

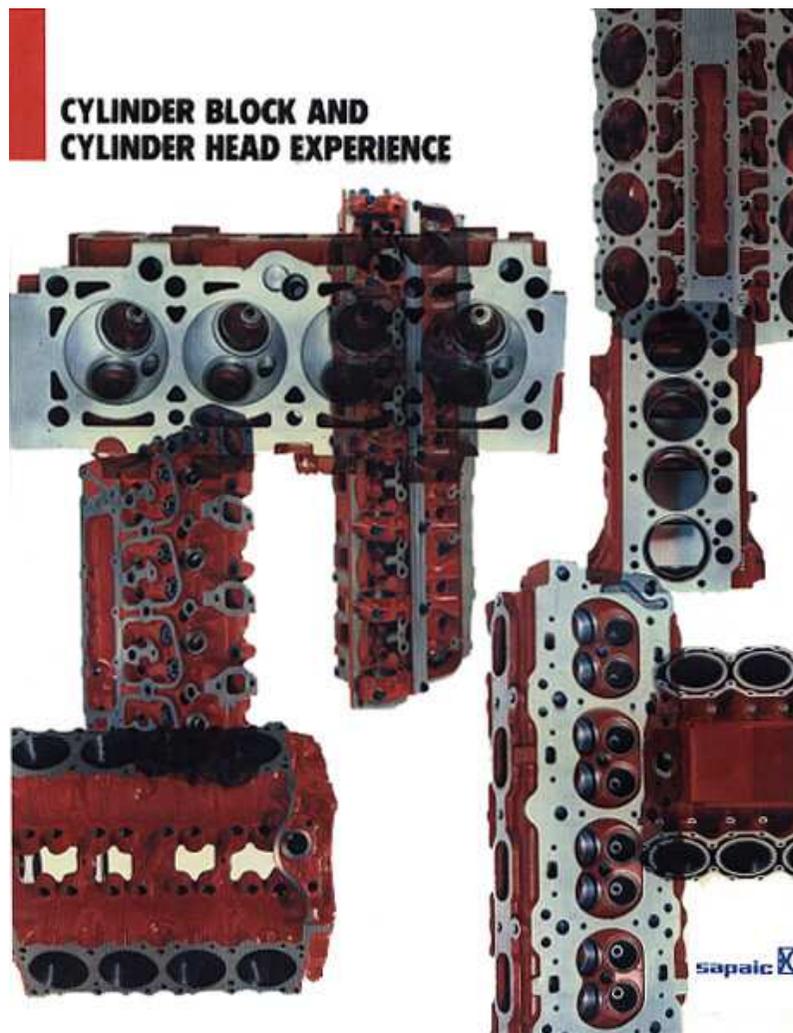
SAPAIC INDUSTRIES

- **Welcome to**



欢迎各位

SAPAIC INDUSTRIES



丰富的缸体、缸盖加工经验



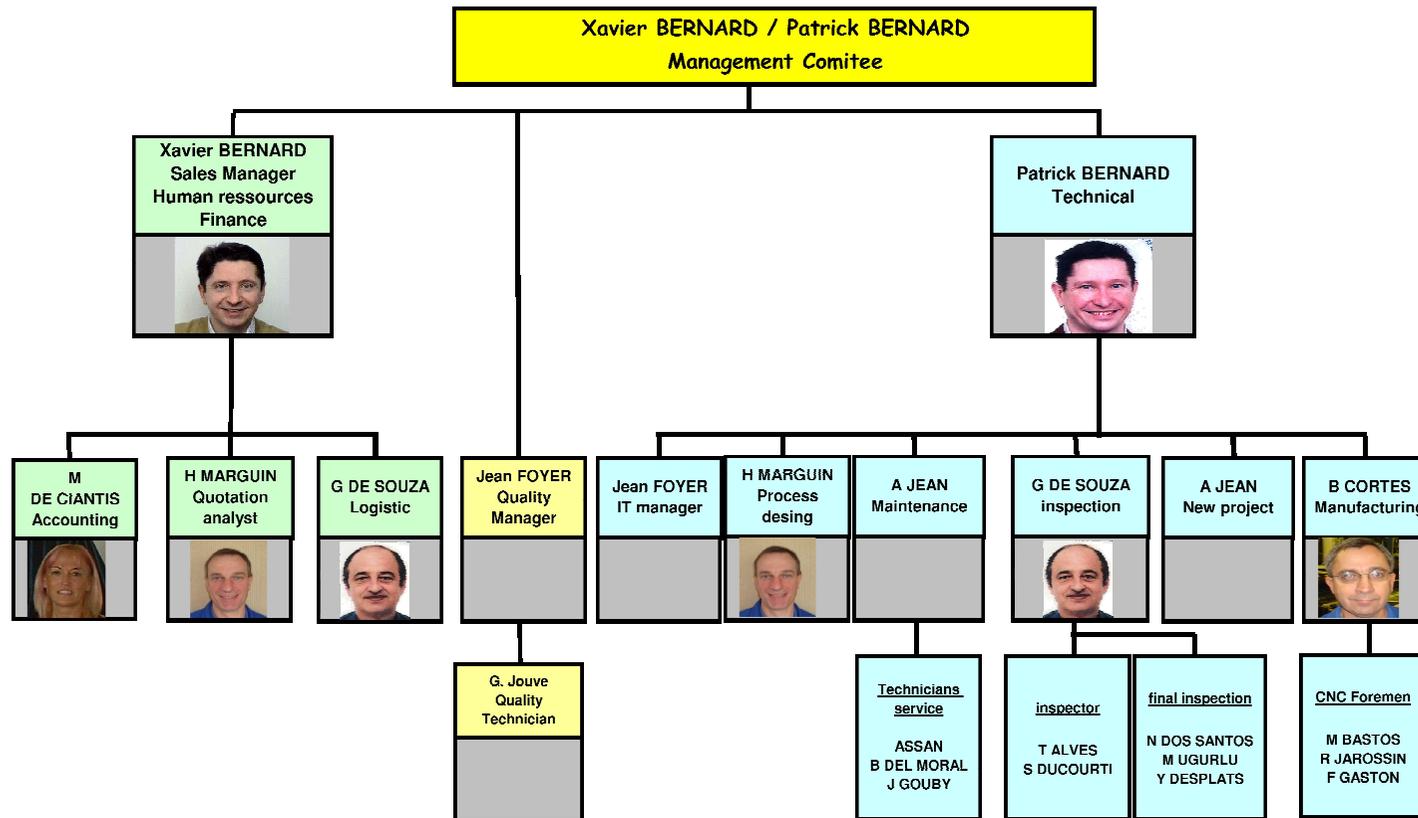
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- Customers 主要客户



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- Sapaic team & organization **Sapaic** 团队和组织机构



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- Experience and Know-How **精湛的专业加工技术**



- Culture of cylinders head and blocks
深谙缸体、缸盖的加工内涵

- Experience accumulated from 5 000 000 heads and blocks machined

上乘的加工技艺基于缸体、缸盖加工数量累计已达 5 000 000 个

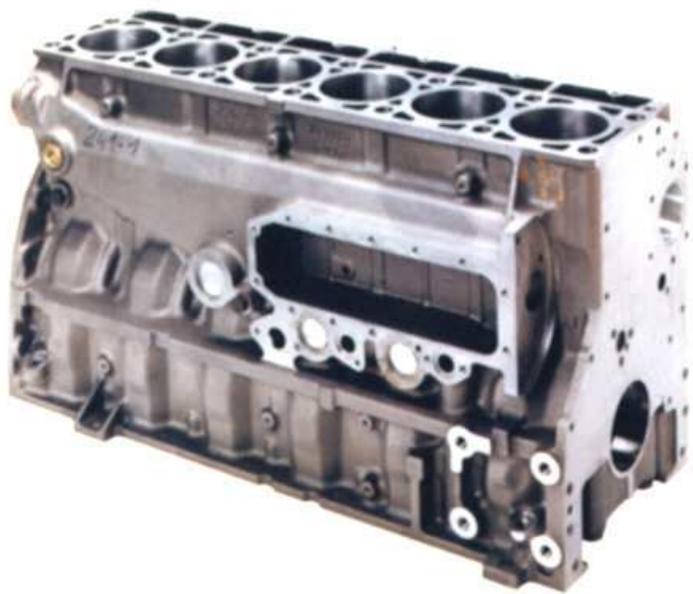
- Skilled personnel
拥有众多熟练的技术人员

- Structured training program for new team members

完善的对加入团队的新员工的培训机制

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- **Products: cylinder block** 产品：发动机缸体

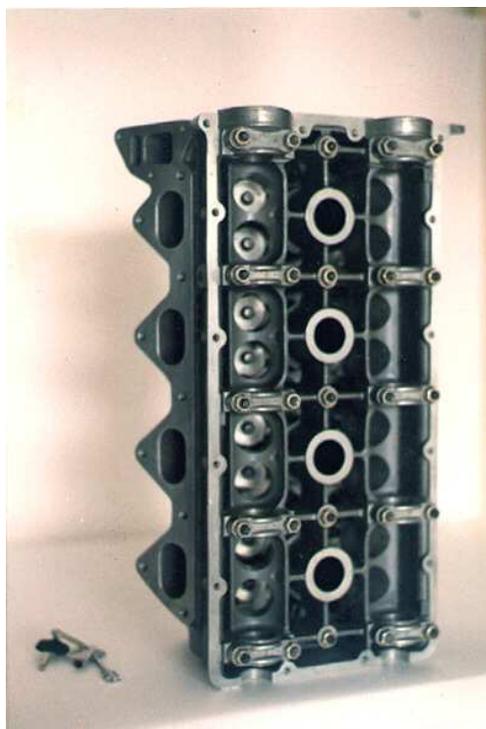


CATERPILLAR 225 Kg 80 / Day
CATERPILLAR 225 Kg 缸体 80个 / 天

- **Automobile** 乘用车客户：
PSA, Volvo, Saab:
up to 500 per day
每天可供500个
- **Truck** 商用车客户：
Caterpillar, RVI, Man,
Liebherr, John Derre:
50 to 250 per day
每天可供50到250个

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- Products: cylinder head 产品：发动机缸盖



VOLVO 16V

- Grey iron and aluminium
灰铁及铝材质缸盖
- Up to 500 per day
每天加工工件可达500个

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- **Your Scope of interest** 我们能提供的服务
- Heads & Blocks 缸体和缸盖
- **Fully machined parts incl. Honing , pre-assembly , leak tests , etc...** 包括珩磨在内的完整的零件机加工, 预装配, 泄漏试验等
- **Or premachining** 或前道工序的预加工
 - **op 10 proof off casting material** 10工序的铸件材质检验
 - **advanced pre-machining** 先进的前道工序预加工技术
 - **200-1000/day** 加工件数可达200-1000个/天
 - **reduces your investment** 可减少你的投资
 - **free up the capacity of your line** 可腾出你的生产线的部分产能, 提高其生产能力
 - **avoid line bottle neck due to longer cycle times** 可帮助你避免因加工周期过长而形成的生产线瓶颈
 - **avoid machine fatigue of early machining** 可避免你的设备因前道工序加工而引起的机床疲劳

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- Manufacturing Plant **生产车间**



- **Modern machine shop**
现代化的生产车间

- **Automated FMS cells**
of horizontal large
CNC centers

装备有众多的大型卧式加
工中心组成的自动化柔性
加工单元

- **7000 sqm under roof**
7000平方米生产车间面积

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- New Plant新增装备



- FMS cells of 5 large CNC centers
由5台大型加工中心组成的柔性生产单元

- Multi-spindle head changer
多轴工作头交换系统

- Single tool magazine
单独的刀库

- Machine size
设备加工尺寸 :

x 1600

y 1440

z 1200

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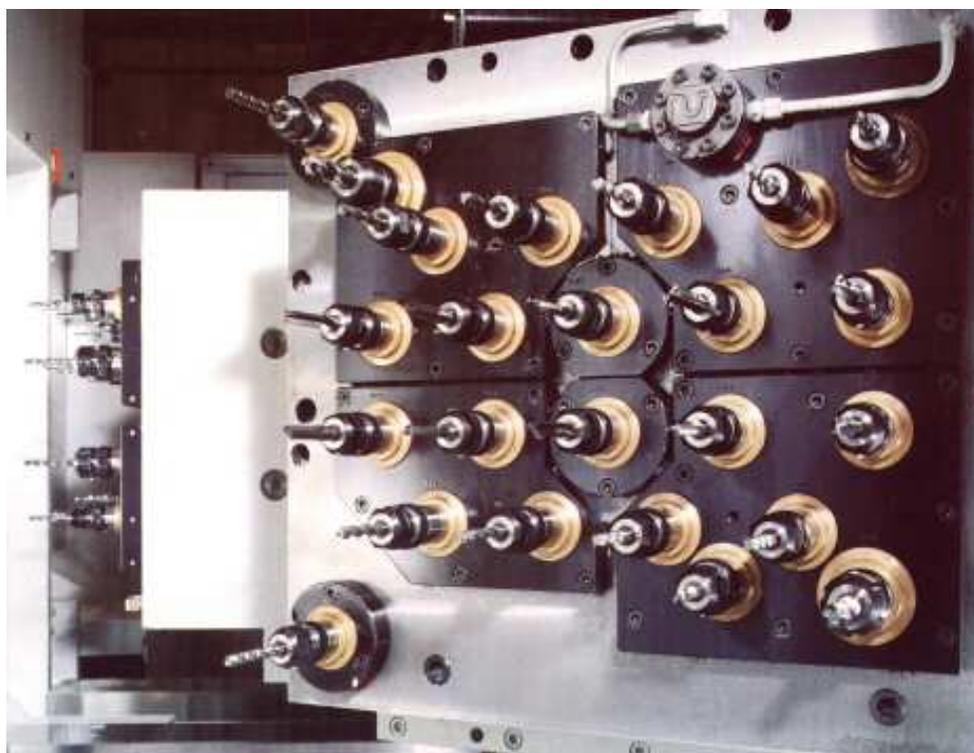
- New Plant新增装备



- 5 FMS machines
5个柔性加工单元
- 25 paletts
25块工件搬运托盘
- Aspirated smoke
除油雾装置
- Centralised fluids
集中冷却液处理系统
- Painted floor
油漆地面

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- Competitive advantages 我们的竞争优势



- Head changer magazine up to 11 heads/machine
每台设备的工作头交换库可容纳11个头

- Single-tool magazine up to 120 tools
单独的刀库容量120把刀

- Size up to 900x600 mm
最大尺寸: 900x600 mm

- Weight up to 350 kg
最大重量: 350 kg

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Competitive Advantages

竞争优势

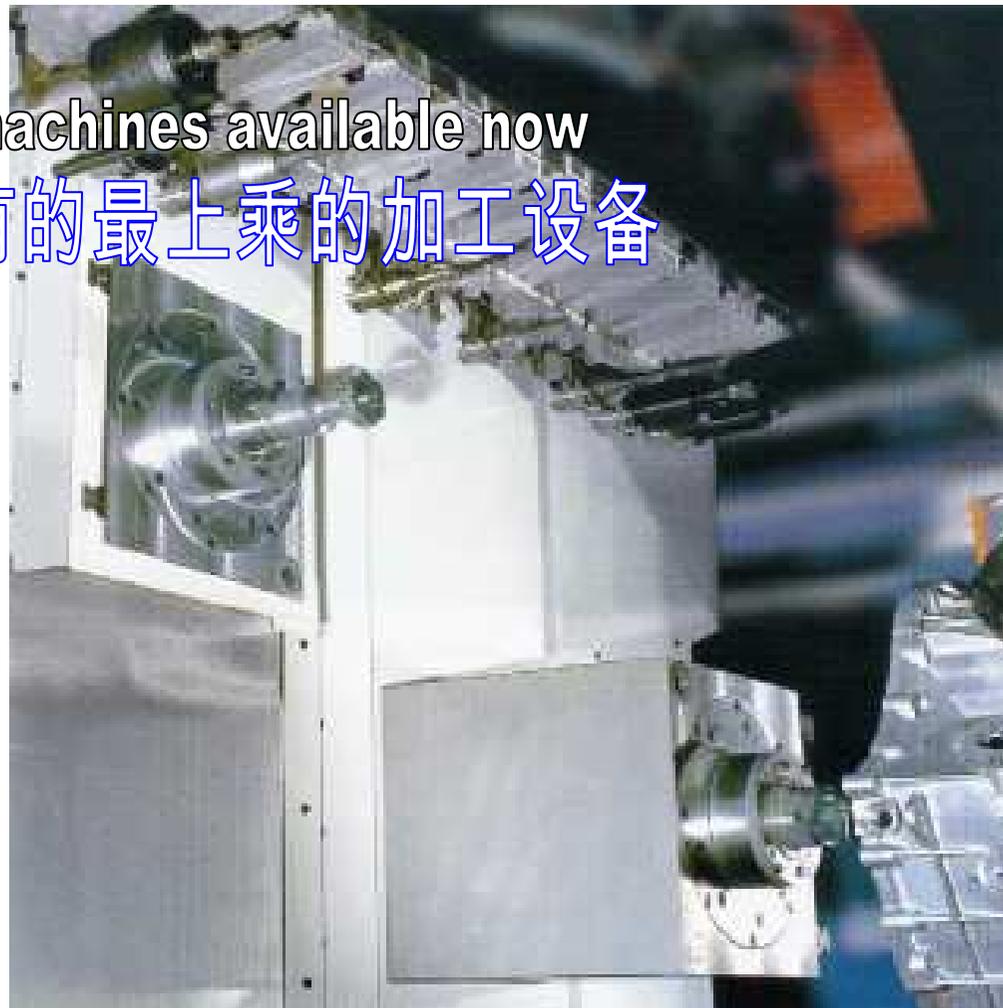
- Centres UGV
UGV中心
- twin-spindles working independently
双轴工作头可分别独立工作
- head & block ultra-fast machining
缸体和缸盖快速加工
- Premachining also for cast leaktests
包括铸造泄漏试验在内的前道工序预加工

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the best machines available now
目前我们拥有的最上乘的加工设备



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- Robotized Machining Cell with robotized washing and air blowing
带自动清洗和自动吹屑功能的机器人加工单元
- Works unattended during the nights during 10 hours
可在夜间10小时无人看管作业



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- Special Know-how 专业技术经验



- Honing 珩磨

- 10 million bores 珩磨缸孔数量已达1000万个

- plateau-honing (Nagel-Gehring) 具有平顶珩磨工序能力(德国Nagel-Gehring设备)

- Leak tests 泄漏测试

- Cleanliness inspection 清洁度检验

- Pre-assembly 预装配

- Valve seat recessing 阀座起槽

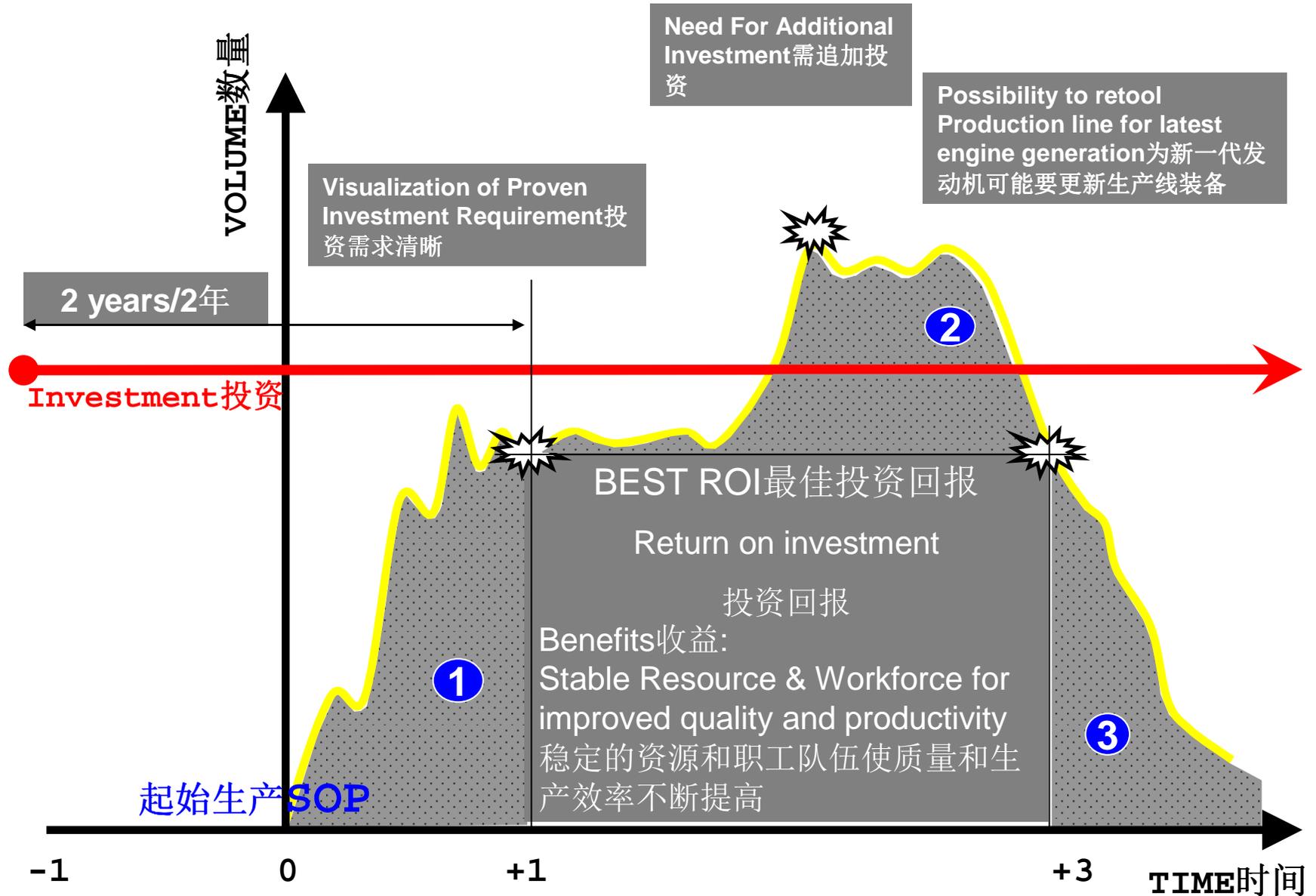
- Crank boring 曲柄孔镗加工



1 Pre series & Ramp-up
爬坡阶段

2 Capacity Back Up
能力支撑阶段

3 Phase Out & Service Parts
下滑和售后服务件阶段



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- Computerized quality system in shop available at each inspection stage (inspection booth)
可用于每个质量控制节点的计算机质量检验系统（质量检验台）



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- Inspection 检测手段



- Zeiss and LK 3D
3D Zeiss 和 LK 设备
- 770 gages identified and monitored
770个识别和监控仪器
- Internal calibration following ISO 17025
按国际ISO 17025标准标定
- External calibration COFRAC / DKD / NAMAS
外部标定协作机构: COFRAC / DKD / NAMAS

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- 3D machines in regulated atmosphere
安装在可控温湿环境中的3D设备
- Zeiss/ LK / DEA for truck part length to automobile size
可用于最长卡车零件长度的Zeiss/ LK / DEA 设备



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- Quality Management: ISO/TS 16949
质量管理体系: ISO/TS 16949



- ISO/TS 16949 certified by
Llyods

已获Llyods的ISO/TS16949的认证

- Caterpillar certified world-
class supplier

已获Caterpillar颁发的国际供应商证书



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- Quality tools and practices
质量管理体系文件



- APQP
- FMEA
- SPC: Cm, Cmk, Cp, Cpk
- MSA: R&R
- PPAP
- 8D
- TPM

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- Environment & Safety Management
环境保护和安全防护



- ISO 14001 in progress
ISO 14001 正在认证中

- Legal requirements
符合各项法规要求

- Waste sorting out
废料分门别类处理

- Plant cleanliness improvement
工厂环境卫生不断改善

- Safety risk analysis
安全风险分析

- Working conditions
良好的工作条件