

The industry is continually striving to achieve higher speeds and better board quality from its corrugators. In this effort, it should not be forgotten that starch production must be of the highest possible standard. To make this possible, improvements have been made by changing the way in which starch is mixed. Without that particular knowledge, starch preparation is just mixing of raw materials to achieve a viscous, sticky material. Up until now, maybe that was good enough — but not today.

MORE THAN JUST MIXING STARCH



Paul Eijmberts

Proven Starch Preparation Systems from Alliance Machine Systems

Europe BV are available in two standard capacity ranges, Multimix and Giromix. The Multimix system allows users to prepare 3000 kg of starch per hour and the Giromix can produce 3600 kg per hour. Both systems can be upgraded to achieve higher capacities, (up to 4300 and 5270 kg/hour respectively). This upgrade can be done directly at the time of order, or at a later date on site. The use of pre-heated water reduces the batch preparation time significantly and therefore improves the hourly capacity of the systems. When using the Enhanced Capacity option (second mixing tank) the batch can be pumped

to a second tank for the final mixing stage; in the meantime the next batch can be started in the standard mixing tank. This batch time reduction creates a further increase in capacity. With the combination of both options, the hourly capacity of both systems can increase up to 5270 kg. Both configurations have flexible batch sizes between 600 and 1200 kg of starch per hour.

As the requirement for high quality starch increases, so does the need for consistent supply. One way to improve consistency is to mix liquid additives. The company's Starch Preparation Systems can be supplied with three different injection systems for liquid additives, depending on the accuracy of dosing required. All methods of dosing are fully integrated in the equipment and its



software to allow for full control. Volumetric dosing pumps allow users to add small amounts of biocide or de-foamer in the batch. Water resistant resins can be added in big volumes for a specific preparation batch when needed for making special board — this system has an accuracy of ± 0.3 per cent. High accuracy dosage injection, with an accuracy of ± 100 grams of Liquid Borax is also available. The control software supports all available liquid additive dosages automatically, so no operator input is needed.

For the highest levels of preparation, more equipment is needed than just the starch preparation system. Peripheral equipment like storage tanks, caustic tanks and bulk (bigbag) silo's with auger bins are necessary to complete the preparation process.

Some of the latest features of the company's equipment include:

- **semi-automatic valve system.** Allows users to define their own starch loops. From all starch storage tanks the user can define which starch application this recipe must be directed. Quick changes of recipes with different properties can be set easily.
- **Second terminal in starch preparation area.** Often the remote computer is located in the corrugator control room. From here the supervisor can observe and control the whole plant, including the

starch preparation. With the fully automatic starch preparation system, the visual machine overview is not necessary, because the control software shows every detail regarding the status of the preparation, the status of the starch storage tanks and the levels of the consumables. For maintenance and overview purposes, control from the remote computer can be helpful.

• **Upgrade from MS-DOS to MS Windows XP.** Older equipment is equipped with dedicated Mother Boards which communicate with the MS-DOS-based computer. Nowadays, PLC/MS-Windows control systems are

state-of-the-art, with all the additional possibilities and features. In 2003 the software system control was migrated from MS DOS to MS Windows, using the specially designed 'Starchware' software. As a result, recipe and batching control can be done by operators with easy to use input screens.

FRESH APPROACH

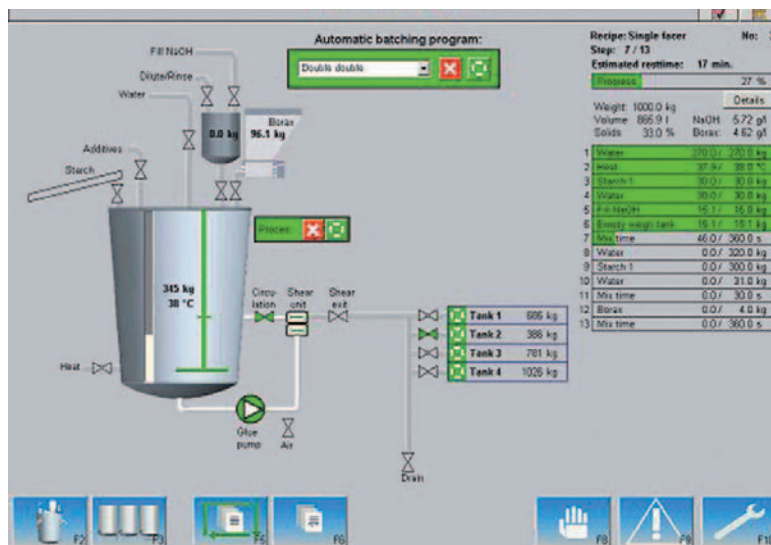
To help achieve a higher level of quality for their range of Starch Preparation Systems in general, the company decided to recruit a Business Line Manager. Mr Paul Eijmberts was appointed to this position for Starch Preparation Systems, in June last year.

SERVICE

"With a dedicated team of service personnel, the company is able to look after repairs, service and regular maintenance," comments Mr Eijmberts. "Frequent system checks and maintenance will help to keep the equipment in top condition and our service personnel are also very experienced in the relationship between the corrugator and starch demands."

PROCESS SUPPORT

"In the market it often happens that the starch preparation equipment is installed, and as soon as the first starch glue flows,



the installation is finished,” explains Mr Eijmberts. “Optimisation of recipes for reaching the highest possible quality is still necessary and that is what you need with the increasing demands of today’s corrugators and their increasing speeds. Of course, preparation and consumption must be balanced, but fine-tuning of viscosity, solid contents and gel point is the major step in process optimisation.”

LATEST SOFTWARE

From the process point of view, control software must have full functionality and show relevant (process) information only, without useless visualisations. The company have developed a dedicated control software, based on Scada (Supervisory Control and Data Acquisition). Major improvements have been made to create enhanced system stability. The software can be used with the keyboard’s function buttons, or by using a mouse or trackball and the user

interface has been prepared for Touch Screens. Different login levels create restricted access to prevent unauthorised access.

The main process screen visualises the mixing tank and all available inlets for raw materials. With one overview, status can be observed. As soon as the preparation process is running, the progress indicator shows the status and indicates time left. Information about the starch storage tanks is indicated, without interfering with the general overview.

In case of a problem, an indicator will request the operator’s attention. Practical information will be available online to bring the system back on line.

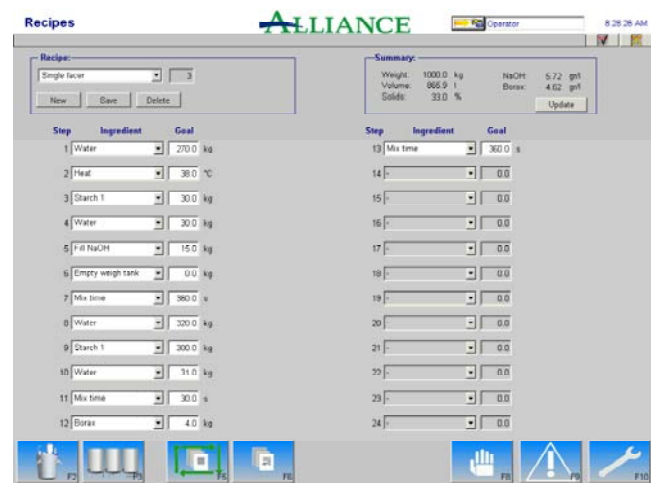
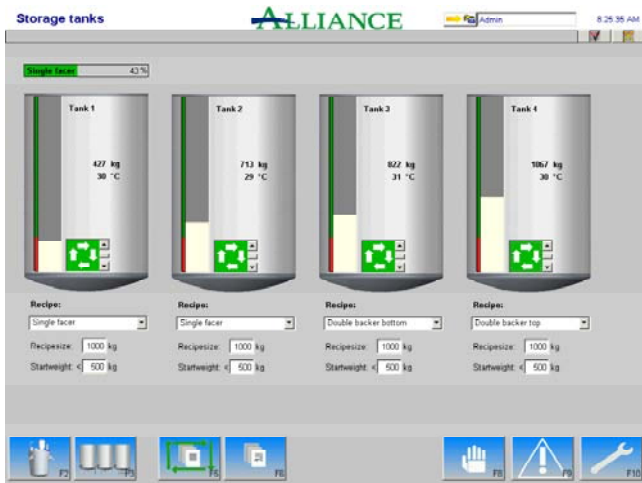
A Storage Tank screen shows all the storage tanks, with their individual information. Quick selectors allow operators to select the desired preparation recipe for each storage tank, their batch sizes and request levels. Just by selecting the action button, the preparation will begin. Setting up the recipe can be done

simply by selecting the desired ingredient and the required amount. The recipe sequence is fully flexible.

For automatic batching the same simple actions can be done by selecting the storage tank number, the recipe for that storage tank, the batch size and the requested level for that storage tank.

An ‘easy to navigate’ panel is used to configure the software in accordance with the system configuration the plant is running. Only the specific features used on that system will be activated. Furthermore, panels for manual operation and alarms and warnings are available.

Recipe and batching set-up is unambiguous and simple. All Batch and inventory information, stored in the SQL-database, can be extracted for printing in pre- or self-defined reports. Queries (pre- or self-defined) can be used for data export to allow interpretation of batch and inventory information.



Alliance Glue Kitchens

‘Alliance has put together a reliable package that will perform well for many years ’

‘The new design is a sensible upgrade of the old Multimix with the small flaws of the old design eliminated ’

‘We were able to purchase the Glue Kitchens within our budget and get them delivered on time ’

‘ I would have no hesitation in recommending Alliance as a supplier of Glue Kitchens ’

Robin Pool, Starch Specialist

**We
get things
moving.**

World's proven solution for Corrugator Starch Production

- Full automatic starch production
- State-of-the-art process control software
- Available in different capacity ranges
- High durable machine parts
- Full process and batch flexibility
- Flexibility in choosing raw material supplier
- Process support for highest starch quality
- Dedicated service organization with highly trained personnel
- The system for superb starch glue
- Complete and perfect solutions

Experiences with Multimix

Cartiera Ondulato Umbro S.p.A. is an independent integrated producer of corrugated board in central Italy. The first corrugator was installed in 1968. In 2002 it was decided to replace the old semi-automatic starch mixing plant. Installation was planned for early 2003.

The old mixing plant, in the middle of the building, had to be replaced and moved to a dedicated area outside. We did not want to install simply a new mixing plant, but the whole starch plant.

We also needed assistance in the project, with technical drawings, dimensioning of piping, pumps and other storage tanks.

We were looking for a supplier independent from starch suppliers, with good expertise, and good know-how to give a quick start up and a good post-installation service.

We had evaluated in the past the Alliance (Serco) mixing plant but we were not convinced by technical solutions and by the flexibility limits of the old software/hardware solutions.

In that period Alliance was developing a completely new Starch Preparation System, Multimix II, obviously based on the experience of hundreds of starch preparation systems working worldwide.

We saw the project and talked about the new Window-based software and finally we made the decision to buy the first Multimix II from Alliance.

Our 35 years experience in making starch was telling us that it was reliable, flexible, operator friendly, and indeed it was.

After a couple of weeks working parallel, we dismantled the old mixing plant, and had suffered no relevant production stops in the first months, which are usually the most critical.

Today, after three years and hundreds of millions of square meters corrugated board production, we still think it was the right choice. The reliability is guaranteed from three independent levels of working:

- Manually, (redundant electrical components)
- PLC-controlled
- Fully automatic with remote-PC

Viscosity is under control with the operator friendly Steinhall system, and we can use treated flexo-water in a safe way. The maximum software flexibility allows also "no carrier" formulations.

Flexibility, reliability, post-sales service for a state of the art Starch Preparation System are Alliance's winning points.

Thanks to Alliance that made this project successful.

Guido Boscherini
General Manager
Cartiera Ondulato Umbro S.p.A.



EUROPE
+31 (0)497 362 500
info.Europe@alliancellc.net
Muggenhool 3
5531 RZ Bladel, the Netherlands

AMERICAS
+1 (509) 535 0356
info@alliancellc.net
5303 E. Desmet Avenue
Spokane, WA 99212 USA

www.alliancellc.net

Prefeeders - RDC Stackers - Specialty Folder Gluers - Load Formers (Palletizers) - Conveyors Robotics - Bundle Handling Equipment - Bundle Separators - Pallet Handlers - Counter Ejectors Stretch Wrappers - Taping Units - Starch Preparation Systems - Stack Handling Equipment

