



# Excellence through Lean – Innovation Makes IT

## 精益实现卓越-创新是关键

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# What is Lean – striving for EXCELLENCE 精益是什么-是通往卓越的方式

- Lean enables innovation and needs of customer demand for EXCELLENCE

精益是由客户需求驱动的，是企业实现卓越的方式

- Tools for lean production: JIT, Automation, TQM, TPM, etc., Toyota TPS is the most famous lean production system  
精益生产的工具包括：准时制，自动化，全面质量管理，全员生产维护等，最著名的精益生产系统是丰田的TPS系统

## Made in China 2025 Strategy 中国制造2025

- Lean production is Indispensable for achieving *Made in China 2025 strategy*

精益生产是实现中国制造2025必不可少的前提条件

- Combined with intelligent software implementation of the *Made in China 2025 strategy*, to continuously optimize with the help of lean production

结合中国制造2025在智能软件方面探索优势，不断优化精益生产

## Industry 4.0 工业4.0

- Achieving industry 4.0, Lean, automation, smartness, intelligent are all needed, Lean is the foundation of all  
实现工业4.0，精益化，自动化，智能化都缺一不可，而精益是一切的基础

- Industry 4.0 is the goal and Lean is the means to achieve the goal

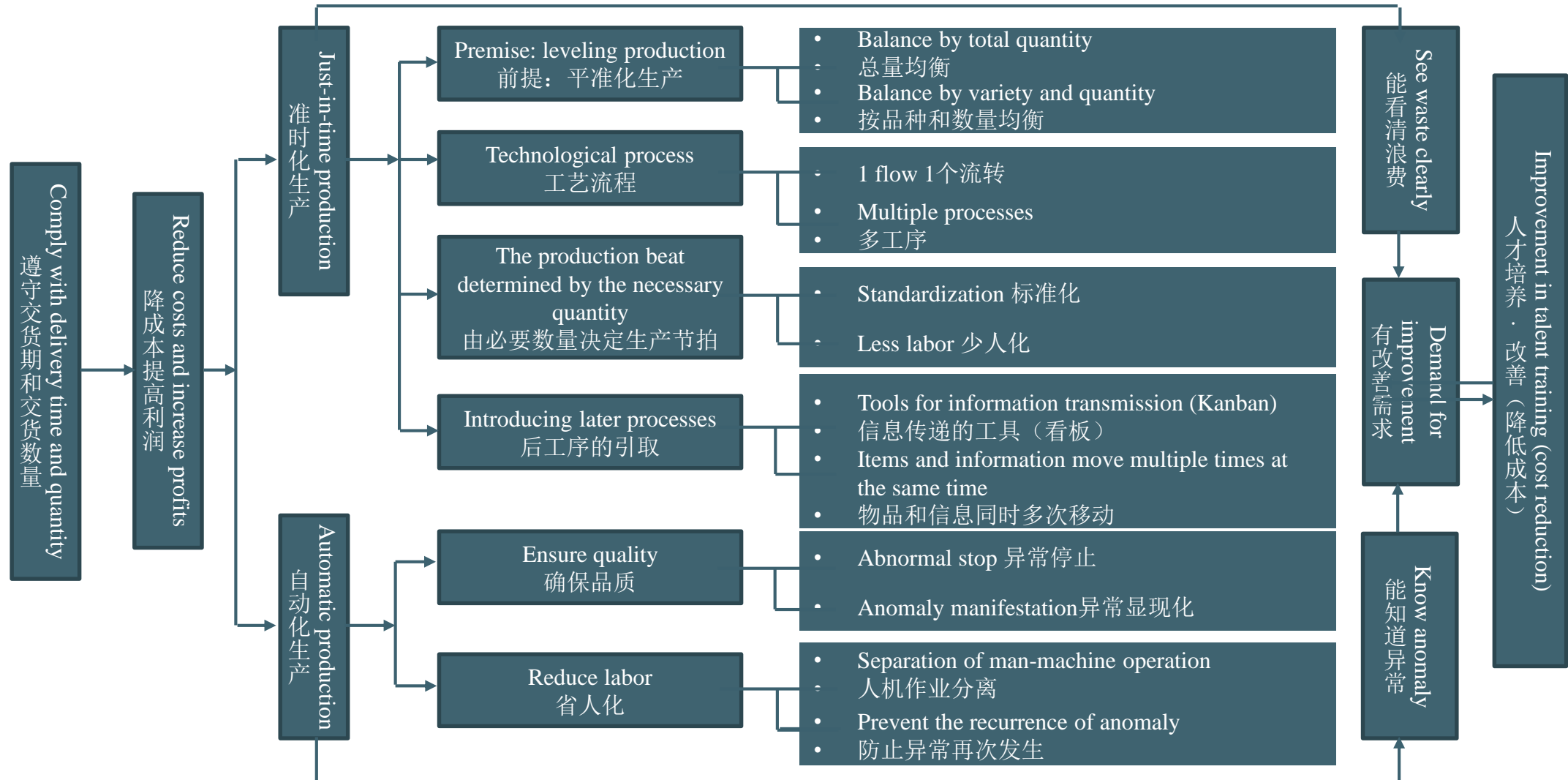
工业4.0是目标，精益是实现这一目标的手段



# Toyota Lean-TPS

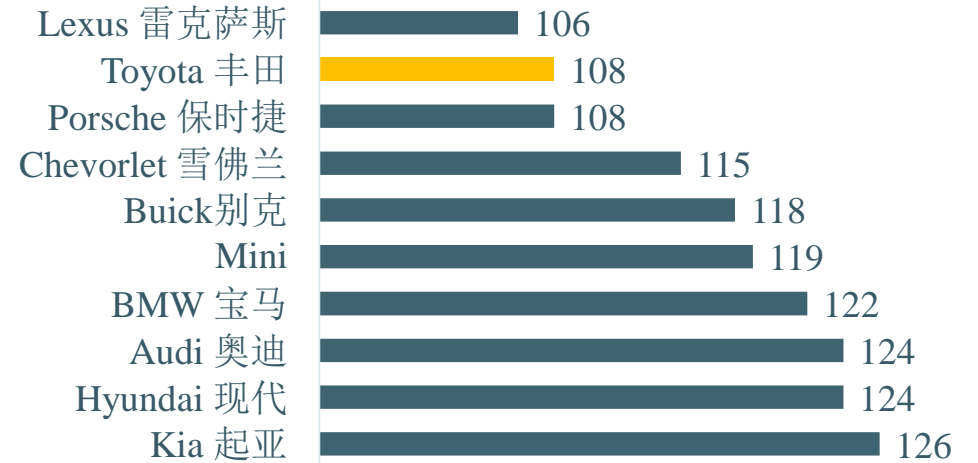
## 丰田精益-丰田生产系统

- **Toyota is pioneer of lean**, TOYOTA Production System (TPS) is the original template for lean production  
丰田是精益生产的先锋，丰田生产系统TPS是最原始的精益生产模板



# Without Lean, Toyota will be not Toyota 没有了精益，丰田将不再是丰田

- JD Power 2019 Brand Ranking: **Toyota was ranked 2rd** with 108 problem per 100 vehicles;  
JD Power 2019 品牌排行：丰田以每百辆车108个问题的成绩排名第二
- Ranked **2<sup>nd</sup> among OEMs by achieving 10,520,655 sales** volume in 2018;  
2018年实现全年售出汽车10,520,655辆，仅次于大众，排名全球第二
- Made **\$265,172 million of revenue and \$22,510.1 million of profit** to continue to be the **most profitable car company in 2018**  
2018年继续成为全球利润最高的汽车企业



2019 Brand Ranking -Problems per 100 vehicle  
2019年汽车品牌排行-每百辆车问题数量

## OEM Sales volume top 5 in 2018/2018年汽车销量Top 5

Rank 排名	Company 公司	Sales volume in 2018 2018年销量	Market Share 市场份额
1	Volkswagen 大众	10,830,625	11.4%
2	Toyota 丰田	10,520,655	11.1%
3	Renault Nissan 雷诺日产	10,360,992	10.9%
4	GM 通用汽车	8,786,987	9.2%
5	Hyundai Kia 现代起亚	7,507,945	7.9%

## 2018 Fortune 500/2018年 财富500强

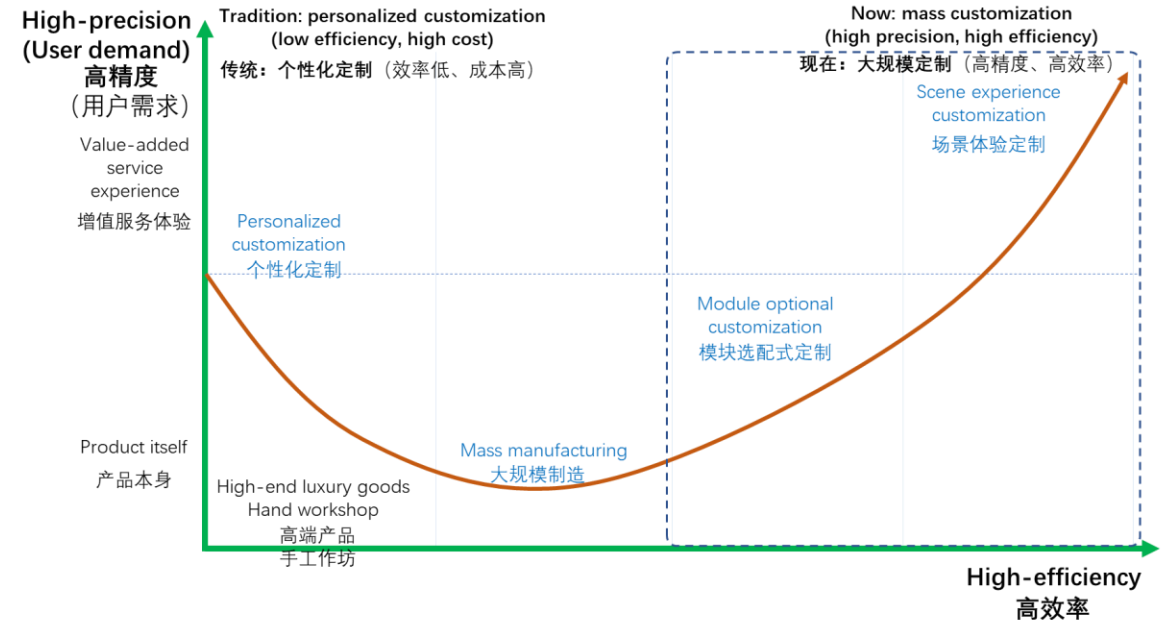
Rank 排名	Company 公司	Business income (Million \$) 营业收入 (百万美元)	Profit (Million \$) 利润 (百万美元)
1	Toyota 丰田	265,172	22,510.1
2	Volkswagen 大众	260,028.4	13,107.3
3	GM 通用汽车	185,235.4	11,863.9
4	Daimler 戴姆勒	157,311	-3,864
5	Ford 福特	156,766	7,602

# Lean let Haier know what is customer demand 精益使海尔掌握客户需求

Haier COSMOPlat-Mass Customization 海尔COSMOPlat平台-大规模定制

- Haier incorporates users into the industrial system, allowing users to participate in the creation of the entire process from 0 to 1; 海尔将用户集成到工业体系当中，客户参与从0到1的整个创造过程
- Switching from large-scale manufacturing to mass customization; 从大规模生产转换至大规模客户定制
- Upgrading from “waste elimination” to “creating value” 从“消除浪费”升级至“创造价值”

Year 年份	Business income 营业收入-亿	Net profit 净利润-亿	Market share of large household appliances 大型家用电器市场份额	Rank 排名
2018	1833.16	74.4	-	No.1
2017	1634.29	69.1	10.60%	No.1
2016	1191.32	50.42	10.30%	No.1
2015	897.97	43.04	9.80%	No.1
2014	969.3	53.38	10.20%	No.1





# Huawei Lean- lean from German Industry 4.0 and Japanese quality management 华为精益-学习德国工业4.0和日本的质量管理

1. With German technical process and industry software as the main body, embedded Japanese quality management  
以德国的工艺流程和工业软件为主体，嵌入日本的质量管理
2. Reference to the architecture of Industry 4.0  
参考工业4.0的架构，大生产体系的主体就是沿着三个流打通、集成和融合：
  - Digital integration of designing and manufacturing, multi-role on a platform to work;  
设计与制造数字化融合，多角色在一个平台上工作
  - Customer order/supply plan information delivers to manufacturing plants, shared integration, automated processing;  
客户订单/供应计划信息与制造工厂共享，共享式集成、自动化处理
  - Production process: highly automated, partially intelligent, software-defined  
生产工艺过程是多级物联网的，高度自动化、部分智能化，可以软件定义
3. Systematically standardize the management of craftsman scientists, improve the treatment of people in these fields, let R&D and manufacturing be integrated from the beginning  
要系统性地规范工匠科学家、工匠专家的管理，提高待遇，让研发和制造从一开始就融合在一起

# Lean is key factor to enable Huawei to succeed 精益是促使华为成功的关键因素

- Huawei was ranked 72 in 2018 Fortune World Top 500, excluding HON HAI PRECISION INDUSTRY, Huawei is the only private company in the top 20 Chinese companies; 2018年财务500强华为排名第72位，除了鸿海精密以外，华为是排名前20的中国企业中唯一一家民营企业
- In the first quarter of 2019, Huawei surpassed Apple and ranked second by achieving 59.1 million shipment volume 2019年第一季度，华为超越苹果成为该季度手机出货量第二的手机制造商

Rank 排名	Company 公司	Company Type 公司性质	Business income 营业收入
1	STATE GRID 国家电网	State owned	348,903.1 Million \$
2	SINOPEC GROUP 中国石化	State owned	326,953 Million \$
3	CHINA NATIONAL PETROLEUM 中石油	State owned	326,007 Million \$
4	CHINA STATE CONSTRUCTION ENGINEERING 中国建筑工程公司	State owned	156,070.8 Million \$
5	HON HAI PRECISION INDUSTRY 鸿海精密	Private	154,699.2 Million \$
6-16	...	State owned	...
17	HUAWEI INVESTMENT 华为投资	Private	89,311.4 Million \$
18-20	...	State owned	...

Top 20 Chinese companies in 2018 Fortune World Top 500  
2018年财富500强中排名前20的中国企业

Rank 排名	Company 公司	Shipment Volume- Million 出货量-百万	Market Share 市场份额
1	Samsung 三星	71.9	23.1%
2	Huawei 华为	59.1	19%
3	Apple 苹果	36.4	11.7%
4	Xiaomi 小米	25	8%
5	Vivo	23.2	7.5%
6	OPPO	23.1	7.4%
7	Others 其他	72.1	23.2%

Mobile phone shipment volume in Q1 2019  
2019年第一季度手机出货量

# Fuyao Glass Lean 福耀玻璃的精益

Intelligent manufacturing can adequately respond to customization while improving operational efficiency

智能制造可以充分应对定制化，同时提高运营效率

- **Lean manufacturing makes customize production on a large scale to be achieved;**  
精益制造使大规模定制化生产成为可能
- **Intelligent manufacturing target: In 2021 to achieve a 30% increase in production efficiency and resource utilization, 30% decrease on operating costs, R&D cycle and bad product rate;**  
福耀智能制造目标：在2021年实现生产效率提升30%，资源利用效率提升30%，运营成本、研发周期和不良品率各降低30%
- **1<sup>st</sup> step: Achieving the digitization and transparency of enterprise through six information platforms establishment including CRM、PLM、ERP、MES、SRM and EPM, optimization of automation equipment;**  
第一步首先通过CRM、PLM、ERP、MES、SRM以及EPM六大信息平台的构建以及自动化设备的优化升级实现企业的数字化、透明化
- **2<sup>nd</sup> step: Achieving intelligent collaboration of end-to-end value chain processes through the construction of process collaborative platform based on SOA architecture**  
第二步：通过以SOA架构为基础的流程协同平台构建，实现端到端价值链流程的智能化协同
- **3<sup>rd</sup> step: Achieving intelligent decision-making based on big data through construction of data Warehouse and BI system**  
第三步：在积累了大量的真实、准确的内外部数据的基础上，通过数据仓库、BI系统的构建，实现基于大数据的智能化决策

## Fuyao Glass “industry 4.0” plan 福耀玻璃工业4.0规划

### Intelligent Manufacturing Promotion Roadmap 智能制造推进路线图

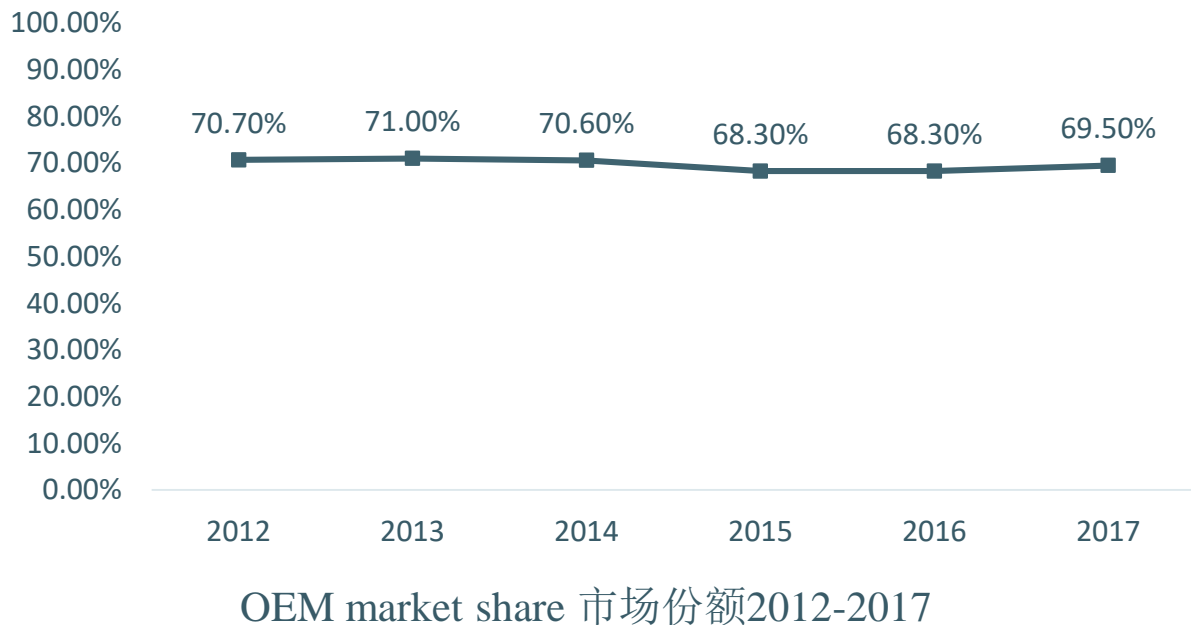






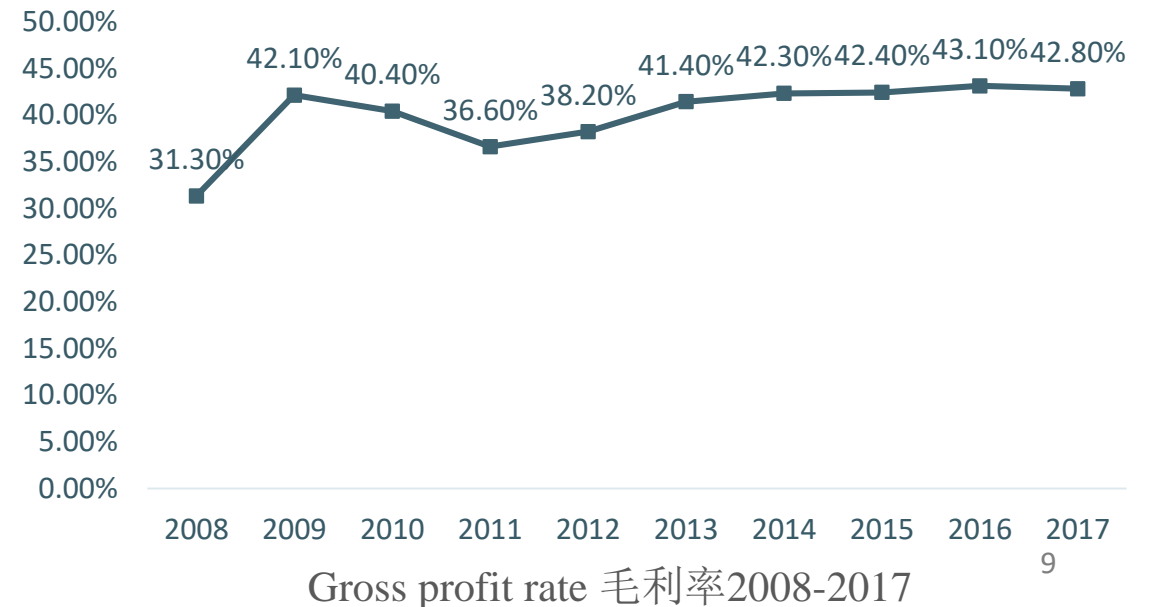
# Lean Manufacturing will Enable Fuyao to gain greater market share and profit 精益制造使福耀能够获得更大的市场份额和利润

- **Since 2013, annual gross profit stayed at above 40%, significantly ahead of other competitors in profitability**  
2013年以来，毛利润一直高于40%，大大领先于同行业其他竞争企业
- **Remained 70% of China OEM market share for many years** 长年保持OEM市场份额高达70%



Profitability comparison among main competitors  
主要竞争者获利能力比较

Company 公司	Gross profit rate 毛利率	Net profit rate 净利率
Fuyao Glass 福耀玻璃	42.76%	16.82%
Saint-Gobain 圣戈班	25.46%	3.84%
Nippon Sheet Glass 板硝子	23.13%	5.76%
Asahi glass 旭硝子	26.86%	8.10%



# Lean Process Enables Innovation on Road to EXCELLENCE 精益流程实现卓越道路上的创新

The **essence of the customer community is Excellence** – there are **three constituents**

客户群体的精髓在于“卓越”，卓越由三个成分构成：

**To be Excellent, all three must be satisfied!** 如果想要实现“卓越”，以上三个部分必须全部满足

## **Customer** 客户

1. Quality 质量
2. On-time delivery 准时交付
3. Competitive cost 有竞争力的成本
4. Technology 技术
5. Innovation

## **Employee (Internal)** 员工

1. Fair wage and reward  
合理的薪资和奖励
2. Reasonable required work effort  
合理的工作付出
3. Community and Country

## **Investor (External)** 投资人

1. Profit on investment employed  
投资利润
2. Efficient use of capital  
资本的有效使用
3. Minimum Inventory  
最小化的库存

**Lean is the glue that holds all this together to achieve EXCELLENCE.** 精益就像是胶水，将所有部分都聚集在一起，从而实现“卓越”

# Inventory Waste, and Quality Management 库存浪费和质量管理的

Let me give you some **goals that I have seen reached** 让我给你一些我看到的达到的目标：

➤ Inventory: **no more than one day** in-plant

库存：工厂中不存放超过一天的库存

➤ Waste: **visual waste control**

浪费：可视化废物控制

➤ Quality: **0 ppm**

质量：100万个零件中，不合格品的数量为0



# This Process is the Responsibility of Everyone!

## 这个过程是每个人的责任!

- Without the **Head of an Organization being Committed** – **NO GO**  
没有组织负责人的承诺-不会成功
- **Every person** in organization **must be TRAINED**  
组织中的每一个人都需要被培训
- **Customers must be trained** in expectations and open dialogue  
客户必须接受期望和公开对话方面的培训
- **Feedback** on performance **must be reviewed and appropriate corrections** put in place  
必须审查对业绩的反馈意见, 并进行适当的纠正

 **This Process is the Responsibility of Everyone!**  
这个过程是每个人的责任!

**Lean allows Innovation**  
**(eliminate “firefighting”)**  
**and**  
**EXCELLENCE will happen!**  
精益使“卓越”发生