

are surface modified, i.e. the fiber surface is coated with a silicone polymer emulsion or other surface modifiers, which provide a soft touch feeling to the final product. This treated fiber is dried and directly fed into the cluster forming apparatus. In this machine, the fiber is submitted to a tumbling or rolling process, resulting in the final product, the fiber cluster.

The obvious advantage of the in-line integration of this cluster forming process is the optimized material handling; the interim fiber baling step is omitted and storage of intermediate product is avoided. In addition, it was found that due to the specifically engineered 3-dimensional crimp structure, clusters are formed

up to five times faster compared to the standard process and the resulting clusters exhibit improved filling power.

Summary and conclusion

Polymerization and spinning is identical for both processes, thus the jet bulking modules can easily be adjusted to existing equipment. The new bulked continuous filament technology enables drawing/cripping and cutting at speeds which are significantly higher than the incumbent standard technology.

In addition, the availability of small modules allows not only for higher flexibility, but also for further integration of the production of staple fibers and/or fiber clusters from polymer to finished product in

a coupled line. All the above mentioned factors lead to an overall process simplification, a reduction in required investment (no separate draw machine needed) and lower manufacturing costs.

DuPontSA will further evaluate process and product versatility based on this technology. In the specialty textile fibers end-use the potential of special fine fibers for soft touch pile fabrics becomes evident. Furthermore in future, it can be envisioned that the in-line integration of the downstream process for nonwoven products could be an interesting field of application.

Comforel = registered trademark

Manufacturing information in airbag yarn production

For many years, the airbag has been the center-piece of passenger safety. It can only serve its purpose, if every single component meets the highest quality standards. The airbag yarn, must withstand immense tear and break forces. In order to guarantee the required supreme quality, the yarn producer Acordis is using a manufacturing information system based on internet technology.

In a car crash, a bursting airbag can inflict severe injuries on the passengers. This might put the airbag manufacturer as well as the yarn producer in a terrible position, considering the detrimental effects of a liability law suit. To prevent this, Acordis continuously invests in Total Quality Management (TQM). The manufacturing information (MI) system of APE

Engineering GmbH, Niedernberg/Germany makes an important contribution to this endeavor.

Cutting-edge spinning technology

Acordis Industrial Fibers is the single largest business unit of the Acordis Group. With more than 3,300 employees worldwide, Acordis Industrial Fibers produces sophisticated polyester and PA yarns for safety-critical automotive applications (etc. airbags, seat belts, tires). The two production sites in Obernburg/Germany and Scottsboro, Alabama/USA supply a number of airbag yarn products to the world market and jointly account for more than 60% of the European market. One reason for this success is the versatility

when it comes to ramping up innovative spinning technology.

It is true that the production process of man-made fibers from polymers is not exactly a recent invention. Yet, the economical requirement of a maximum production yield at a consistently high quality level does impose quite a challenge. All the technologies and processes employed need to be mastered at all times. Isolated yarn breaks and fluffs (filament breaks) do lessen the volume and quality of the yarn produced and therefore need to be monitored closely.

SCADA system and manufacturing information joining hands

SCADA systems and software solutions for operations management usually take

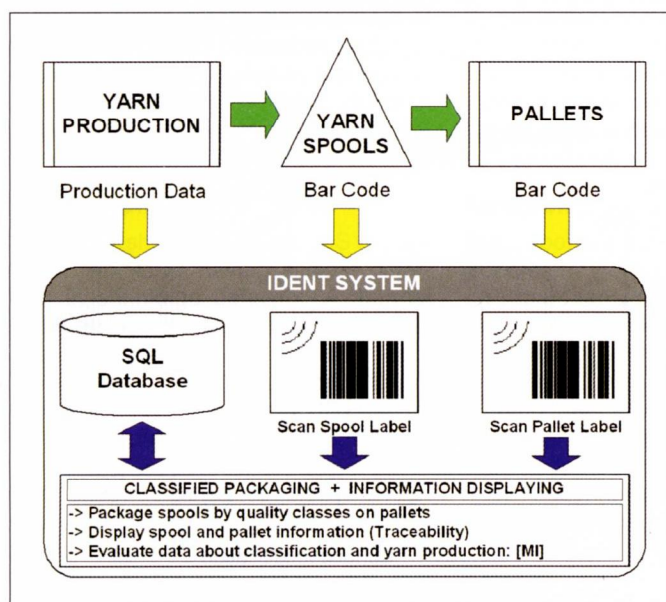


Fig. 1 Ident system and [MI] for yarn production

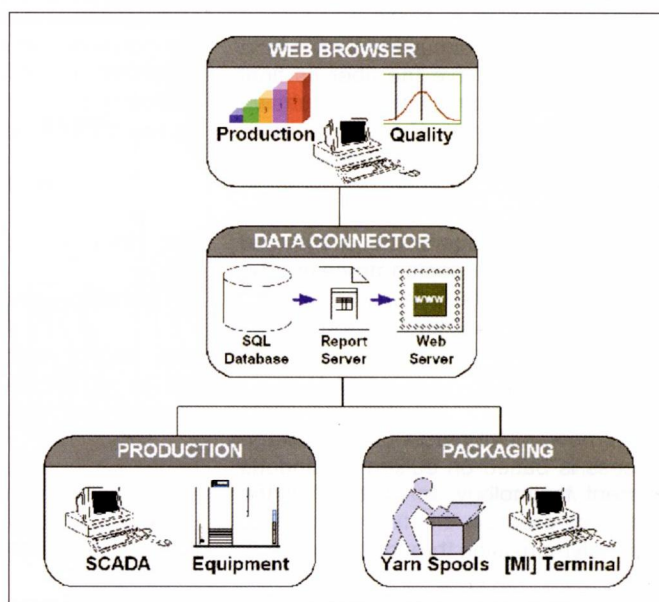


Fig. 2 [MI] System at Acordis Industrial Fibers

part in monitoring production processes and quality. This is where all optimization efforts need to be made. The production managers must watch quality trends, detect and analyze failure mechanisms, and develop and implement troubleshooting approaches and solutions. Above all, the return on production must be considered. The yarn spools are subject to "classified packaging", which controls the consistency of production lots according to quality ranges defined by the respective customer.

For this purpose, a manufacturing information system for process and quality control had to be implemented within a narrow time frame.

The MI solution for Acordis by APE Engineering consists of two parts. The so-called "Ident System" uses barcode scanners to identify the yarn spools coming from the shop-floor. The scanners will notify the operator if a yarn spool does not match with the quality requirements of the production lot currently being packed on pallets. This part of the system also collects the operations data needed to control subsequent steps in the production workflow.

The actual MI system is a data acquisition and management information system. It collects and assembles product and machine data from the SCADA system into tables and charts that are incorporated in standard HTML web pages. With this system, production workers and managers can access the information they need from anywhere within the Acordis intranet. The only software they need is a standard web browser. No extra client application or expensive runtime licenses are required. Plus, the information can be exported to text or spreadsheet formats and forwarded via e-mail. The core of the APE [MI] system is a data

[MI] Uses in a company
Access to products and resources in operations
<ul style="list-style-type: none"> - Product and process parameters - Production lots and batches - Material resource planning (MRP) and supplies - Equipment, machines and operators
Access to available data and information
<ul style="list-style-type: none"> - Operating times - Production volumes - Quality losses - Stocks, work-in-process and warehouses - Product traceability

connector, which reads the information requested from the SCADA database and integrates it through a report server into standard web pages (HTML, ASP, ASP.NET). These pages are then made available through a web server to the corporate intranet, even to the internet, if required.

"Glasnost" in production

Acordis have organized their MI system into three distinct areas:

- In *Sorting*, you have access to evaluations about products and the relevant spinning machinery. The reports will show the quality of yarn spools, distributed over different quality levels. There is also detailed statistics about production volumes (e.g. spool count, weight, percentage of total production). This is where one can get a quick idea of the volume and quality produced within a certain time frame.
- The area *Spinning Machinery* highlights statistics about problems coming from the spinning equipment. Fiber breaks and their causes as well as trend observations regarding produc-

tion and down times will be summarized. An in-depth analysis of error mechanisms for a certain machine is also possible. This goes all the way down to a single spinning position (drill-down).

- The area *Management* examines the yarn production for the commercial effects of quality problems. The net margin for selected yarn products is allotted to different quality classes and compared to the respective quality costs. The quality costs per yarn spool and quality class can be assigned in a specific configuration frame.

New standard in production management

For the people in charge of spinning technology with Acordis, APE [MI] is a useful tool for scrutinizing and continuously improving the production process. The evaluation sheets and reports developed so far will be extended and complemented to become a standard for all of Acordis' spinning plants. This strategy has proven to be very productive: two more spinning lines are currently being equipped with APE [MI].

By using standard interfaces and tools, APE Engineering wanted to create an open and flexible information system for all conceivable applications in a manufacturing plant. These standardization features have made connecting Acordis' available SCADA database an easy task. Report development and database query programming have shown to be a somewhat bigger effort.

The project manager in Acordis Engineering is also happy that the new approach to Manufacturing Information is being rewarded: "This is another innovation that helps strengthen Acordis' technology base. And it is 'Made in Germany'."

Rieter and Saurer do not exhibit at ITMA 2003 in Birmingham/UK

The two textile machinery groups headquartered in Switzerland announced their decisions to cancel participation in the ITMA 2003 separately at a press conference held by Swissmem on June 17, 2003.

Both companies said that their customers from around the world had expressed a reluctance to travel to trade fairs in the wake of the SARS outbreak and terrorist attacks.

APE ENGINEERING

Intranet Systems for Manufacturing Information and Data Acquisition: APE [MI]

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APE Engineering GmbH
 Hansaring 18
 D-63843 Niedernberg
 Fon: +49 (0) 60 28/99 15-0
 Fax: +49 (0) 60 28/99 15-99
 info@ape-engineering.de
 www.ape-engineering.de