Ten Guidelines for Choosing the Optimum Cartoning OEM

Following these 10 recommendations will help to ensure maximum uptime and lowest overall cost of ownership during the lifecycle of the cartoner

By Gary Anderson - Director of Engineering & Applications Engineering, PMI KYOTO Packaging Systems

On many packaging lines, the key machine is the cartoner. Problems with the cartoner either in quality or uptime tend to ripple throughout the overall packaging operation both upstream and down, lowering productivity and profitability. The most efficient way to purchase the most productive machine for the application is to find the right original equipment manufacturer (OEM), a company with the capability, value, and support required to deliver a machine on time and on budget that will perform at maximum uptime for years.

For more than two decades, PMI KYOTO Packaging Systems (formerly PMI Cartoning) has worked with end users to provide the highest uptime cartoners in the industry. Through feedback from actual installations and customers and from the adoption of world class manufacturing practices, PMI identified ten critical guidelines for end users to follow when evaluating cartoner OEMs. Applying these recommendations will help to ensure optimum throughput and profitability. These guidelines are:

● **Capability**
  o Application experience
  o Product and material handling
  o Financial stability
  o Worker safety

● **Value**
  o Robust design
  o Manufactured parts control
• **Support**
  - Adequate staffing
  - Parts availability
  - Support materials
  - Remote diagnostics and support

**Capability**

1. **Application experience enables the cartoning supplier to manufacture a reliable, high uptime machine.** Experienced OEMs proactively address technical issues *before* they become issues.

   The discerning end user looks for the deepest possible experience, expertise, and broad engineering resources in a cartoning OEM. In discussions with OEMs, listen carefully for probing questions on technical concerns. Insightful technical and application questions indicate an OEM team focused on providing the best possible solution. The OEM should be able to showcase the company's overall capability through video of machines built for similar applications, leading to a thoughtful exchange of details about the end user's product, product handling on the machine, throughput, uptime, long term plans for the line, and end user plant environment.

   The OEM must possess expertise in integrating complex systems. This experience demonstrates industry knowledge, technical abilities in setting up communications with machines upstream and downstream from the cartoner, and a cartoner OEM that effectively partners with other OEMs and its customers. Integration expertise also shows that the OEM has resources that extend beyond the cartoner, which is essential in an era of network connectivity of embedded devices.

2. **Product and material handling maintains product integrity and ensures system and line efficiency.**
The cartoner must precisely control and handle the product. Accurate handling and timing are paramount to a well running line and without quality handling desired throughput cannot be obtained. The OEM must show how its design establishes full control of the product and material from the start of the process to end. And the proposal team must demonstrate that product and material handling is well controlled and maintained throughout the process. Beware an OEM that skirts over technical details of control and handling. Video focusing on product handling is important; a tour of the OEM’s manufacturing floor is even more so. The proposal team will highlight their company’s approach to control and handling on actual machines, demonstrating how various challenges are solved.

3. **Financial stability ensures the end user is able to take on the project.**

   In the market today, it’s not uncommon for customers to have net 60 or net 90 days on their payments. Financial stability ensures that the OEM is sufficiently funded to complete the job during this payment deferral period. Otherwise corners could be cut and/or the project delayed. End users are well served by securing third party financial data. Due diligence on the financial stability end will pay dividends.

4. **Worker safety is paramount.**

   The cartoning OEM must have a passion for safety and the wherewithal to engineer safety into the machine. There is nothing easy about safety engineering. It requires extensive experience. The OEM team should demonstrate its capabilities to eliminate potential risks and safety problems. The OEM needs to ensure that hazards
are eliminated, guarding is in place, lockout/tagout (LOTO) for critical areas will be instituted, and the entire machine will meet UL, NEC, CE, and CSA codes.

In initial discussions about the new cartoner, an OEM will typically be more focused on the capability of the machine. Once the initial design demonstrates that the machine will operate as specified, it is time to look into safety and the OEM’s approach. OEMs should have the capability to manufacture the electrical panels. Taking responsibility for the electrical panels is critical and demonstrates attention to detail from the OEM. During the OEM plant tour, make it a point to have machine safety features pointed out.

Value

5. Robust design allows end users to maximize productivity, reduce downtime, and extend machine life.

Interestingly a large stationary component – the foundation of the machine – has a major impact on handling, operation, and component wear. The more robust the design and construction of the frame, the more stable the machine’s operation. Lighter frames may result in long term trouble due to vibration and deflection of the machine foundation. Vibration is the enemy of precise handling. Vibration tends to accelerate component wear, while a more stable machine lends itself to higher speeds and greater reliability.

Machines with lighter frames also tend to flex during transportation, or when moved to a different line in the plant. Flex in the frame makes it exceedingly difficult to bring all of the settings back to the zero point of original manufacture. Listen carefully for
the OEM to emphasize the importance of a robust frame to cartoner operation and long operational life. During the tour of the OEM’s plant, assess machine frames.

6. **Control of manufactured parts from the start of machining allows the OEM to control delivery schedule, quality, enhance fit and finish, and ensure the availability of quality replacement parts.**

   Some OEMs source a portion of their machined components from job shops and thereby lose control of their manufactured parts. Look for an OEM that does all of its own machining in-house. This provides factory level control of fit, tolerances, quality, cost, and on time schedule. Ask about control of manufactured parts and the impact on overall quality.

   Also be aware that manufactured parts control has an impact on long term support of the machine. If the OEM has to contact a job shop for a replacement part, there may be delayed delivery and longer response time. During the OEM plant tour, assess the production equipment on the floor and the operational environment of the machine shop. Does the OEM have the latest technology? Is the machine shop clean and orderly?

**Support**

7. **Adequate staffing is essential for installation, training, field service, and upgrades. And the same team that built and tested the machine should support it.**

   When discussing support with a prospective OEM, talk with members of the support team. Gauge their knowledge and passion for end user uptime. The end user should feel comfortable that the OEM has the bench strength to support the machine.
Determine whether the support team is made up of the same people who designed and built the cartoner. This is important because of the great deal of knowledge about the machine and packaging application that resides with these engineers and technicians. Expert familiarity with the actual cartoner and application ensures faster resolution of problems and high uptime. Continuity of the team also means a great training experience. No one knows the cartoner and details of the application better than the people who built it. They will be able to answer every question and provide real insight about machine operation.

When the people who design and build a cartoner know they will be supporting it for years, they will make sure the machine has excellent operational characteristics and is easy to work on. Having designers and technicians provide field service also means that valuable feedback and insights will be brought back to the OEM’s plant to improve design.

8. **Parts availability is essential to uptime.**

When the OEM controls the manufacture of its own parts, quality and faster replacement are assured. The OEM does not have to call a job shop for the part and be subject to the job shop’s manufacturing schedule.

Furthermore, OEMs must be diligent in their sourcing of commercially available parts such as actuators, relays, PLCs, valves and valve terminals, servo motors, air prep systems, and more. Commercial products must first of all be sourced from world class suppliers that have recognized quality and performance as well as established local and regional distribution channels. These channels will ensure fast availability of
replacement parts. The distributor personnel handling the top tier component suppliers are typically adept in terms of cross referencing parts that may have been replaced with newer technology.

9. **Support materials must be included with the machine in electronic and hardcopy format.**

   Topflight documentation must include all of the source codes, electrical files, original machine parameters and settings, complete set of machine drawings, complete bill of materials, and commercial part numbers and manufacturers. OEMs should have a documentation department with sole responsibility to ensure that the electronic records and hard copy are 100 percent complete and accurate. Documentation will be easily accessible from the cartoner's human machine interface (HMI). During training, the OEM support team will spend time making sure maintenance personnel and operators understand the value of the documentation at their fingertips. During the tour of the OEM’s plant, ask for an on machine documentation demonstration.

10. **Remote diagnostics and technical support**

    There will always be cases with mechanical systems that require a factory technician to be dispatched for field service. With servo electronics and other smart systems, however, far more diagnostic and support services can be performed through secure Ethernet connectivity via the Internet. Ask the OEM for a demonstration of remote diagnostics and support utilizing one of the machines on the OEM’s shop floor. Also, make it a point to learn more about the OEM’s online and on call support infrastructure. If there is a problem on third shift or over the weekend, how would the OEM support the end user?
Following these guidelines for capability, value, and support when evaluating cartoner OEMs will go a long way to ensuring productivity and lowest total cost of ownership over the lifecycle of the machine and the overall packaging line.

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For more information, contact:

850 Pratt Blvd.
Elk Grove Village, IL 60007 USA
847-437-1427
sales@pmikyoto.com
www.pmikyoto.com