

a **TNA** whitepaper

# turnkey solutions

project management, controls & integration,  
training: three ways to get the most out of  
your turnkey solutions provider





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With over 20 years of sales, marketing and business management experience within the food industry, Michael is responsible for further developing TNA's systems and processes in order to meet the global needs of TNA's expanding customer base. Much of this rests with supporting and encouraging global and local collaboration aimed at helping food manufacturers improve productivity and performance.

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### **summary**

# introduction

In today's market, turnkey solutions are a growing trend across the food industry. For many food manufacturers, selecting a turnkey solutions provider for all their packaging and processing needs is a hassle-free way to manufacturing success. However, it's important to find a single-source supplier that can deliver the industry-leading technology and first-class services needed to maximise the potential of the entire production line.

An installation for example, often involves much more than design, set-up and testing. As such, a complete turnkey solutions provider offers comprehensive products and services before, during and after installation is complete, taking full responsibility for the entire project from start to finish. These solutions include total project management, controls and integration and training. In addition, a turnkey supplier also ensures that every detail is covered, no matter how small, giving plant managers complete peace of mind.



# 1 total project management

Project management is a methodical approach to planning and guiding project processes from start to finish. Understanding effective project management techniques helps organisations carry out large-scale projects on-time, on-budget and with minimal disruption to the rest of the business. For example, keeping any project on track requires strict management of metrics and project goals that extends across the project team and out to suppliers, contractors, the customer and stakeholders. From assessing the production site and its capabilities, to testing the equipment and helping integrate it to maximise the efficiency of the whole line, project management is necessary to ensure project success. For example, adding or replacing parts of an installation, involves a multitude of tasks that when plant managers handle themselves, can become time-consuming and distracting. These extra tasks can include, planning, execution and evaluation.

However, partnering with a turnkey solutions provider can help plant managers to overcome these challenges. Comprising every detail of project management, such as finding a site for pre-installation or delivery logistics, a single-source supplier can offer plant managers total peace of mind that every aspect is covered throughout the life of a project. In this sense, the total solutions provider takes full responsibility of the project – from start to finish. This removes the burden from plant managers who are often managing multiple projects.

Alongside providing ongoing specialist technical support and expertise throughout an entire installation, turnkey solutions providers also implement the latest technology to benchmark the project management process. The very latest digital software for example, enables the

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3D design layouts of equipment to significantly facilitate the pre-building process and keep downtime to an absolute minimum during installation. Furthermore, acting as business consultants, turnkey suppliers also help select a number of key objectives, such as project timelines, production improvement and expected return on investment that will serve as a guide throughout the implementation of the project to ensure maximum return on investment.

## 1.1 support from start to finish

For many plant managers, the presence of a dedicated project manager throughout an installation can provide invaluable support. In particular, selecting the right equipment and supervising the installation project can be a significant challenge for plant managers. And as food production systems become increasingly sophisticated, manufacturers are faced with an array of considerations, such as: which system will help me meet the new demands? Will it be compatible with my current production line or will I have to make adjustments? How can I minimise downtime? Identifying all the requirements for the new project and addressing every detail adds workload to existing daily tasks and can impact the overall duration of the project.

A turnkey solutions supplier can provide support throughout every stage of the process; from initiation and planning to execution, monitoring and project closure. With a holistic view of the production line they can recommend the system that really fits with the client's needs and advise on best industry practice and legal requirements. Not only will they take care of all the aspects of the new installation, saving a lot of time and paperwork, they will also be responsible for the seamless integration of the new equipment into the production line, meaning plant managers can stay focused on their daily tasks. In addition, the project manager, assigned as the main point of contact, brings invaluable support to the project alongside an appointed team of specialists, from collecting and tracking project deliverables, to owning the project budget and configuring sophisticated equipment. Involved in the installation from the very beginning, their expertise and technical knowledge will help manufacturers achieve manufacturing success, by ensuring the project is installed within budget and on-time, every time.

## 1.2 modular equipment

Finding bespoke machines that match your key performance indicators (KPIs) can be a significant challenge. Every manufacturer has specific requirements in terms of quality and quantity and even the most advanced systems require set-up and programming to achieve the company's KPIs. While single system suppliers are able to estimate what a system can achieve as a stand-alone unit, turnkey suppliers can estimate and improve how effectively it will work within the entire production line. Through their intricate understanding of each and every piece of hardware, software or electrical equipment, turnkey solutions providers can meet integration protocol and holistic customer requirements. This is achieved by installing modular equipment, constructed with standardised units or dimensions to provide the ultimate flexibility across different systems. Furthermore, a turnkey solutions provider takes responsibility for overcoming any integration issues so the plant manager doesn't have to.



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As well as taking on the project management of the new system, the project manager works alongside a team of experienced engineers. Via their in-depth technical knowledge, for example, equipment can be fine-tuned to ensure the installation is tailored to the customer's specific objectives. Ensuring the new installation is seamlessly aligned to the rest of the production line is one of the project manager's key responsibilities, together with maximising its overall efficiency. In the hands of a turnkey solutions project manager, solutions provided to customers are ready to use right after the installation.

## 1.3 investment security

When investing in a new system, ensuring it meets all the required expectations and performance targets is a key consideration for

many manufacturers. Excessive downtime, limited performance and unforeseen installation issues are all factors that could inevitably reduce the success of the installation in terms of quality and budget, as well as the ability to complete the project on-time. However, part of a project manager's role is to remove this burden from plant operators, help foresee any potential issues and find the most appropriate solution.

When it comes to plant downtime, every minute counts. Whether it's adding a new machine or replacing a full system, a good turnkey solutions provider understands it is extremely important to minimise installation time and re-start production as soon as possible. Pre-assessing and preparing the site for the installation are just some of the extra measures used to ensure the process runs smoothly. Furthermore, many manufacturers undervalue the risk of a delay during a project – partnering with a turnkey solutions provider not only saves many hours of planning, but also helps to avoid unforeseen complications to ensure a smooth installation.

Pre-testing and pre-building a system offsite for example, can significantly reduce the installation window and ultimately, downtime. The new system can be fully tested before it is assembled in the plant, therefore reducing the risk of unexpected problems and delays during installation. As such, any minor inefficiencies or inaccuracies are easily resolved before the new machine is integrated into the existing line, ensuring production continues as quickly as possible. In this regard, the project manager

has the skillset and knowledge to take on full responsibility for the work prior to installation. From finding the appropriate external site for a pre-build to assembling the pre-installation team and ensuring on-time delivery, the turnkey supplier manages every aspect of the pre-installation phase.

Furthermore, a factory acceptance test (FAT) is an effective solution for food manufacturers to preview and test the equipment. Tests not only check if the equipment meets the pre-set specifications, but also if it is fully functional. A FAT usually includes a check for completeness, a verification against contractual requirements, a proof of functionality (either by simulation or a conventional function test) and a final inspection. The results of these tests demonstrate to the client how the system performs in production and allow final adjustments to be made before the installation is complete. This provides the customer with complete assurance the equipment runs as expected.

In addition to a FAT, a factory design suite will help visualise the result of the new installation and identify any additional modifications that may be required. Depending on the manufacturers' individual needs, the project manager will be able to organise a 2D projection or a more realistic 3D walkthrough. With a turnkey supplier, the project manager organises all of this, from the scanning session at the factory to delivering the final projection and communicating any adjustments required. As a result, there is complete support from the very beginning of a project through to installation completion.

## 2 effective controls and integration technology

As production lines become more and more automated to keep up with growing competition, it is increasingly important for food manufacturers to keep full control of all operations. To accomplish this and ensure smooth and efficient operations, effective electrical controls integration and reporting technology are essential. Once implemented, it provides a full, timely overview of the whole production line. A turnkey solutions provider offers a broad range of control systems that can help throughout the whole manufacturing process. From providing

360 visibility to keep control of energy costs, product quality and process inefficiencies, to ensuring seamless integration to maximise line output, the best controls system gives plant operators a single point of control.

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### 2.1 single point of control

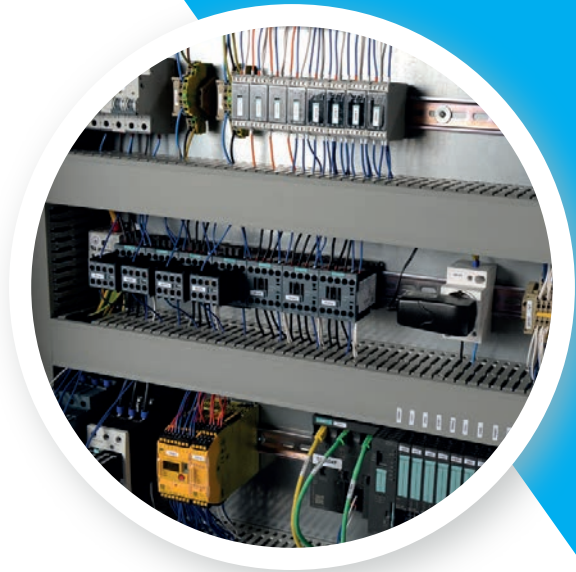
To ensure maximum efficiency, a plant manager needs visibility of every section of the production line. To do so, they require a detailed, reliable and timely report from the entire line. However, a production line is often composed of machines that employ different software, making it difficult to evaluate reports and run detailed diagnostics. Often, supervisors receive information on several screens, which limits visibility and duplicates effort and increases the risk of human error.

A turnkey solutions supplier can provide plant managers with a standalone SCADA system that is applied to every unit of the production line. Capable of gathering information from the entire line, these systems deliver comprehensive diagnostics for each machine from a single platform. Once collected, all the information is logged in a central database to create detailed and accurate reports, which can easily be accessed from a clear and concise HMI (Human Machine Interface) system ensuring a quick, efficient and seamless response.

### 2.2 360 visibility

As discussed above, a full control system that monitors the production line from start to finish is essential to gain a complete overview. When a plant manager does not have this, there can be a lack of visibility, hiding leaks, waste and inefficiencies – all of which are factors that affect overall equipment effectiveness (OEE). With today's production lines often running at break-neck speeds, even a small issue, can affect the entire production cycle before the fault is noticed. These issues include product breakage, excessive energy consumption, mechanical fault, etc. A monitoring approach that focuses on individual sections might not be enough to identify a

production flow. As a result, the issues described above will only be recognised by analysing the production line as a whole. A turnkey solutions supplier can help develop a detailed user requirement specification (URS) based on the company's specific objectives. A valid tool for plant managers to quickly identify any sign of inefficiency, the URS is key to reducing waste. The URS is translated into a functional design specification (FDS), a report including an organised list of requirements to smooth the product flow. Once targets have been set, a turnkey supplier can also provide the technology to keep track of progress. Control systems such as supervisory control and data acquisition systems for example, collect the information from every unit of the production line.



Partnering with a turnkey solutions supplier helps provide the technology needed to balance the resources between staff and machines. In terms of operational efficiency, workers play an essential role in the outcome of every production facility. A good coordination between technology and human labour is vital to the overall efficiency of any production. The idea that trained staff is enough to maximise the output of modern equipment is being challenged by the development of increasingly user-friendly technology. Conversely, standard reports and fixed interfaces and dashboards alone are usually insufficient in meeting business' complete reporting and analysis needs. However, a total solutions supplier with a turnkey approach will allow the customisation of dashboards and reports, to highlight relevant information in an intuitive proactive rather than reactive format. This provides plant operators with a thorough analysis of the business' processes to identify which sections will benefit from automation. For example, a number of processes within a production plant can be automated to remove repetitive functions and reduce the margin for human errors.

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### 2.3 seamless integration

Working efficiently is imperative for any business as it significantly impacts profitability and competitiveness within the market. Every time there's a new addition to the production line, it is extremely important to ensure seamless integration among all equipment. Inaccurately tuned controls systems, for instance, can inflict inefficiencies in all areas of the production line – including low product quality, excessive labour costs, material wastage, process efficiency and poor environmental control. Collecting and examining data from the whole production line is therefore essential to develop and implement an effective operating plan. This may involve the installation of plant sensing devices to detect violations or leakages, the replacement of inaccurate pieces of equipment, or the tightening and interlocking of control parameters within the existing programmable logic controllers (PLC) application code.

A service-led turnkey supplier can support plant operators with software setup. Using a dedicated software package, such as Rockwell Automation RSTune, to fine-tune the proportional integral derivative (PID) loops and revisiting the original PLC control code will greatly improve the control situation. This is achieved in a number of ways. For plants requiring more complex loop tuning, the use of predicative and adaptive systems, such as a model-based controller that sits above the PLC control loop on its own PC-based platform, can be considered. Using these models, the system predicts the direction the process is taking and makes corrective actions before production can deviate from its set points. A turnkey solutions supplier with broad controls and integration expertise provides invaluable knowledge and advice to plant managers on the best systems for their line when this process is carried out.

## 3 training

Maximising the efficiency of a new installation does not stop with mechanical, software and electrical integration. To make the most of the new equipment's potential, plant operators and engineers need to retain as much knowledge of the new equipment as possible to ensure processes run smoothly after the installation is complete. Among the factors that contribute to the overall efficiency of a food production plant, a fully trained workforce is top of the list.

Investing in employee training means improving the ability to operate new and existing machines safely and efficiently. By increasing personnel skill levels, a tailored training programme, delivered by experts, will boost the day to day output and build a foundation for long term development. The service offered by a turnkey solutions supplier goes beyond selling a new piece of equipment and includes a range of flexible training solutions that can fit the needs of every food manufacturer.

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### 3.1 everything covered

Getting to know the machines that make up a plant's production line is essential to maximise production efficiency. As food production equipment becomes increasingly sophisticated, a general knowledge of food engineering is no longer enough when it comes to technical maintenance. Every machine has its specific features and a tailored training course comes with extra benefits of having an in depth knowledge of specifications. Having detailed in-house knowledge can significantly speed up processes and reduce downtime.

A first-class turnkey solutions supplier offers a wide range of training solutions to cover every technical aspect of the machine that might need attention. For example, product-specific operator training, should include, safety, installation, trouble-shooting guidelines, cleaning requirements – as well as other important training modules that can be tailored to the customer's bespoke needs. Maintenance training on the other hand, tends to cover both electrical and mechanical modules with a focus on reducing downtime. It is essential for a training programme to combine both theoretical and practical aspects as well as provide technical insights that bring real added value to the supporting documentation.

### 3.2 flexible training solutions

Finding a training course that meets individual needs in terms of organisation and technical knowledge is vital when it comes to getting the most out of newly installed equipment. While, choosing a single, short training course for all the plant's employees might seem a quick win in terms of time and budget limitations, this can often lead to pitfalls in the long run due to a lack of tailored content. With a detailed, customised training course, plant managers can be assured their engineers and operators have the skills to quickly diagnose any inefficiencies and promptly address them. Even the simplest of issues can cause unnecessary stress and slow production. To address this, routine maintenance and smooth running of equipment are also essential in training modules.

In addition, providing tailored training according to job role and skill level is vital to ensure plant operators are receiving the most relevant information to them. An electrician, for instance

may require different information to an engineer. Meanwhile, different processing plants have specific needs and requirements in terms of training. That's why organising an on-site training course is a great opportunity for companies that have the space and resources.

Offering full project management support, a turnkey solutions supplier can guide you through the process of choosing a training programme that helps you to overcome the challenges of operating today's technologically advanced equipment, no matter what your skill level, budget or location. In many cases, a combination of both on-site and off-site training options is essential to accommodate the needs of businesses of any size.

At the same time, on demand courses, such as online courses are a great opportunity when the team is located in different time zones and cannot attend the same session at the same time. Training is also offered at a variety of skill levels to offer further flexibility. As part of turnkey training solutions, teams can learn to set up equipment or become experts so they are able to perform basic maintenance, as well as help train new operators. As such, a complete turnkey solutions provider should offer a variety of training courses to suit individual needs, whether it's online, on-site or at the supplier training facility.



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## summary

Over recent years, the need for food manufacturers to quickly adapt their production to the latest consumer demands has grown considerably. In turn, this has raised awareness of the huge value that can be achieved when partnering with a professional turnkey solutions supplier. Covering everything from design to after-market support, turnkey solutions suppliers like TNA provide invaluable expertise. This full project management support from start to finish, enables manufacturers to innovate and improve production lines resulting in maximising output and efficiencies. As part of our complete 360° support, we provide our worldwide customers with the guidance they need, pre, during and post installation to ensure that their objectives were achieved. Supported by a global network of industry experts, TNA has the ability to help food manufacturers through all the stages of their food production activities.

If you would like to find out how TNA can help you choose a turnkey solution that suits your needs then please contact us at [www.tnasolutions.com](http://www.tnasolutions.com) or email us at [tnateam@tnasolutions.com](mailto:tnateam@tnasolutions.com)

TNA is a leading global supplier of integrated food packaging and processing solutions with over 14,000 systems installed across more than 120 countries. The company provides a comprehensive range of products including materials handling, processing, coating, distribution, seasoning, weighing, packaging, cooling, freezing, metal detection, verification and end of line solutions. TNA also offers a variety of production line controls integration & SCADA reporting options, project management and training. TNA's unique combination of innovative technologies, extensive project management experience and 24/7 global support ensures customers achieve faster, more reliable and flexible food products at the lowest cost of ownership.

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