is how EffiSpin works and this how the optimisation the production is achieved.

The system is structured in two main networks:

- Hardware: group of electronic components, sensors and interfaces that pick the information and send it to:
  - Direct information for the workers for an efficient managing of the number of breaks, machine stops, low twist spindles.
  - Production data that is sent to the computer to be processed by Eureka
- Software: Eureka spinning, double intranet network. One with the machines and the other one with corporate network. Unlimited number of clients can have access to the data and it can even be shared by a remote client through the Internet

## Advantages

Improvement	Competitive advantage
<ul style="list-style-type: none"> <li>▪ Decrease in the number of breaks</li> <li>▪ Decrease in the average break time</li> <li>▪ Increase in the production speed</li> <li>▪ Increase in labour efficiency</li> <li>▪ Increase in machine efficiency</li> </ul>	Production increase
<ul style="list-style-type: none"> <li>▪ Decrease of waste</li> <li>▪ Decrease in lappings</li> <li>▪ Decrease in rubber cots, aprons</li> <li>▪ Decrease in cleaning frequency</li> <li>▪ Possible reassignment of workers</li> <li>▪ Electrical consumption reduction</li> </ul>	Expenses reduction
<ul style="list-style-type: none"> <li>▪ Instant detection of low twist spindles</li> <li>▪ Less fibre contamination</li> <li>▪ Less hairiness in broken yarns</li> </ul>	Quality increase
<ul style="list-style-type: none"> <li>▪ Simplicity for workers</li> <li>▪ Work more attractive</li> <li>▪ Implantation of clear bonus money</li> </ul>	Improvement in working conditions
<ul style="list-style-type: none"> <li>▪ Relevant data supply to different levels (intermediate and high managers)</li> <li>▪ Linked to corporate intranet</li> <li>▪ Export to other information systems</li> </ul>	Increase in managing control



RStop

## EffiSpin in detail

Sensorfil: experience is a degree

The development of Sensorfil in the market as the first spindle by spindle static detector for ring frame, opened a new range of possibilities in the control and improvement of the spinning mills. Its great technological level, high reliability, easiness in use and no need of maintenance make of Sensorfil the individual sensor leader in the market, with more than 2 million spindles under its control all over the world. Today, in the information era, Sensorfil, as cornerstone of EffiSpin system, turns into an essential part for an efficient production. The possibilities to complement with R-Stop, L-Save and M-Power, in the line of EffiSpin R-Save, bring mark-up solutions to the spinning sector.

One system – many applications

Sensorfil can be installed on any kind of spinning machine, both short staple and long staple, allowing the integration to EffiSpin even to machines from different producer. This flexibility allows the use of a same technology, applied in a different way depending on the machine and on the choices required by the client.

Patrolling for yarn breaks? Not anymore with Sensorfil



Installing Sensorfil means to remove the biggest time consuming job of our workers: the patrolling in order to look for a yarn break. The system allows the worker to do the work of repairing the yarn breaks without wasting his time and concentration in searching where the breaks have occurred, thanks to the efficient signalisation system (multicolour and multi sign lamp, LEDs on the sensors and control unit T-Box). Time will be better applied in more productive tasks, with the consequent benefit for the company. Sensorfil allows reducing up to a 90% the average time per break when adding this instant sign with a bigger arriving speed to the broken spindle.

This working method can be applied in an effective way to a system with individual sensors in order to detect at the moment, the yarn break or the twist loss, specially in machines of more than 500 spindles. Otherwise, a big part of the benefits remain cancelled due to the long detection period that it is taken with other mobile conventional systems.

Besides the standard signalisation system, this can be personalized depending on every need, with numerical or alphanumerical screens showing the real number of breaks by side, efficiency and other interesting data.

EffiSpin R-Save: specially projects for a maximum efficiency

Universal solutions do not suit today's industry. The needs of a denim producer have not much in common with the ones of a shirting yarns or technical fabrics producer. That is why, based on the EffiSpin concept, we have designed the R-Save module, with the aim of offering several solutions to optimise the efficiency and adaptable to every reality, through equipments that reduce the processes expenses and improve the qualities of the machines, based on our own experience and also on the worries of our clients.

R-Save includes the different personalized possibilities pointed to the saving of both raw materials and electric consumption, taking the maximum profit of the human resources in disposal. Next we show some of the standard personalized options but it is possible to develop other solutions and adaptations based on any particular need.

## R-Stop

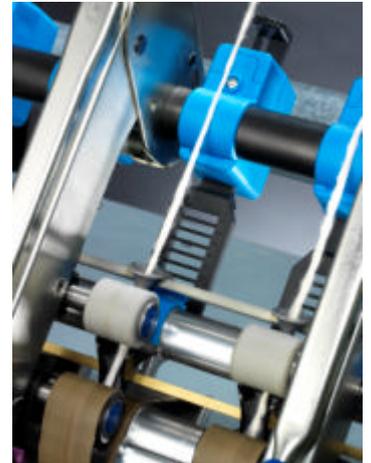
The R-Stop application (roving stop) to the ring frame means an important step towards three key points for the spinning mills:

1. Saving of raw material.
2. Removal of fibre lapping problems.
3. Minimize the human effect on the production.

Connected to the Sensorfil, when the roving stop detects a yarn break, comes into operation, by stopping the roving feeding.

The R-Stop application is specially recommended in cases of fibres with great mark-up or high resistance, in thick count yarns (with high production speed) and spinning mills with an important labour cost, because it allows the operations with a smaller number of workers.

There are different kinds of R-Stop, which permit its adaptation to any kind of ring frame.



## S-Light

Why having the illumination on for no reason? The option S-Light (Light Saving) allows the lighting control of the machines, turning on or off the lights in a certain part of the plant, a machine or a section depending on the breaks detected by EffiSpin, with the consequent energy saving. Without breaks it is possible to work without a direct lighting, which will turn on when a break occurs in order to make easy the repairing operation.

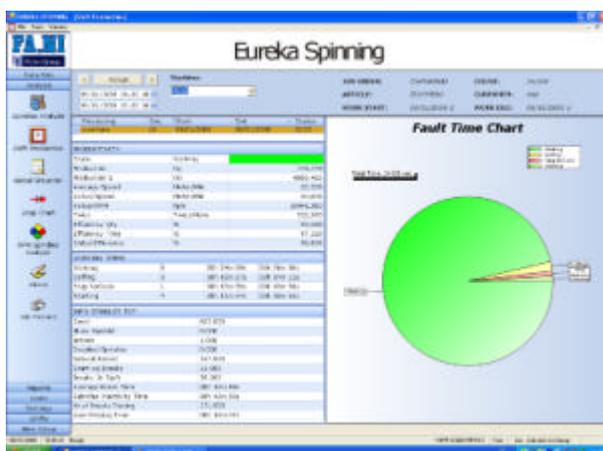
## M-Power

The energy costs are, day by day, more important in the total of the production. With the new M-Power module it is possible to monitorise the consumption of the different machines at real time in order to plan the production also from an energy point of view.

## Effispeed

A step towards the automation of the spinning mill: EffiSpin can regulate automatically the speed of the ring frame according to the level of the breaks detected, in order to optimise it depending on the article, the material, the situation of the staff or any other parameter.

## Eureka Spinning, or how to control production at the moment, from any place



Eureka joins the experience accumulated from the launching of the first MPS and Archimede more than 20 years ago, with a software completely updated, in Windows, faithful to the strength, liability and use typical of Eureka parents. It has been designed to work in a global scene, and therefore allows remote access from everywhere (through the corporate company net), the connection of an unlimited number of workstations and remote technical assistance, among others.

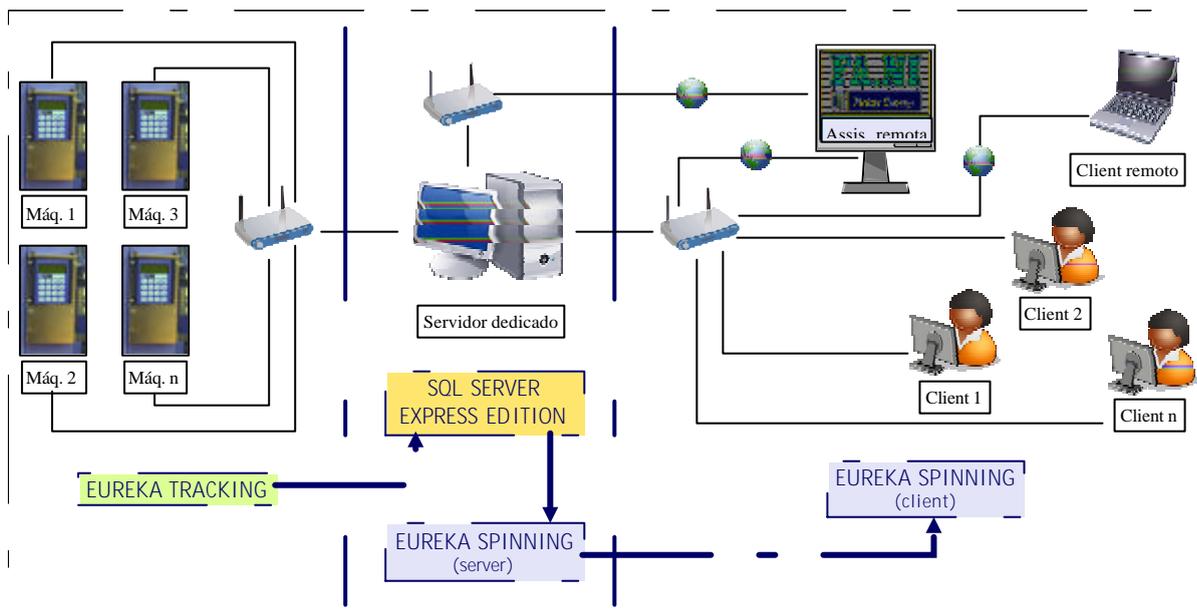
Created in the more up-to-date programming environments, the possibilities of personalize and development of Eureka are almost unlimited,

beginning with the creation of specific reports, to wireless connection of the information, to PDA devices. It is also possible to integrate the production information directly to its corporate systems, depending on the needs.

Taking into account that the data that feed Eureka are collected and processed in real time, due to the individual detection and to the high transmission speeds via Ethernet, the generated information is always updated. Contrary to other supervision systems that need more than half a minute to question each one of the machines connected to the system, with Eureka we need only 1 to 2 seconds (depending on the machine) in order to have the information. That is why, even in big installations, the refreshing time of the data is very short. Another advantage of EffiSpin; in case of detection of values out of the pre-established limits, the programme generates pop-up messages that allow an immediate adjustment of the problem. With the old control systems, the problem was detected only when analysing the report (at the end of a shift or production lot), and therefore the correction time was long. Eureka controls the process in detail all the time, warning about the possible deviations in order to obtain greater efficiency also in this section.

## Basic architecture of Eureka

Eureka is a powerful packet made up by three different modules, combined among them:



- Eureka Tracking: collection and transport module of the data, from every control unit to the server. It has also the work of registering the data in the database.
- Database: store of all the information in SQL Server Express Edition (updated to the complete version)
- Eureka Spinning: interface with the user. Collects and processes all the information of the database and displays it in an easy way to the user. It is completely shaped regarding security level, qualities and access.

## T-BOX: simple, liable and 100% effective

T-BOX is the brain of all the elements that form EffiSpin. As central control unit for each one of the different system elements, it has the work of conducting all work parameters, detectors programming, signalisation elements and saving modules. Each equipment has its own T-Box which is the motor for a good running. Moreover, as self-governing unit, it is a supervision tool very effective for the control of any kind of textile machinery, specially for the spinning preparation; it collects the work main data for each one of the machines



(cards, draw frames, etc), and it is displayed on the machine in an easy way and transmitted to Eureka Spinning, in this way the spinner can have all the production information in only one program. With T-Box and EffiSpin you can know the reality of all your plant at the moment with only one click.

X-Rover; the maximum safety and detail, also in the roving frame

The information of the roving frame spindles it is a key process in the spinning: one roving bobbin with a high number of breaks means, apart from a less of efficiency in the production, an increase in the number of breaks of the ring frame. That is why, in order to achieve a maximum efficiency, we have developed the X-Rover, the roving break individual detector for roving frames.

The advantages of the X-Rover are clear:

- Immediate stop of the machine when a break is detected, with a higher liability in comparison to the traditional photoelectric barrier systems.
- We can avoid the formation of lapping during the draft, with the resulting saving of time in the breaks repairing and decrease of the spare part cost.
- Individual break signalisation : the worker can come quickly to the spindle that has a break and repair it.

And, naturally, with total connection to Eureka Spinning, in order to know, all the time, the development of the production machine, locate problematic spindles and control the work of the equipment, among others aspects.



X-Rover



Production machine time chart