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Supply Chain Management Software for Textile Networks at ITMA 2019

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Introduction

At ITMA 2019, a variety of different types of textile software were showcased. There were many textile supply chain solutions among these. This paper focuses specifically on advanced planning and scheduling (APS) for supply chains. The software discussed in this paper was classified primarily in category 14.3.2, "Software systems for Supply Chain Management in textile networks". One of the nine companies listed in 14.3.2, Setex (https://www.setex-germany.com/), was not included. Although it seems to have good machine monitoring and predictive maintenance capabilities, the author determine that Setex is not an APS system.

All of the packages in 14.3.2 were also classified in category 14.3.3, "Software systems for Enterprise Resource Planning (ERP), Product Lifecycle Management (PLM) and Production Planning and Scheduling (PPS)", since most of the software reviewed could be classified as both ERP and PPS systems. Two of the companies listed in category 14.3.3 but not in 14.3.2 (Interlem GP Omega and Zeta Datatec) were also included in this paper because their software has similar capabilities as the software of the companies in 14.3.2. All of the companies discussed in this article, were also listed both in category 14.3.4, "Warehouse and logistics management systems", and 14.3.6, "Quality management systems", except Interlem GP Omega. PLM solutions were not specifically included, although some of the software reviewed in this article has this capability.

The software reviewed in this paper has a primary focus on the textile industry. This is in contrast to other APS systems on the market that do not necessarily focus on any specific industries. This focus on the textile industry can be a key advantage for a textile company looking for an APS system, since this often means that employees of the software company are much more familiar with textile processes. In addition, the software usually incorporates more of the functionality required to plan and schedule textile processes, which may result in less customization being necessary to successfully implement the system within a textile company. This can save a textile company significant money and time in getting the software fully operational.

The information in this article is based on discussions with software vendors at ITMA, promotional material that was handed out by them, and viewing the websites of the software companies. None of the software packages was tested. The companies are presented in the order in which they are listed in section 14.3.2 of the ITMA 2019 directory, followed by the two companies previously mentioned that are not in section 14.3.2. (When a company's website is in more than one language, the version in English is the one that is given.)

Computer House
Website: http://www.cho.it/index.php?ln=2
Computer House is an Italian company. Their software, PROTEX, contains an ERP solution with an Oracle database. The ERP solution consists of a sales module and a production module. Functionality within the production module includes cost control and quality control. Schedules are created that minimize a cost function. The user can assign different weights to different parts of this cost function, and the cost function can include meeting delivery dates. PROTEX also is a manufacturing execution system (MES), a warehouse management system (WMS), and a customer relationship management (CRM) system. It is not a PLM solution, but Computer House does collaborate with a specific PLM vendor if PLM functionality is needed by their clients. PROTEX can be used in spinning, knitting, warping, weaving, dyeing, finishing, and cut and sew operations. It has many applications in all segments of the textile industry, including apparel and home textiles.

According to the Computer House website, advantages of PROTEX ERP include that it is "developed entirely within Computer House", "totally integrated and easy to use", and is "multi-company and multi-language". The website also advertises that "This product is the existing most advanced on the market of textile scheduling, studied for years by the experience of our customers, [and] has 48 successful installations ranging in all areas of the textile industry."

Datamon
Website: http://datamonplus.com/, https://www.ruta4datamonplus.com/ (in Spanish)
Datamon Plus is a company based in Spain. Their primary software package is TEXPLUS. Their software is an ERP system that has costing and quality control. It plans production and performs scheduling with dispatching rules. The software has specialized solutions for spinning, weaving, dyeing, finishing, printing, and industrial laundries. The company currently sells their software in Spain, Portugal, and Latin America.

According to their website, Datamon Plus software offers control, improvement, and cost effectiveness. Its main benefits include increased profitability, immediate information for negotiations and decision making, inventory optimization, quick response to problems, and meeting customer quality specifications.

Datatex
Website: https://www.datatex.com/
Datatex has offices in Switzerland, Germany, India, Israel, Italy, and the United States. Their ERP system has sales and customer service (including CRM), planning and scheduling, production order management, quality management, inventory and warehouse management, purchasing, costing, and financial management functions. Their application-specific products include shop floor automation, fabric inspection, machine capacity management, machine queue management, and PLM. Datatex has many solutions including ones for fiber, spinning, knitting weaving, printing, dyeing, apparel, nonwovens, technical textiles, and carpet.

Shannon McCarthy, Vice President of Business Development at Datatex, said that are several advantages of Datatex. Datatex focuses exclusively on the textile industry (except for a few cases in which one of their textile customers has expanded into another industry), and the software has been developed for more than 20 years in response to their customers' needs. Not only does Datatex do detailed scheduling, it does load balancing among machines in different locations. According to the Datatex website, "Datatex is the world's leading supplier of IT software solutions to the global textile and apparel industry with the largest installed base of textile software with customers in 42 countries and 5 continents…Textile and apparel have very different and particular planning and scheduling requirements. Therefore the Datatex planning and the Datatex scheduling systems have proven to be one of the key success factors to our customers."

Inteos - Halo
Website: https://www.inteos.com/en/
Halo is an Austrian company. Its software package, Inteos, is an ERP, MES, and monitoring solution. Inteos also has quality control and warehouse management functions. In terms of planning and scheduling, it does capacity planning and reservation, rough and detailed planning, optimization, and simulation. It does not have PLM capabilities. Inteos can be used in weaving, knitting, finishing, printing, and apparel operations.

Stefano Sampietro, Salesman at Halo, said that he feels that that the main advantage of Inteos is that they are continuously developing and innovating. For example, they did not previously have tablet capability, and now they have it and are also moving into augmented reality. According to their website, Inteos provides "a product that can be integrated quickly and smoothly into current operations. The system is customised to suit your individual needs and the user-friendly and easy-to-understand platform allows for a minimum of training and guarantees maximum acceptance among users."

Intex
Website: https://www.intex-consulting.com
Intex is ERP and MES software. It is developed by Intex Consulting Group, a company based in Germany. Intex Consulting Group also has offices in other locations, including China, India, and Brazil. They partner with Oracle and also are a member of the SAP Extended Business Program. Modules within Intex include sales, production, inventory, purchasing, costing, and quality management. Scheduling is based on both meeting due dates and minimizing costs. Intex also contains a shipment model, and has CRM and PLM functionality. It allows the user to schedule sampling on machines and provides detailed tracking of sampling costs. Intex can be used in fiber, spinning, warping, weaving, dyeing, finishing, and cut and sew operations. Intex has been implemented in a variety of industries, including apparel and home furnishings.

According to Dileep Kumar, Senior Consultant at Intex Consulting Group, there are many advantages of Intex. It has integrated planning across the system and is a finite capacity scheduler. Actual costing is performed throughout the supply chain. Intex enables users to estimate accurate delivery dates during the course of a phone conversation and suggests similar products if the desired product cannot be produced on time. It also allows companies to determine who their best customers are from a profit point of view. According to the Intex website, "Including our co-operation partners and our international subsidiaries, more than 100 textile and software specialists are selling and implementing our solutions worldwide."

Porini
Website: https://www.porini.it/
Porini is a company based in Italy. Porini distributes its software through a channel of partners, including Arquiconsult. The Porini Suite for Microsoft Dynamics 365 consists of Porini 365 ERP, Porini 365 CRM, Porini 365 Apps, and Porini Analytics. Porini 365 CRM is a solution for fashion and retailing. Porini 365 Apps is for retail and includes point of sale (POS) management. Porini 365 ERP is for fashion, retail, footwear, and textiles. It has functionality for spinning, weaving, knitting, dyeing, finishing, printing, and cut and sew. Porini 365 ERP can be also used in technical textiles and geo-textiles. The scheduling module calculates requirements based on due dates and process constraints. The system suggests a schedule based on one of several different algorithms, including first in, first out (FIFO) and priority schemes. Porini takes into account quality control, and it blocks work in process (WIP) from advancing on its route and finished goods from shipping to the customer, if quality specifications are not met. The software has MES and warehouse management capabilities. Porini also has PLM software.

According to Luis Fernandes, Vertical Areas Lead at Arquiconsult, a major

advantage of Porini is its relationship with Microsoft. The software is cloud-based with a subscription fee and is accessed through browsers. Updates occur seamlessly. Porini integrates easily with Microsoft PowerApps, Flow, and PowerBI, as well as the standard Office suite. The Porini website states that they have 150+ projects and 25,000 active users.

Schaeffer Productique

Website: http://www.schaeffer-productique.com

Schaeffer Productique is a French company. Their software includes the ERP/CRM SOLINSyst and has capabilities in inventory management, costing, scheduling, quality control, and logistics. It can be used in knitting, weaving, dyeing, and cut and sew operations. It has been implemented in many industries, including apparel and home textiles. The software is used primarily in Europe. However, there are also some implementations in North Africa. The software is not currently used in China or India.

According to the Schaeffer Productique website, "…Schaeffer Productique is today the European leader in its sector. We integrate the changing needs of the International Textile Industry with the latest advances in digital technologies to support our Customers in their evolution. We regularly bring them the most relevant solutions, at the best conditions." Schaeffer Productique has 200 customers in 12 countries.

Up Solutions

Website: https://www.just-mes.com/en/

Up Solutions is a company based in Italy. Their Just MES software is not an ERP system, but is compatible with many ERP systems. Up Solutions is a Microsoft partner. Just MES consists of the just suite, which has the following four integrated solutions: just plm, just planning, just monitoring, and just quality control. There is one just suite for fashion, and a separate one for textiles and technical textiles. Companies only have to purchase the integrated solutions that they need. For example, carpet manufacturers often only use the just monitoring textile solution. With the textile just planning solution, there are specific programs for spinning, knitting, weaving, and dyeing. The just planning solution also has warehouse management functionality. Just MES does not yet have a program for cut and sew operations. The just planning solution incorporates the option to source production or schedule production. When the user decides to schedule it, they select the priority within scheduling heuristics. Just MES has been implemented in such industries as home textiles, apparel, shoes, and carpet. Most recently, it has be used in the automotive industry.

In describing Just MES, Up Solutions's website says that "… we have now achieved a fundamental goal for us: to offer a complete solution capable of managing and monitoring the entire manufacturing process of the company…Thanks to our consolidated experience in the textile and apparel sector, we are now able to satisfy all those production companies that need to monitor and improve their supply chain." Just MES currently has 160 customers in 30 countries.

Interlem GP Omega

Website:

https://interlemgpomega.it/?lang=en

Interlem GP Omega is an Italian company whose main focus is on small and medium sized enterprises. Their products include the Arianna Textile ERP solution, the Arianna Printing ERP solution for digital printing, and the Net@Pro MES solution. The software has functionality to be used in spinning, warping, weaving, dyeing, printing, and finishing. It is not currently for cut and sew operations. The software has been used for many end applications, including apparel, home textiles, and making carbon fiber. The software has finite capacity scheduling, and the user puts weights on different factors, including due dates and costs. It has CRM and WMS capabilities with order picking. It does not have PLM functionality. Interlem GP Omega sells primarily to the European

market. Its ERP is generally not sold outside of Italy.

Andrea Picone, Managing Partner at Interlem GP Omega, said that one key advantage of their system is that it is more flexible than others on the market. The Interlem GP Omega website says Net@Pro has more than 16,000 users in Italy and 200 user companies. According to the website, the benefits of using the software include speed improvement, production lead time reduction, reduction of waste, completeness of deliveries, punctuality, and resource optimization.

LOOMDATA (Zeta Datatec)

Website: https://en.zetadatatec.com

Zeta Datatec is a company based in Switzerland. Their software, LOOMDATA, is both an ERP and MES system. They deliver both the hardware and software. The system does plant monitoring, quality control, and warehouse tracking. It also can be used for planning. LOOMDATA did not historically have a lot of automated scheduling functionality. However, one of their new features is forward and backward scheduling of orders. Furthermore, the company is willing to customize their software for clients who require more scheduling functionality. Their software is specifically for weaving, knitting, and finishing. It is not used for spinning or sewing operations. The software also does not have PLM capabilities. Industries Zeta Datatec serve include textiles, technical textiles, plastics, pharmaceuticals, cosmetics, food, and paper.

Werner Zberg, Zeta Datatec Co-Owner, said that there are a lot of advantages to using LOOMDATA. He believes that LOOMDATA can more quickly integrated into companies. The software runs on an HP server with Sun Solaris, and he believes that this is a more stable environment. According to the Zeta Datatec website, "Having installed more than 550 systems in 50 different countries around the world, our over 35 years of experience in providing powerful monitoring and planning solutions for the textile industry has given us the ability to produce the most stable and reliable system in the world today."

Discussion

There are a lot of options available when choosing a supply chain APS system. Among the software discussed in this paper, there are significant variations in the software capabilities, types of textiles processes for which the software system was designed, and the final products of textile companies in which the software has been implemented. In addition, some of the software companies have a strong international presence, while others have focused on a particular region. Some of these regional companies may be looking for new opportunities to expand, while others may be content to be regional players.

Before evaluating different supply chain APS software, textile companies should

- clearly define the benefits that they expect to achieve from implementing the new software,
- determine how they would like the software to integrate with and/or replace existing software,
- decide how they would like the software to fit into their existing business procedures,
- and agree on the essential software functions necessary to achieve the desired benefits based on their business procedures.

This information, combined with textile company product and process details, can be used to narrow down which commercial packages seem to best match the company's requirements.

The remaining supply chain APS software can be further evaluated based on a more detailed assessment of both software capabilities and whether company constraints can be met. In terms of software capabilities, having an APS system that automatically generates detailed finite capacity schedules and outputs dispatching lists for individual machines might be very important to a company. If that is the case, can the software

provide that capability? If so, how are those schedules generated? Textile companies should also develop a comprehensive list of business and manufacturing constraints, in conjunction with production managers and machine operators. They should find out which if these constraints can be modeled in the base software system and which would necessitate customization. In addition to evaluating commercial APS systems, textiles companies should consider the alternatives of developing software in house and/or hiring a consultant experienced in supply chain planning and scheduling to develop specialized software. A cost-benefit analysis of each acceptable option should be performed based on a detailed cost breakdown and a well thought-out estimate of the anticipated financial benefits.

Conclusions

Many APS software packages for textile supply chains were presented at ITMA 2019. By carefully analyzing textile company requirements and constraints, in conjunction with software benefits and costs, textile companies can make the most informed decision as to whether one of these systems, a generic (non textile specific) APS system, developing software in house, or hiring an experienced consultant is the best decision for the textile company.