

The Intertek logo is displayed in white text within a dark blue rounded rectangular box. The background of the slide features a 3D bar chart with four blue bars of varying heights and a green line graph with sharp peaks and valleys. In the foreground, a 3D pie chart is shown with two slices: a green one and an orange one. The entire scene is set against a white background with soft shadows and reflections.

Valued Quality. Delivered.

## 统计质量保证 (SQA)

运用统计学提高质量稳定性

## 挑战

各品牌企业及零售商在消费产品方面需求逐渐增加，消费产品产量及批次的增加会令到企业在质量控制方面具有更大的挑战性。很多企业传统的符合性测试(合格/不合格)，得到的只是一个定性的结果且不得知产品及其生产过程中存在的质量问题。许多企业还有很多疑问，如：

- 如何可持固定的、较小的抽样数量而将产品的不合格率控制到无限小？
- 如何辨认制造过程中潜在的差异？
- 如何识别制造过程中潜在的差异及时发现制造过程中发生的质量和方面的安全问题？

## 我们的解决方案

Intertek将法规要求、客户要求以及“必要的安全”要求结合起来，为客户度身定做做一个切实可行的质量保证程式，即统计质量保证(SQA)。

SQA是用来识别制造过程中潜在的差异，并以每百万中的个数(PPM)为单位预测成品中的坏品率。通过运用统计技术对产品质量进行分析，及时发现制造过程中发生的质量和方面的安全问题。SQA主要包括三个操作部分。

### 1. 力图

描述应如何对产品进行测试。

Intertek工程师综合产品的可预见用途使用、关键生产工序以及有高故障风险的关键部件等方面知识来制作产品受压力图。

### 2. 破坏性测试

和传统标准的测试方法不同，TTF的结果可以使制造商清楚每一百万个成品中有可能存在的坏品数。此信息将反馈到SQA程式中，确定产品是否需要质量改进或者是否设计不当（最终将节约生产成本）

### 3. 量产过程中检测

成品将根据总产量和生产线来分组，对每组成品在一定的量产过程中进行抽样检测，用数理统计中参数之一Z值作为判断产品质量是否与规范要求相符合的衡量指标。量产过程中抽样测试可以使制造商查明特定批量内和特定生产线产出的产品的坏品数，因此，大大节省了制定和采取纠正措施的时间和费用。

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**Intertek**

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## Statistical Quality Assurance (SQA)

*Maximize Quality Consistency Statistically*

## Your Challenges

As brands and retailers experience growing demand for the latest consumer products, the resulting increase in production and batch sizes makes quality control more challenging for companies. Traditional compliance testing techniques can sometimes provide limited pass/fail information, which results in insufficient measurements on the batch's quality control, identification of the root cause of failure results and overall quality assurance (QA) in the production process. Other questions that arise include how do we:

- How do we reduce the failure rate in a fixed and smaller sampling amounts?
- How do we identify the potential variations in the manufacturing?
- How do we determine potential quality and safety issues that arise during manufacturing in a timely manner, before it becomes a problem?



## Our Solutions

Intertek combines legal, customer and essential safety requirements to customize a workable QA process, called Statistical Quality Assurance (SQA)

SQA is used to identify the potential variations in the manufacturing process and predict potential defects on a parts-per-million (PPM) basis. It provides a statistical description of the final product and addresses quality and safety issues that arise during manufacturing. SQA consists of three major methodologies:

### 1. Force Diagram

A Force Diagram describes how a product should be tested. Intertek engineers base the creation of Force Diagrams on our knowledge of foreseeable use, critical manufacturing process and critical components that have high potential to fail.

### 2. Test-to-Failure (TTF)

Unlike any legal testing, TTF tells manufacturers on how many defects they are likely to find in every million units of output. This information is incorporated into the process and concludes if a product needs improvement in quality or if it is being over engineered, which will eventually lead to cost savings.

### 3. Intervention

Products are separated into groups according to the total production quantity and production lines. Each group then undergoes an intervention. The end result is measured by Z-value, which is the indicator of quality and consistency of a product to a specification. Intervention allows manufacturers to pinpoint a defect to a specific lot and production line; thus saving time and money in corrective actions.

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