

# FRESH Ideas

新的创意

食品工业中新的创意  
Fresh Ideas in Food Manufacturing

优化运作  
Optimizing Your Operations



# 食品生产 操作



烘烤食品和小吃	原料处理	调配	成型	烘焙	包装	仓库储存
肉类和禽类	屠宰	冷冻	分割	清洗	分类	包装
奶酪制品	原料处理	培养	分离	成型/挤压	冷冻	包装
糖果	原料处理	调配	熬制	成型	包装	仓库储存
水果和蔬菜	原料处理	清洗/去皮	剪切/精加工	处理	包装	仓库储存

**罗克韦尔自动化**是食品处理和生产企业最佳合作伙伴，从原始材料到最后成品的各阶段，可以满足这些企业成本、质量、灵活性以及不断的挑战。

罗克韦尔自动化食品生产优化方案关注于面向食品工业的商业问题，专注于食品生产运行的每一个阶段。解决方案的基础包括产品(现场设备、控制系统、可视化平台、信息系统)和服务(咨询、项目管理和实施、技术支持)，需要成功地实施这两部分，以提高生产线运行质量。罗克韦尔自动化在自动化领域的专业技术和信息架构很容易整合到商业系统中，帮助企业优化人力和物力的使用，帮助企业满足消费者和零售商需求的同时减少浪费。

# 食品生产优化方案运行中

## 食品工业成功范例

### ENZAFOODS有限公司

浓缩苹果汁产品采用厂级范围的解决方案

- 提高数据采集能力
- 减少安装成本30%
- 提高质量、产量和效率
- 减少维护

### 减少水果处理成本30%

“通过紧密地控制，提供给操作员更好的可见度，产品的质量显著提高。”

MARK HEATH，STREAT自动化项目经理(负责ENZAFOODS有限公司系统集成)。

### 嘉里配料

配置大批面粉自动处理解决方案。

- 生产中断降到最小
- 提高质量、可用性和产量
- 提高效率35%

### 估计2年内收回成本

“新的[面粉称重]系统是全自动的-它的连贯性达到了前所未有的程度，而且也减少了再加工和操作员错误。生产浪费也显著减少...它确实改善了生产过程。”

AL ZENONI，Kerry配料的现场工程师。

### Leahy Orchards

实施设备性能改进方案

- 实现重要数据网络实时访问
- 优化运行
- 提高日效率到80-90%
- 减少废料40-50%
- 增加产量10%

### 实现少于8个月收回成本。

### Major Cereal Producer

包装生产线升级为全集成控制系统。

- 提高了袋尺寸、产品类型和袋结构的灵活性
- 提高装袋机生产速度到600-700袋/分。
- 提高纸袋包装机产量到120-140纸袋/分。

### 增加生产量40%。

### Tegel Foods

实施配料运送控制系统升级。

- 优化配料挤压机的运行
- 增加产量10%
- 减少挤压机停工时间40%
- 解放了操作员时间

### 3个月收回成本

“每一个配方或食谱被储存，以便机械可以自动地以该配方的最佳条件运行。不需要操作员进行精调。即使配方是多变的，压力总是受控的。”

WHAREHOE LISSINGTON

TEDEL FOODS 产品经理。

### 三角包装

新的垂直纸袋包装机

- 集成动作和机械控制
- 提高循环速度和次数
- 减少地面空间和维护成本
- 减少工程时间

### 减少生产方法转换时间到10分钟。

“灵活的结构允许我们再使用该设计，简化工程任务...我们可以设计一个用户可以承担得起的机器，提供用户最高等级的灵活性和质量。”

ATEVE BERGHOLT

TRIANGLE PACKAGING 首席电气工程师

### Fresh Foods Manufacturer

实施自动生产进度安排方案

- 集成有SAP/3企业资源规划系统
- 减少产品储存和生产过剩
- 实现生产和厂级交货进度的连续运行

### 减少订货周期为12-24小时。

# results

# 二十一世纪

## 食品工业的机遇

### 生产灵活性

今天的消费者需求更加广泛的食品。他们的购买行为包括预包装好的配餐、体现民族特色的产品、具有独特风味的熟悉的食品和满足消费者生活方式需求的产品。为了满足消费者需求，迅速地把新产品推向市场，食品生产商必须具有灵活性，具有在现有的生产线上生产多种产品的能力。罗克韦尔自动化的集成架构和在制造执行系统方面的专业技术帮助生产商提高工业灵活性，为推出新产品，允许生产线快速调整和系统快速转换。

### 新兴市场

在新兴市场中，例如亚洲和拉丁美洲，许多公司采用新设备，提高他们的生产能力，满足日益增长的人口需求。这些新的设备采用最先进的技术，是最新型的。罗克韦尔自动化与食品OEM(原始设备制造商)、设计公司和食品生产商密切合作，为这些新设备提供解决方案，在很多情况下，包括活跃在多个国家的执行小组。罗克韦尔自动化的全球化能力、在食品工业的专业技术和经验是他们成功的关键。

### 提高利润

全球化和食品工业内的合并运动已经产生了非常激烈的竞争环境，大大减少了食品生产企业的生产利润。作为响应，为了减少运营成本并增加利润，许多食品企业正在已建立的市场上巩固业务，积极地实施连续的改革措施，并在新兴市场增加投资。罗克韦尔自动化咨询服务、系统实施和提供广泛的产品帮助食品生产商积极响应市场条件，达到他们的运行利润目标。

### 零售商对生产的影响

为满足大型零售商的需求，食品企业不得不调整他们的生产和供应链策略。这些零售商采用及时库存调节供应模型，要求食品生产商必须对市场需求变化快速反应。食品企业不能再生产储存，为了满足大型零售商的需求，而必须及时调整生产计划，几乎以日来计算。罗克韦尔自动化能帮助食品生产商配置系统，连接工厂层产品的供应链。这些系统能使生产商把零售商需求转换为工厂生产进度表，并实施生产操作，满足这个进度表。



# 罗克韦尔自动化

## 食品工业 优化方案

### 规范数据管理

该方案用于测量、采集、记录和报告重要数据，以便监控生产运行，帮助满足食品卫生和安全的规范。

- 食品卫生和安全
- 记录的精确性和可靠性
- 管理规范
- 品牌资产

### 跟踪和产品系列

该方案用于跟踪和记录生产过程每一步使用的资源(原料、人力、设备)和操作，并为产品生成完善的产品系列。

- 食品卫生和安全
- 品牌资产
- 产品召回
- 安全规范

### 产品优化

自动化和信息解决方案可以更好地监视和控制生产运行，提高效率和功效，帮助提高产量，减少废料并减少运行成本。

- 一致品质
- 减少浪费和再加工
- 生产灵活性
- 提高产量
- 减少循环周期
- 生产量

### 生产进度和订货

该方案用于确定生产进度和监控产品订货，提供工作指导和步骤并分析在工厂级改善执行的实施办法。

- 生产进度
- 库存管理
- 供应链部署
- 优化设备使用

### 配方管理

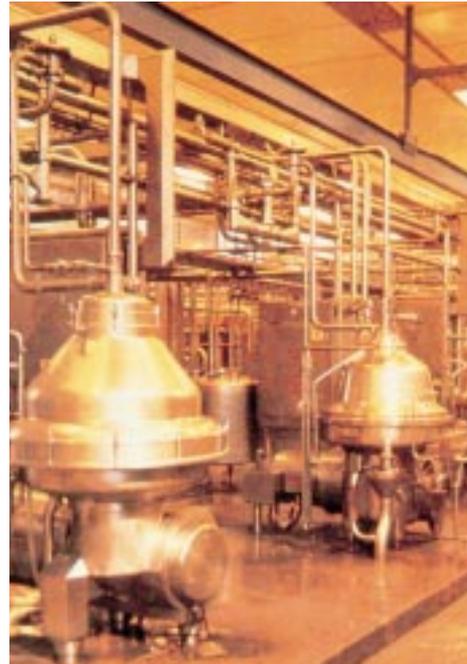
自动化和信息方案可以用来更好地管理产品配方和生产过程，以确保生产连续性。

- 一致品质
- 减少浪费和再加工
- 产品规范管理
- 提高产量
- 减小循环周期

### 资产利用

该方案用于设计、监视和控制资产的安全使用，生产设施包括设备、机械、供电和劳动力。

- 设备可靠性
- 巩固生产
- 生产灵活性
- 资源分配和利用





## Rockwell Automation

# Food Manufacturing Optimization Solutions

### Regulatory Data Management

Solutions that measure, collect, record, and report on the critical data necessary to monitor operations and help with regulatory compliance for food safety and security.

- Food Safety and Security
- Record Accuracy and Authenticity
- Regulatory Compliance
- Brand Equity

### Tracking and Genealogy

Solutions that track and record the resources used (raw materials, people, equipment) and actions taken during each step of production and generate a complete genealogy for each lot of production.

- Food Safety and Security
- Brand Equity
- Product Recall
- Regulatory Compliance

### Production Optimization

Automation and Information Solutions to better monitor and control production operations for improved efficiency and effectiveness to help improve yield, reduce scrap, and reduce operating costs.

- Consistent Quality
- Reduce Waste and Rework
- Production Flexibility
- Improve Yield
- Reduce Cycle Time
- Throughput

### Scheduling and Order Execution

Solutions to schedule and monitor production orders, provide work instructions and procedures, and analyze operations to improve execution on the factory floor.

- Scheduling
- Inventory Management
- Supply Chain Logistics
- Optimize Equipment Usage

### Recipe Management

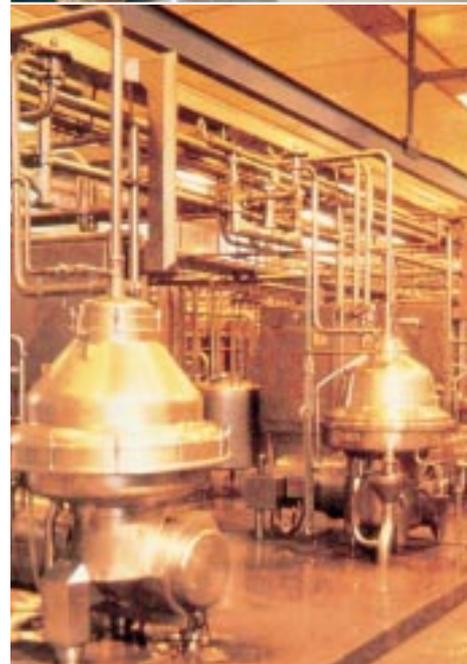
Automation and Information Solutions to better manage corporate and site-specific product recipes and production processes to help ensure consistency.

- Consistent Quality
- Reduce Waste and Rework
- Product Specification Management
- Improve Yield
- Reduce Cycle Time

#### Asset Utilization

Solutions to design, monitor and control the safety and utilization of assets in the manufacturing facility including equipment, machines, utilities, and labor.

- Equipment Reliability
- Production Consolidation
- Production Flexibility
- Allocation and Utilization of Resources



# Food Manufacturing Operations



<b>BAKED GOODS &amp; SNACKS</b>	<b>Material Handling</b>	<b>Mixing</b>	<b>Forming</b>	<b>Baking</b>	<b>Packaging</b>	<b>Warehousing</b>
<b>MEAT &amp; POULTRY</b>	<b>Slaughtering</b>	<b>Chilling</b>	<b>Splitting</b>	<b>Cleaning</b>	<b>Sectioning</b>	<b>Packing</b>
<b>DAIRY &amp; CHEESE</b>	<b>Material Handling</b>	<b>Culturing</b>	<b>Separating</b>	<b>Forming/ Extruding</b>	<b>Chilling</b>	<b>Packaging</b>
<b>CONFECTIONARY</b>	<b>Material Handling</b>	<b>Mixing</b>	<b>Cooking</b>	<b>Forming</b>	<b>Packaging</b>	<b>Warehousing</b>
<b>FRUITS &amp; VEGETABLES</b>	<b>Material Handling</b>	<b>Cleaning/ Peeling</b>	<b>Cutting/ Sizing</b>	<b>Processing</b>	<b>Packaging</b>	<b>Warehousing</b>

**ROCKWELL AUTOMATION** is the partner of choice for food processing and manufacturing companies who want to meet their cost, quality, flexibility, and regulatory challenges @C from raw material through final shipment.

Rockwell Automation Food Manufacturing Optimization solutions focus on the business issues facing the food industry and address every phase of food manufacturing operations. Elements of the solutions include products (field devices, control systems, visualization platforms, information systems) and services (consulting, project management and implementation, support) that are required to successfully implement and improve operations. Rockwell Automation domain expertise and information-enabled architecture easily integrate with business systems to help optimize utilization of valuable and limited human, physical and financial assets, and to help minimize waste while satisfying demanding consumers and retailers.

# Food Manufacturing Optimization Solutions in Action

## A Sampling of Successes in the Food Industry

### ENZAFOODS Ltd.

#### Implemented plant-wide solutions for apple juice concentrate production

- Improved data gathering
- Reduced installation costs 30%
- Improved quality, yields, and efficiency
- Reduced maintenance

#### REDUCED FRUIT PROCESSING COSTS 30%

"By providing tighter control of the process and better visibility to the operators, the quality of the product was noticeably improved."

MARK HEATH, PROJECT MANAGER, STREAT AUTOMATION  
(SYSTEMS INTEGRATOR FOR ENZAFOODS LTD.)

### Kerry Ingredients

#### Deployed an automated bulk-flour handling solution

- Completed with minimal production disruption
- Improved quality, usability, and yield
- Improved efficiency 35%

#### ESTIMATED ROI IN 2 YEARS

"The new [flour weighing] system is fully automatic — you get a degree of consistency that you didn't have before and that, in itself, has reduced rework and operator error. The amount of waste that you produce has been reduced considerably...It has significantly improved the process."

AL ZENONI, SITE ENGINEER, KERRY INGREDIENTS

### Leahy Orchards

#### Implemented plant performance solution

- Created real-time, web-based access to critical data
- Optimized operations
- Increased daily efficiency to 80-90%
- Reduced scrap 40-50%
- Increased production output 10%

#### ACHIEVED ROI IN <8 MONTHS

### Major Cereal Producer

#### Upgraded packaging line to fully integrated control system

- Improved flexibility of pouch size, product type, and pouch configurations
- Increased pouching machine production speed to 600-700 pouches/minute
- Increased cartoner throughput to 120-140 cartons/minute

#### INCREASED THROUGHPUT 40%

### Tegel Foods

#### Implemented feed forward control systems upgrade

- Optimized operation of feed presses
- Increased throughput 10%
- Reduced press downtime 40%
- Freed up operator time

#### ACHIEVED ROI IN 3 MONTHS

"Every recipe or diet is stored, so that the machinery automatically operates at the optimum conditions for that recipe. There's no fine-tuning required by the operator. As diverse as some of the

recipes are, the press is always under control."

WHAREHOE LISSINGTON, PRODUCTION MANAGER, TEGEL FOODS

### Triangle Packaging

#### New vertical cartoner machine

- Integrated motion and machine control
- Increased cycle rate and time
- Reduced floor space and maintenance costs
- Decreased engineering time

#### REDUCED CHANGEOVER TIME TO 10 MINUTES

"The flexible architecture allows us to reuse the design and simplify engineering tasks...We were able to design an affordable machine that provides our customers with the highest level of flexibility and quality."

STEVE BERGHOLT, CHIEF ELECTRONICS ENGINEER, TRIANGLE PACKAGING

### Fresh Foods Manufacturer

#### Implemented automated production scheduling solution

- Integrated with SAP/3 enterprise resource planning system
- Reduced product shortages and over-production
- Reduced scheduled generation time
- Gained consistency in production and delivery schedules across plants

#### CUT ORDER TURNAROUND TIME TO 12-24 HOURS

# results

# 今天的食品工业 Food Manufacturing in Today's 全球化市场 Global Market

## 食品安全

食品安全关注于采取所有可能的步骤，防止恶意的污染，能快速地召回产品，把对公众可能的危害降到最低。工厂的信息管理系统涉及原料配方和使用，随着2002年生化反恐法案的出台，信息管理系统起的作用逐渐增大。精确实时的信息的受益范围已经超出了食品安全，因为它为最优资源管理、改善目录管理和降低成本提供了依据。

## Food Security

Food security focuses on taking all possible steps to prevent malicious contamination, and to make product recall as rapid as possible to minimize potential harm to the public. Plant information management systems, particularly related to materials receipt and usage, have increased in importance with the introduction of the Bioterrorism Act of 2002. Accurate and timely information has benefits beyond food security as it provides a basis for optimal resource management, enabling improved inventory management and lower costs.

## 经济效益

消费者的购买习惯建立在对他们所购买食品品牌价值的认知和理解上，直接影响生产商的经济效益。今天的食品生产商关注于提高产品的多样性和混合性，以满足消费者的需求。保持良好经济效益的关键因素是提高产品数量的能力，同时，还要保持生产的容量。

## Financial Performance

Financial performance is directly impacted by consumers' buying habits which are based on the recognition and perception of the brand value of food products they purchase. Food manufacturers today focus on increasing the diversity and mix of products to meet consumer demands. Key to sustained positive financial performance is the ability to increase the number and mix of products, while maintaining production capacity.

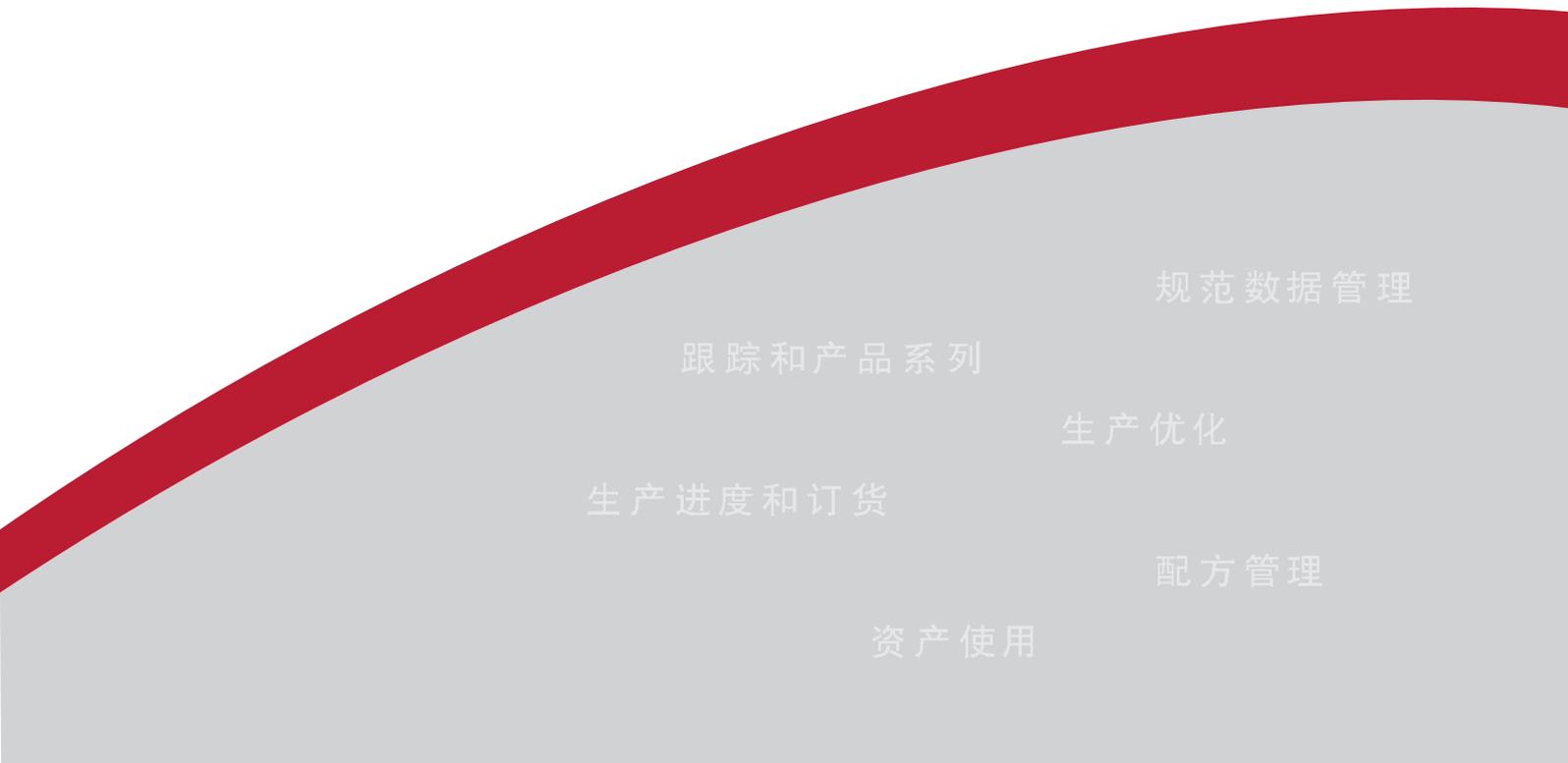
## 消费者满意度

用户对食品产品的满意度转化成食品生产商的品牌价值。新鲜程度、味道和外观对品牌价值是至关重要的。为了保持消费者的满意度，在提高产品多样化和混合化的同时，不管产品在哪里生产或分销，食品生产商需要确保产品一贯的品质。

## Customer Satisfaction

Customer satisfaction with food products translates into brand value for food manufacturers. Consistent freshness, taste, and appearance are all vital to brand value. To maintain customer satisfaction, while increasing product diversity and mix, food manufacturers need to ensure consistent quality, regardless of where their products are manufactured or distributed.





规范数据管理

跟踪和产品系列

生产优化

生产进度和订货

配方管理

资产使用



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Publication FOOD-BR001A-ZH March 2005

**Rockwell  
Automation**

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