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# Medical Implants
# Market and Trends – Tornos Solutions
# 医疗植入物市场与制造趋势 – Tornos解决方案

Philippe Charles | Market Segment Manager | 

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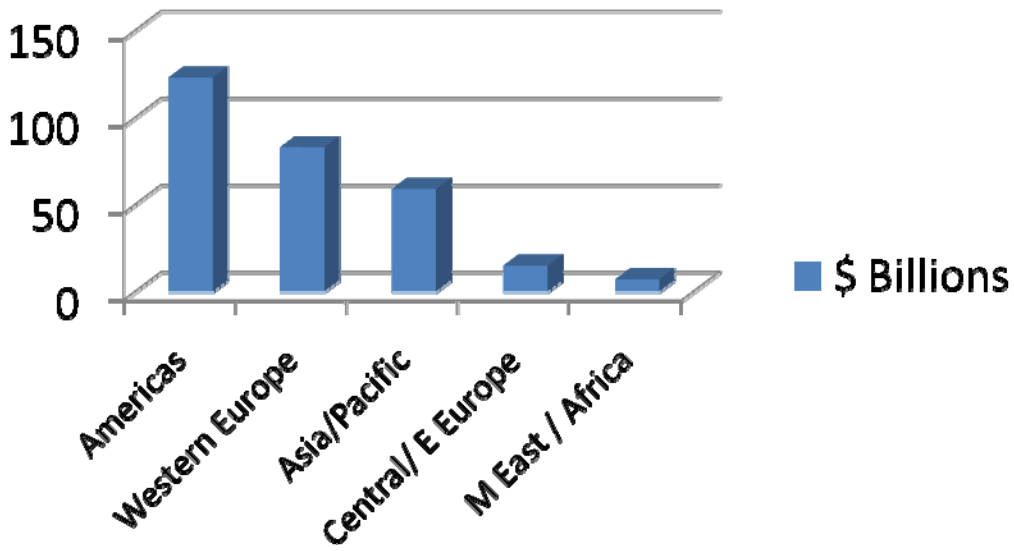
# Medical Devices Worldwide Market

## 全球医疗器械市场概况

# Medical Devices Key Figures

## 全球医疗器械市场主要数据

- **Medical Devices Market Worldwide is projected to reach about 290 $ billions in 2013** **2013年全球医疗器械行业预计目标产值可达到2900亿美元**




- About 1,5 million different medical devices , in over 10'000 types of generic device groups available WW.
- 全世界有超过**10000**家通用器械制造商生产超过**150**万种不同的医疗器械
- 20.000 Medtech companies Worldwide (about 50% within Europe with totally 435.000 employees)
- 全世界有**20000**个医疗行业公司（欧洲占**50%**约**435,000**员工）

# Medical Devices Classification
# 医疗器械分级

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Criterias 分级定义标准
-period of use
使用期限
-degree of invasivness
侵害性程度
-body location
身体部位
-overall risks for the patient life
整个生命期内的风险

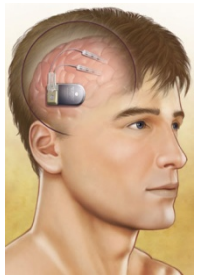
Risk for the patient 患者手术风险

Class III

Class II b

Class II a

Class I



FDA

CE

# History of Orthopaedics

## 现代创伤骨科发展历史

# History of Orthopaedics 创伤骨科历史

« Orthopaedic, derives from the Greek words straight and child. »
Orthopaedic（骨科）一词最早来源于希腊语

## Ancient Orthopaedics 古代骨科

**Mummies' Fake Toes Could Be First Prosthetics**
木乃伊假脚趾是迄今为止发现最早的骨科假体植入物

**Iron dental implant of a right second upper premolar from a Gallo-Roman necropolis . I or II century**

铁质牙植体/ Gallo-Roman墓地出土（I 或 II 世纪）

# History of Orthopaedics 创伤骨科历史

Orthopaedic, derives from the Greek words straight and child.

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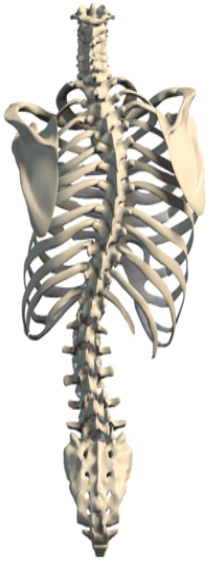
## THE FOUNDATIONS OF MODERN ORTHOPAEDICS
## 现代创伤骨科的奠基人 Dr.Nicolas Andry

**1741** **Dr.Nicolas Andry (F) published the first publication with the word "orthopaedics »**

**1741年** Dr.Nicolas Andry 发表了第一本以骨科为标题的专著

**« crooked tree »**

**«弯曲的树»**



**Scoliosis**

**脊柱侧凸**

SCHWEIZERISCHE GESELLSCHAFT FÜR ORTHOPÄDIE UND TRAUMATOLOGIE

SOCIETE SUISSE D'ORTHOPEDIE ET DE TRAUMATOLOGIE

# History of Orthopaedics
# 创伤骨科历史

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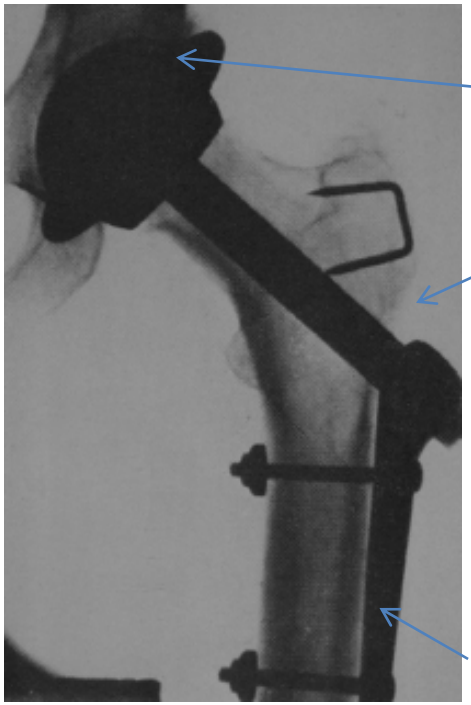
## Yesterday 从前



screwed socket
in steel
植入的钢制的关节窝

hip implant 髋骨植入体

bolted plate 骨板

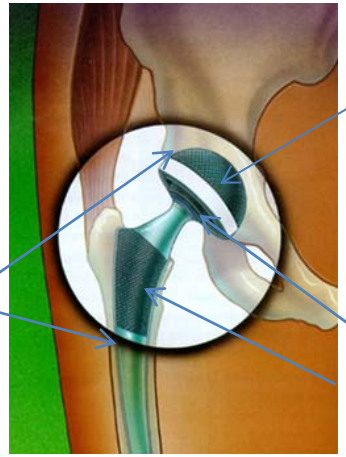
1938 Phillip Wiles
(first hip prothesis)

1938年世界第一例髋骨假体

## Today 现在

**Co-Cr / Ceramic / PE**
**钴-铬合金 / 陶瓷 / 高分子**

HP source
Biomet



socket / cup
关节球头杯罩

Ball / 关节球头

Stem / 关节主干

Cement
骨水泥

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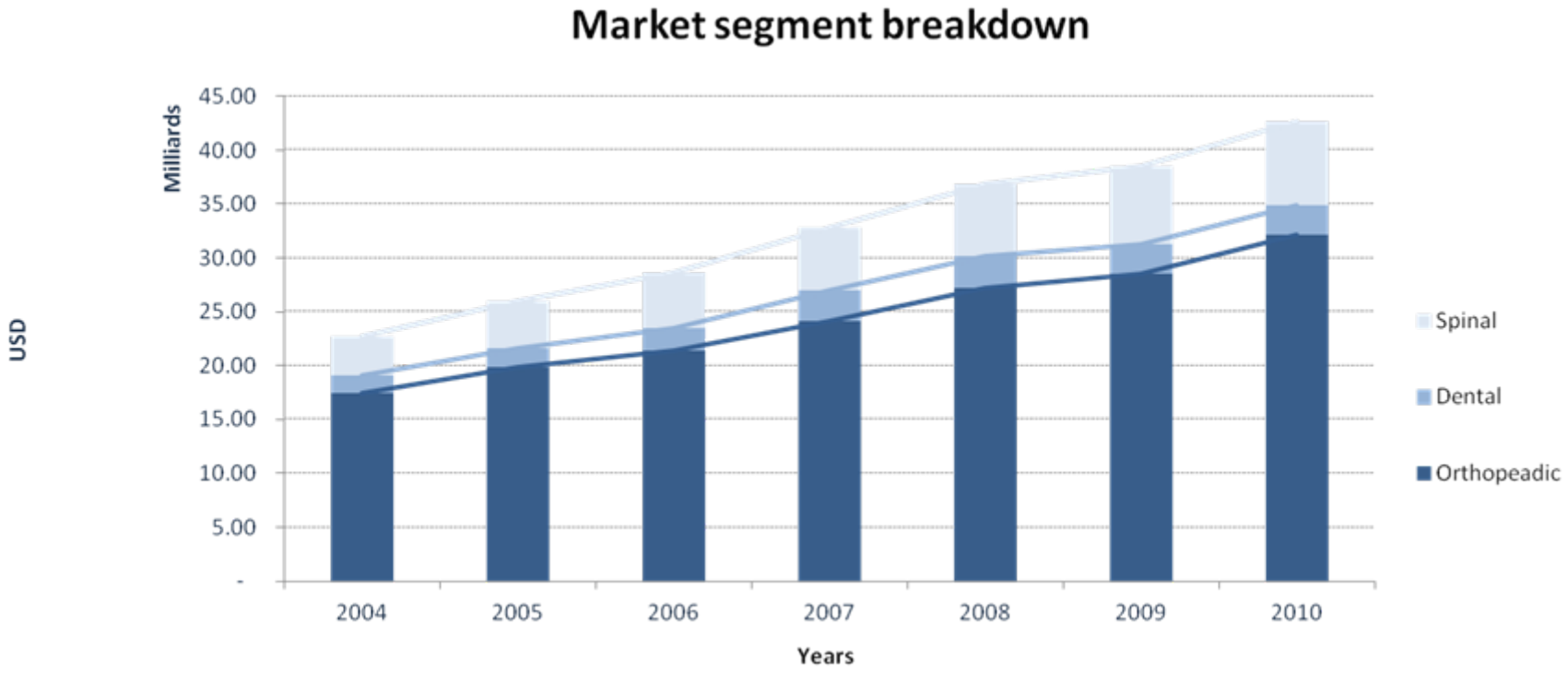
# Orthopaedic , Spine and Dental Markets 2010

截至2010 年骨科，脊柱创伤修复以及种植牙市场

# MedTech Market 医疗器械市场份额图




| CAAGR 07-10 | |
|---|---|
| Orthopeadic | 7.40% |
| Dental | -0.22% |
| Spinal | 7.16% |

Estimated market size 2009 : 42.5 bUSD

**2009年市场份额：425亿美元**

# Big players
## 市场被少数行业巨头占据

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-In 2009, 76% of global orthopaedic revenues came from the efforts of the 10 largest orthopaedic companies.
**2009**年，全球**10**家大公司占据了**76%**的全球骨科市场份额

-There are about 1100 companies Worldwide that manufacture and generate sales in the orthopaedic market.
全球**1100**公司生产骨科产品

# The market drivers市场增长的驱动力

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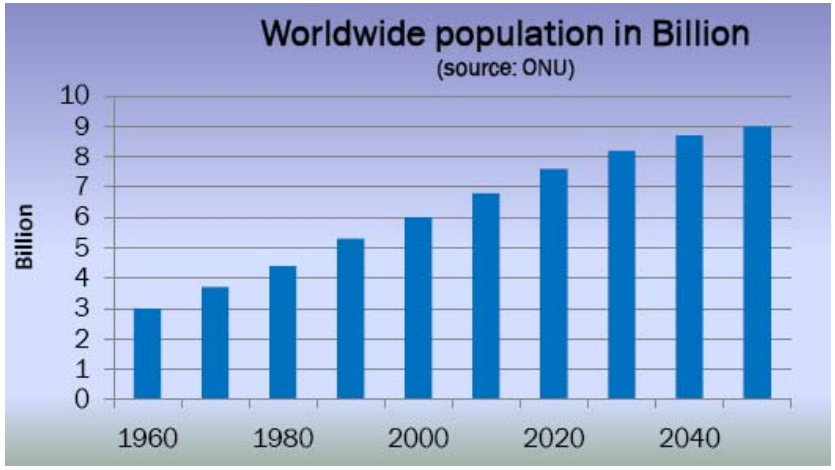
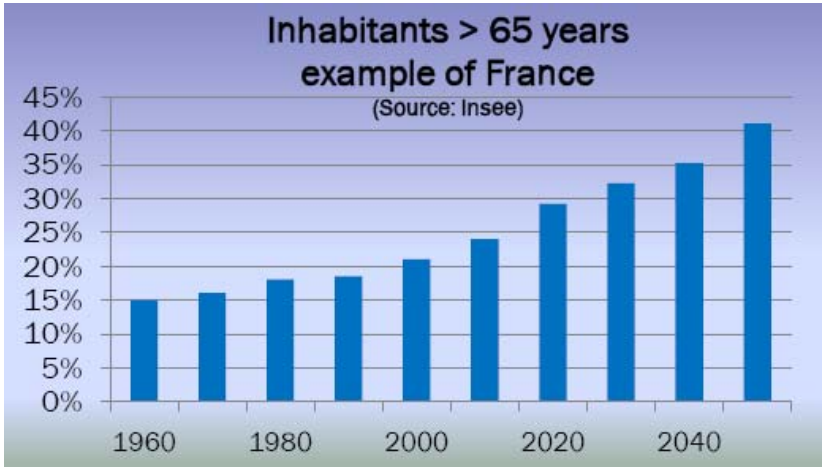
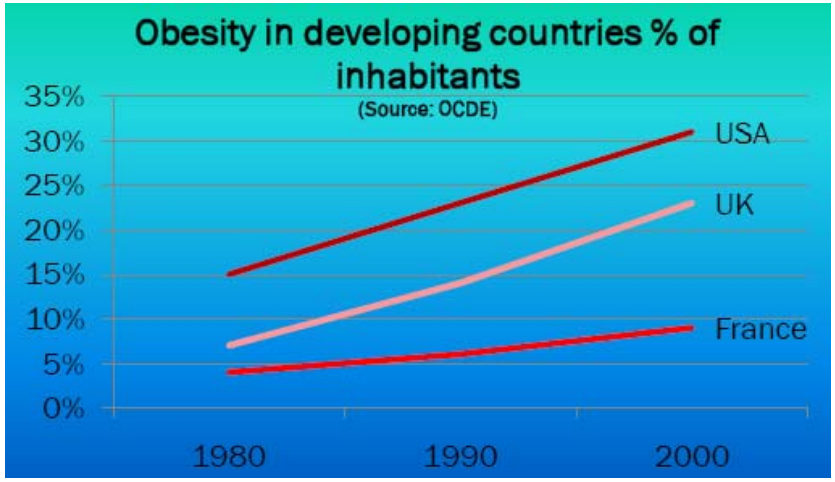
世界人口（单位：十亿）




（举例）法国：
年龄超过**65**岁的人口比例

居民肥胖率




Chinese population
above 65 years of age : 9%
中国**65**岁以上人口占**9%**

# The market drivers

## 全球65岁以上人口比率

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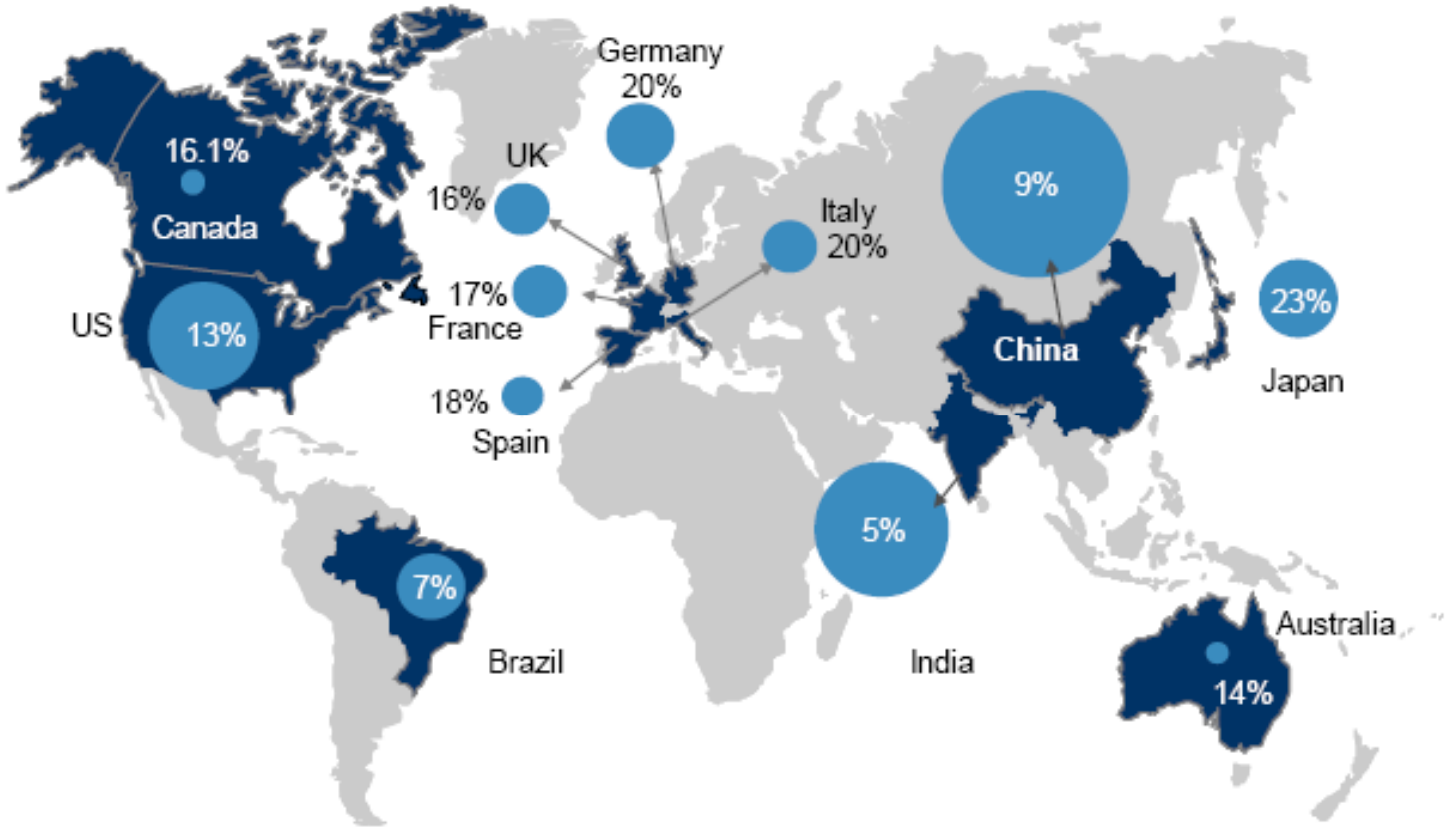
**Figure 9: Global Population Above 65 years of Age**




Note: The size of the bubble represents the relative size of 65 years and above population. The percentage represents the proportion of 65 years and above of total population in the country.

Source: GBI Research, US Census International Demographic Database

# The market drivers
# 市场驱动力

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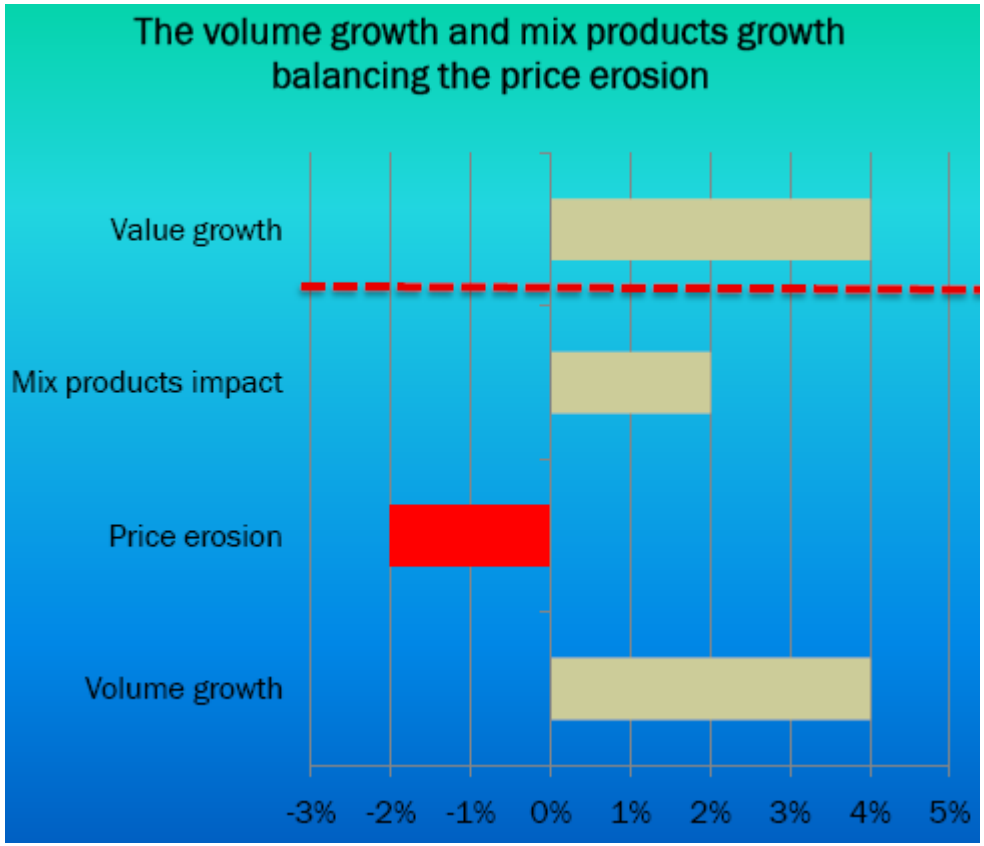
Continuous growth (1-2 digits)
持续增长(1 - 2位数)

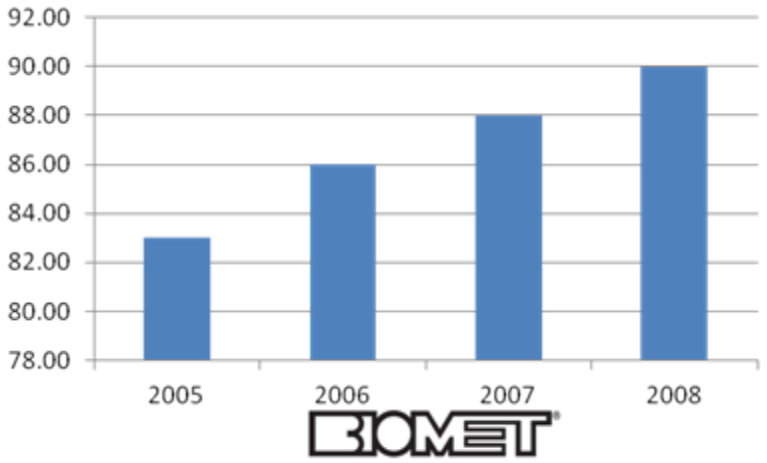
Tougher competition
竞争更加激烈

**Prices under pressure**
价格压力

**The innovation race is on !**
创新的竞争开始了




New products launch is increasing each year.
新产品的开发每年递增



# MEDTEC MARKET TODAY
# Technology Trends
## 医疗市场的发展趋势

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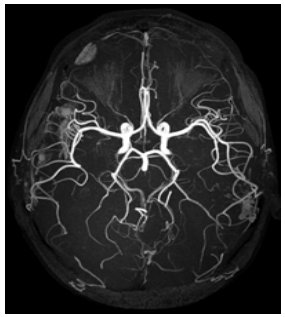
**Co-Cr / Ceramic / PE**

**钴-铬合金 / 陶瓷 / 高分子**



Total Imaging (MRI)
核磁共振

Scanning 逆向扫描

Diagnostic 诊断

Prosthetic treatment Planning义齿治疗规划

Guided implant surgery (preparation and insertion)
引导植牙手术（准备植入）

Provisional restoraation
临时替代

Final restoration
最终植入完成

# MEDTEC MARKET TODAY
# Technology Trends
# 医疗市场科技的发展趋势

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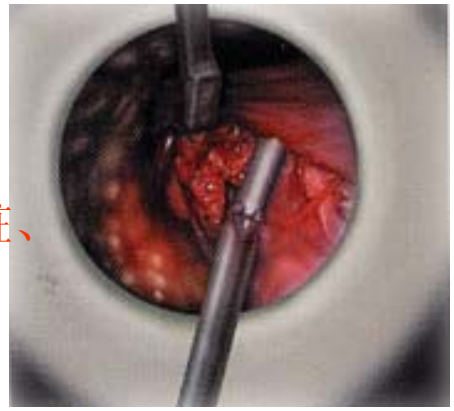
## MIS with Robotic assisted surgery (Da Vinci)

微型机器人辅助手术

Robotic assisted micro surgery is improving a lot especially in the cardiac , urology and general surgery

微型机器人辅助手术大幅提高了特别是心脏、泌尿科和一般的外科手术的手术质量



3 d vision

# MEDTEC MARKET TODAY
# Technology Trends
## 医疗市场的现状及骨科植入的发展趋势

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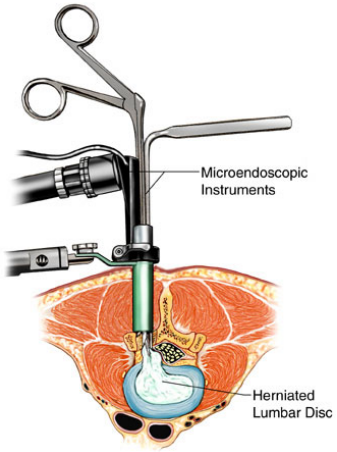
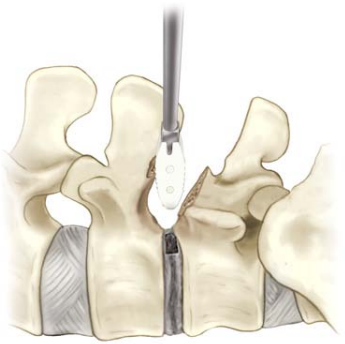
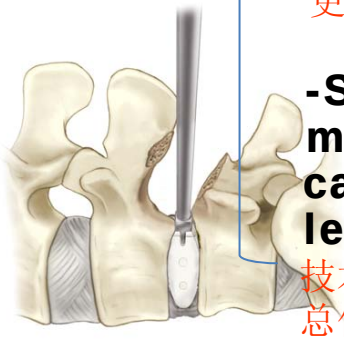



**MIS impact**





-**Some implants are getting smaller** and **more complex** due to new MIS implantation procedures and their toolings needed.
由于新MIS植入工艺和工具的需要促使植入体变的越来越小及更复杂。

-The **implant overall precision is increasing** due to their size and operative procedures
植入物整体精度提高——由于他们的尺寸和手术程序需要

-**Quality of implants surface finish is increasing**.**(less frictions , less wear)**
植入物的表面光洁度质量提高了。(更少摩擦,更小的磨损)

**-Some technological shifts into new materials (higher strenghts capabilities and overal resistance, less wear, MIM –CoCr )**
技术转移到新材料——(更高的强度，性能和总体耐磨损度,减少磨损, 锻造压铸成型-钴铬合金技术)

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# Tornos Group

## 瑞士TORNOS集团

# Tornos Today
# 现在的Tornos

TORNOS

- Swiss Company with more than 130 years of history (1880).

  瑞士公司历史超过130年
- Conceptor and Designer of the first and famous automatic lathe ( Swiss type)

  世界第一台纵切自动车床（瑞士型车床）的创造者和设计者
- 700 people working in Switzerland

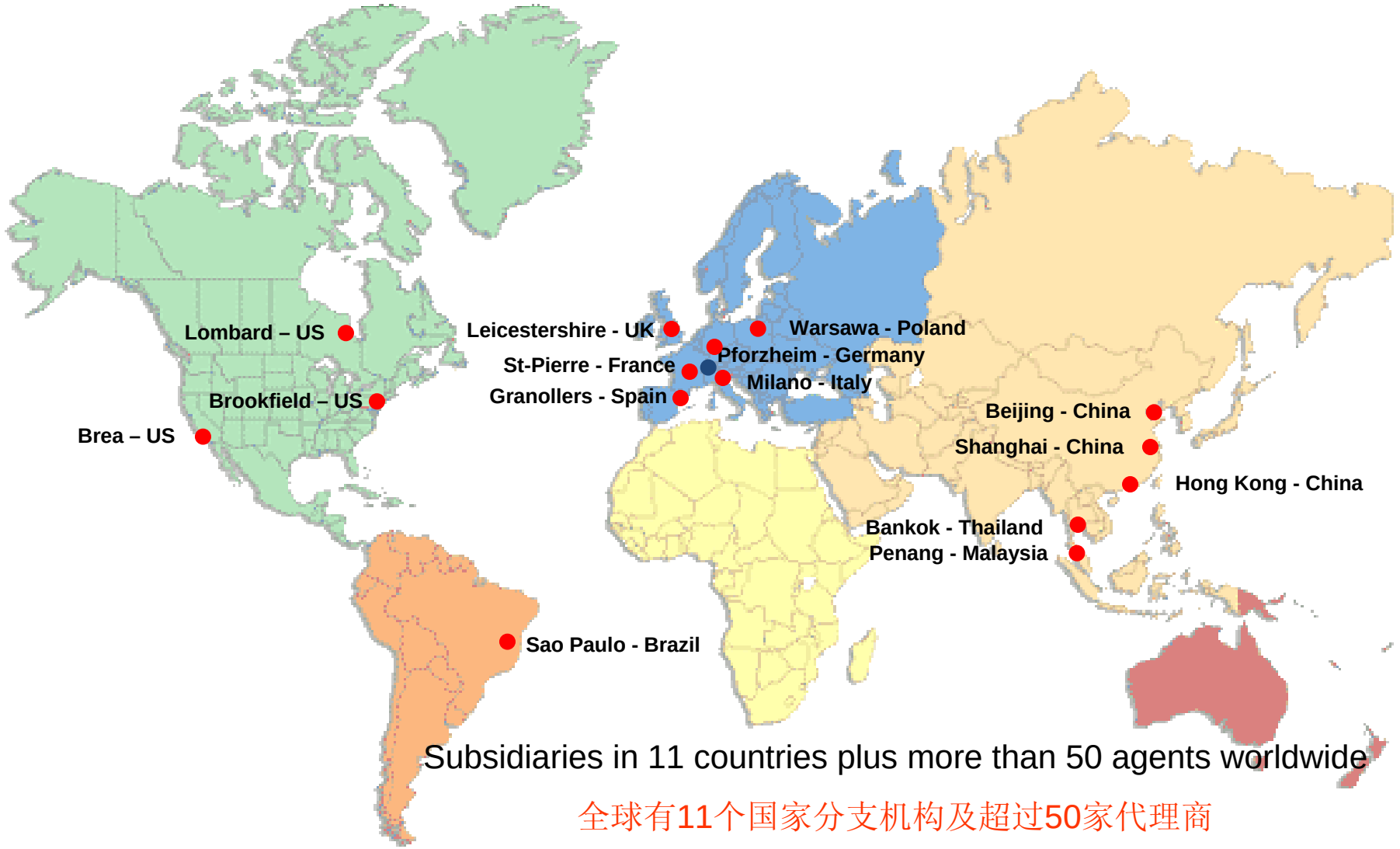
  700名员工工作在瑞士总部
- 185 people in the subsidiaries

  185名员工工作在世界各分支机构
- 35 apprentices

  35名学员在接受培训

- Gross sales 2011 : CHF 270 $millions
- 2011年销售额：2.7亿瑞士法郎

# Tornos Worldwide
# Tornos 全球




Subsidiaries in 11 countries plus more than 50 agents worldwide

全球有11个国家分支机构及超过50家代理商

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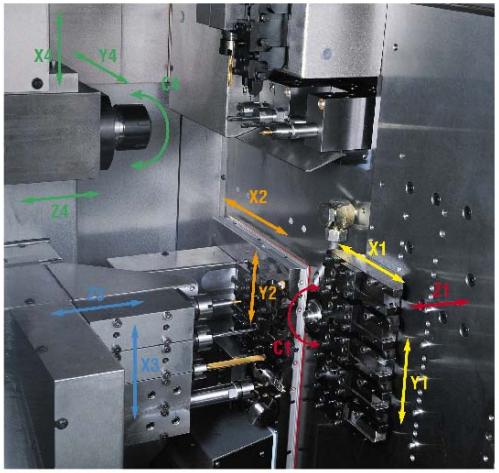
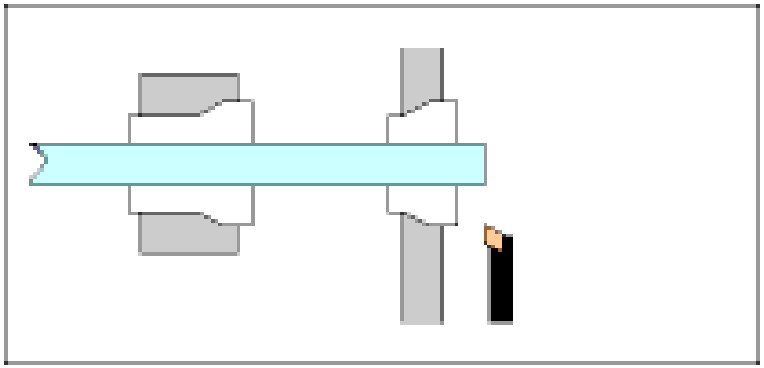
# Machining solutions advised by Tornos

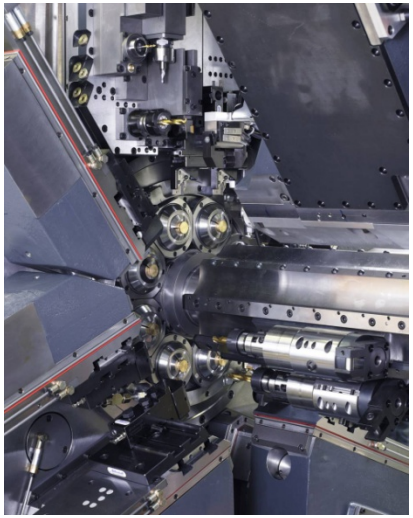
## Tornos能为客户提供全套加工解决方案

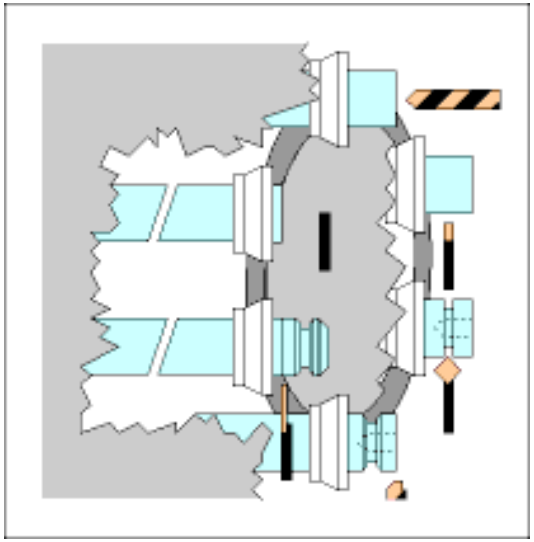
# Tornos today 今天的Tornos



Automatic lathes « swiss type ». Kinematics from 3 – 12 CNC axes for bar capacity 1 to 38 mm.
（瑞士型纵切自动车床3-12个直线轴覆盖直径1-38mm工件）





Automatic multi spindles (6 or 8 spindles). Kinematics up to 30 CNC axes for bars capacity 4 to 32 mm.
自动多轴车床（6-8个主轴）
最多30个直线轴可覆盖加工直径4-32mm工件

# Tornos today
# 今天的Tornos


Machining centers « high speed »
for cubic omponents size
350 x 230 x 160 mm

超精密级加工中心《高速》
加工零件尺寸范围350 x 230 x 160


Bar milling machines
for bars capacity 4 to 30 mm

棒材铣削中心
棒材直径4至30毫米

# Means of Machining Batches of small Parts

大批量小零件的加工手段

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Annual Production Quantity per product 机床加工效率

Very High

High

Medium

Low

1

Multispindles Automatic Lathes 多轴自动车床

Single Spindle Automatic Lathes 单轴自动车床

Machining Centers 加工中心

1 Low Medium High

**Product Variants** 产品变化柔性

# MEDTEC Market :Tornos Mission

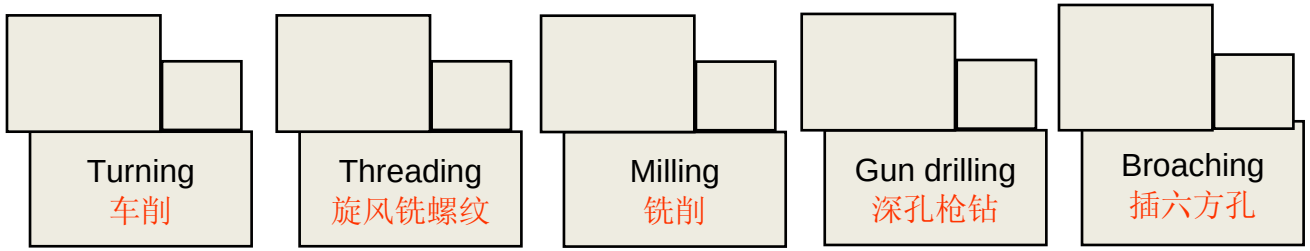
## 医疗市场： Tornos 的目标和使命

Deliver productive manufacturing solutions able to produce complex and precise components made in special alloys or plastics , without any secondary operations, in a **highly quality framework** in small, mid or big size batches.

以高效加工方案解决复杂高精度合金或塑料零件的加工难题,一次加工完成，无需二次加工工序,在高质量的小、中或大批量精密零件生产中应用广泛。

# TORNOS today: MULTITASKING MACHINES

## 多道复杂工序在一台机床上一次完成



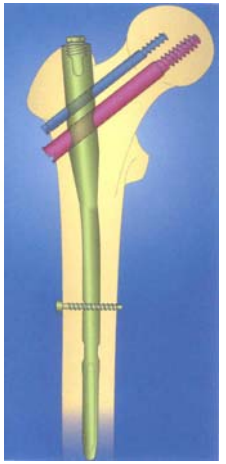

**Yesterday**

*28 minutes*

过去需要***28分钟***

Hip screw in stainless steel

不锈钢鹅头钉




**Today**

Turning Center DECO

***9 minutes*** 现在只需***9分钟***

# TORNOS today: MULTITASKING MACHINES
# 多道复杂工序在一台机床上一次完成

- adapted kinematics 灵活的刀具运动系统
- specific attachments and toolings 特殊附件及刀具
- programming software package 编程软件包

**Yesterday**

*15 minutes*

*过去需要**15分钟***

Dental abutment (for implant)
in Titanium
钛合金的角度基台

**Today**

Turning Center DECO

***5 minutes***

DECO机型上加工现在只需
***5分钟***

Implant assembly
种植体装配结构
(source Nobelbiocare)

# TORNOS today :

## « HIGHLY PRODUCTIVE » MACHINES

超高生产效率多主轴车床

**Yesterday**

on « classical » NC

*lathe 12 minutes*

过去加工需要12分钟

Poly axial head
made in titanium

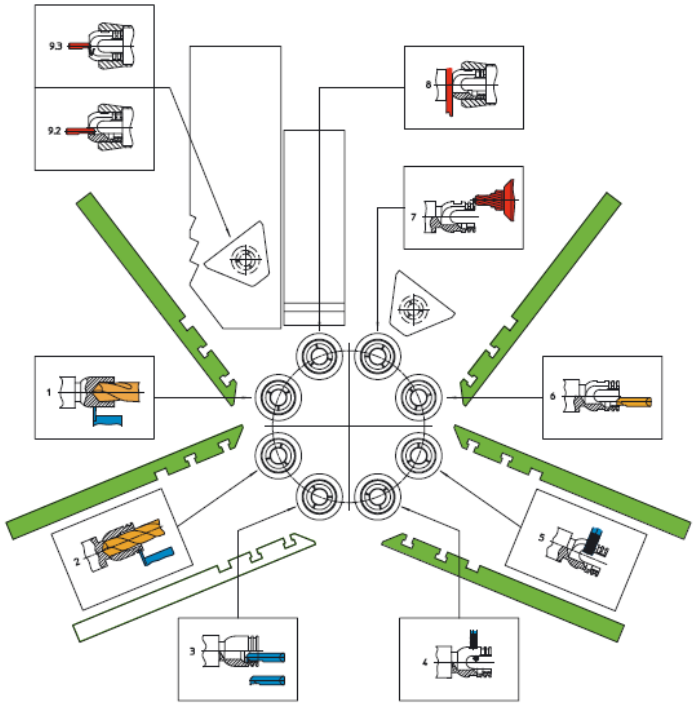
钛合金万向椎弓根钉钉头

**Today** Multispindles lathe

MultiAlpha

***50 sec***

现今用MultiAlpha 机型加工仅需50秒

# Tornos today : CUSTOMIZED MACHINES
## 适应专业客户特殊生产需求的特有机型

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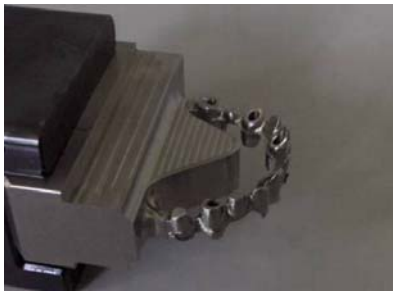
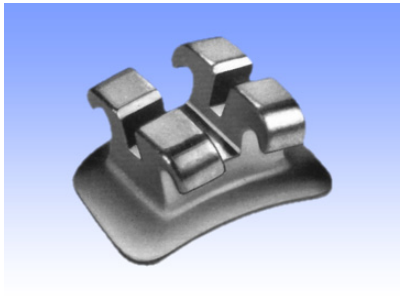
Almac
MACHINES DE PRODUCTION

Ceramics and zirconia
Machining
陶瓷和氧化锆材料零件的精密加工

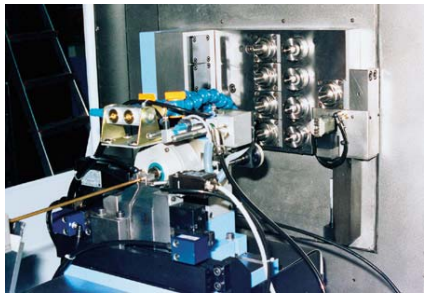
Machining of complex Micromechanical components with
MC 5-6 axes or bar milling machines
用5-6轴加工中心或棒材铣床加工复杂的微型超精密机械零件



Prothesis
义齿



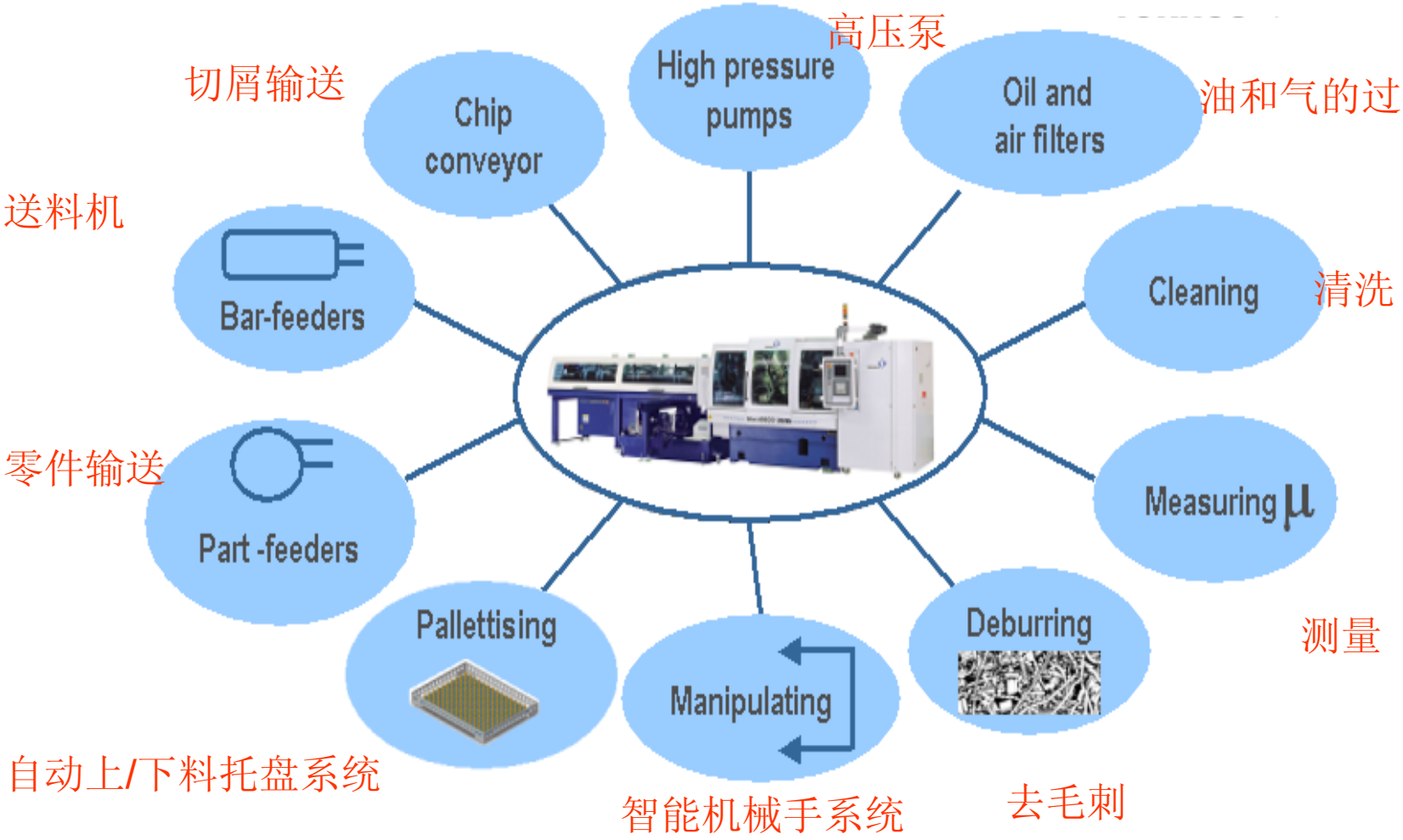
Bracket
牙托支架



# TORNOS today : MANUFACTURING CELL

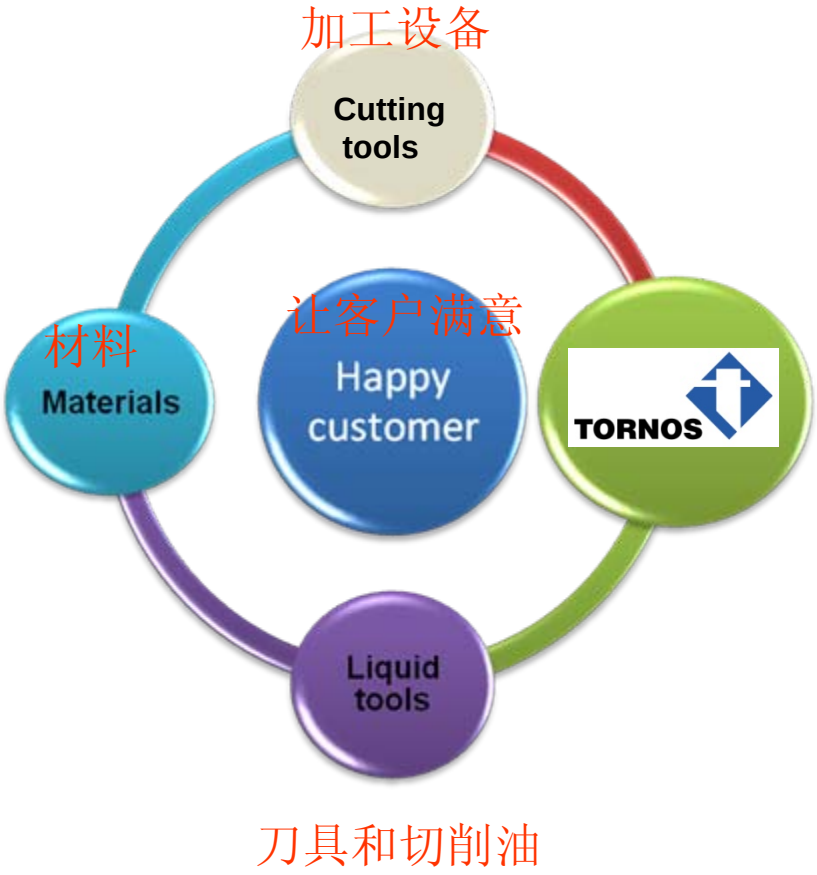
## 满足苛刻加工要求的全集成式加工单元

**… from machine builder to system provider** 从主机制造到周边系统集成的提供者



# TORNOS today: MACHINING PROCESSES IMPROVEMENTS

加工工艺的改进与提升




**Working closely together**

**with strong industry partners**

与知名企业紧密协作，强强联手

TORNOS

# Our presence in the the Medtec Industry

# Tornos在医疗行业

# TORNOS and the MEDTEC industry
# Tornos在医疗行业的应用

-More then 25 years experiences with the Medtec industry.

-在医疗行业积累超过25年的制造及应用经验

-First in sales in Europe.

-欧洲市场排名第一

-Top three in Asia.

-在亚洲市场排名前三

-Top three in the USA.

-在美国市场排名前三

# TORNOS MEDTEC reference list 2011

截至2011年Tornos 全球医疗领域客户基本情况

-320 “Medtec” customers WW.

-世界范围拥有320多个医疗行业用户

-Customers in 40 countries.

-客户遍布40多个国家地区

-1600 machines “Medtec” installed.

超过1600台机床服务在全球范围的医疗行业

- over 44 $millions sales in 2011 in the Medtec industry.

-每年在医疗行业超过四千万瑞郎的销售额

# TORNOS : one step ahead of competition 面对竞争永远领先

-**First to develop/adapt threawhirling process on Swiss type automatic lathes.**

-第一家将螺纹旋风铣工艺成功应用于纵切车床的企业。

-**First to develop/adapt gun drilling process using High Pressure (120-340 bars ) on Swiss type automatic automatic lathes.**

-第一家将高压深孔枪钻工艺（120-340公斤压力）成功应用于纵切车床企业。

-**First to develop/adapt torx milling process with high frequency spindles on Swiss type automatic lathes.**

-第一家将高频铣加工梅花工艺成功应用于纵切车床的企业。

-**First to develop angulated abutment machining process in main and counter-operations on Swiss type automatic lathes.**

-第一家将加工种植牙角度基台工艺成功应用于纵切车床的企业。

-**First to develop/adapt machining process of bone screws and heads for polyaxial screws on multispindles lathes.**

-第一家将超高加工效率的万向椎弓根钉头工艺成功应用于多主轴车床的企业。

TORNOS

# Products
# Tornos产品线

# Single spindles

# 单主轴纵切自动车床

# EvoDECO Kinematics
# EvoDECO结构布局图

TORNOS

Up to 10 (12) axes

可达10（12）数控轴

4 tools systems

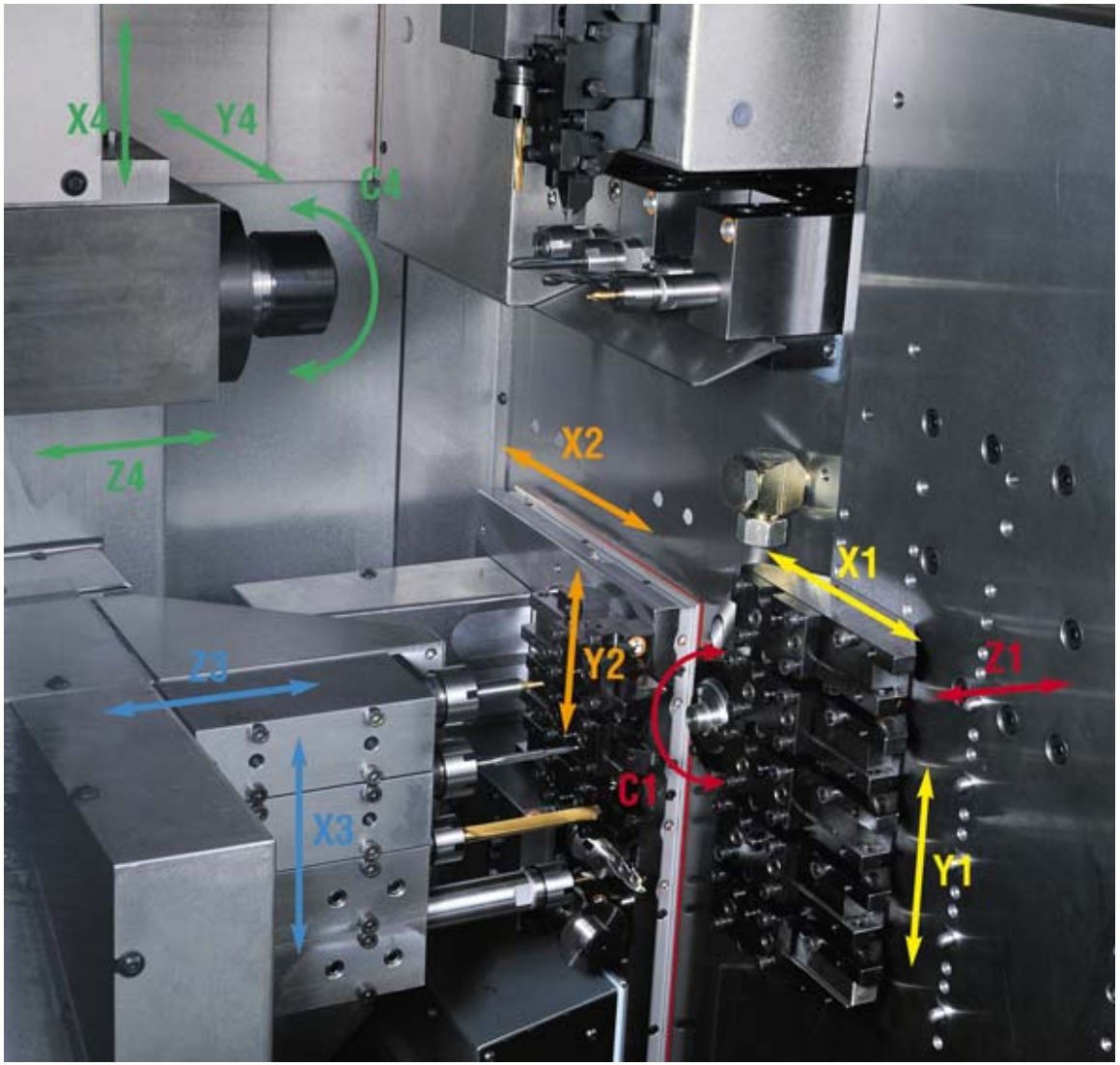
4组独立的刀具系统

4 simultaneous tools

可以4把刀同时加工

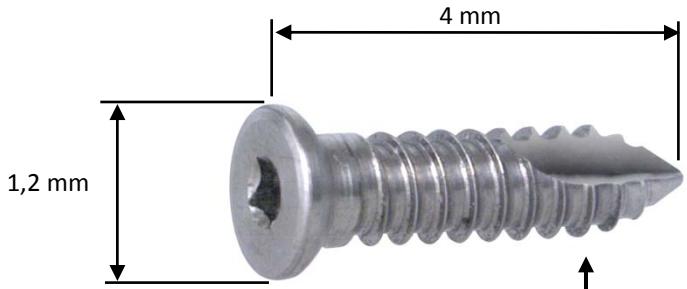
Up to 32 mm

最大加工直径32mm



# EvoDECO 10

TORNOS




- Maxilofacial screws
- Humeral locking screw
- Schanz screw
- Guide wire
- Dental implant
- Dental abutment
- Caps / screws
- Drill/ reamers
- Sleeves / connectors

- 颅骨自攻钉
- 牙科种植体
- 直 / 角度基台

Self tapping distal and middle phallange screw

颅骨自攻钉

# EvoDECO 16


TORNOS

DECO 13a / e

- Bone screws 骨钉
- Cannulated / corticalisscrews 中空螺钉
- Cortex / malleolar screws 趾骨钉
- Humeral locking screw 锁钉
- Locking screw 锁母
- Trocar 套管
- Connecting rods 连接杆
- Steinmann pins 皮质针
- Drill sleeve 钻套
- Distraction / compression rods 压杆
- Dental Implant 种植体
- Abutments 基台
- Drill / reamers 钻头/铰刀

# EvoDECO 20 / 32

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- Cannulated screws 中空螺钉
- Nails 髓内钉
- Lag / hip screws 鹅头钉
- Mono / Poly axial screws 万向钉
- Spine Hooks 椎弓根钩钉
- Screw heads 万向钉头
- Connecting rods rods 连接杆
- Toolings 工具
- Nuts 锁母

# Sigma Kinematics
# Sigma机型结构布局图

TORNOS

Up to 6 (8) axes

可达6-8个伺服轴轴

2 tools systems

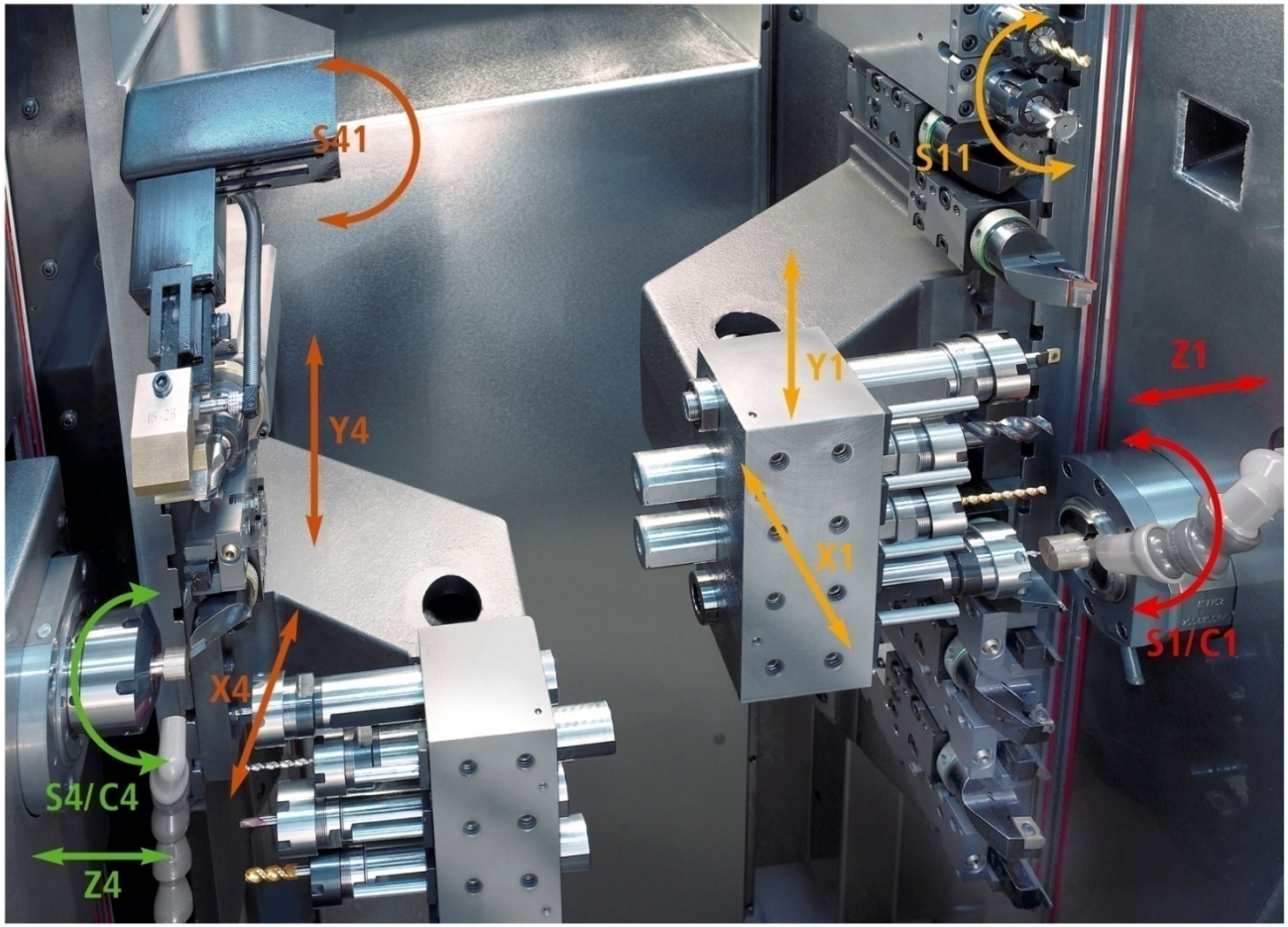
2个独立的刀具系统

2 simultaneous tools

2把刀具同时加工

Up to 32 mm

加工最大直径32mm



# Sigma 20 – Sigma 32


- Bone screws 骨钉
- Locking screws 锁钉
- Corticalis screws 皮质钉
- Pedical screws 脊柱钉
- Mono – poly axial screws 单向/万向椎弓根钉
- Connecting rods 连接杆
- Nails 髓内钉
- Locking nuts 锁母

Toolings 工具

# Delta Kinematics
# Delta 机型结构布局图

TORNOS

Up to 5 (7) axes

可达5-7个伺服轴轴

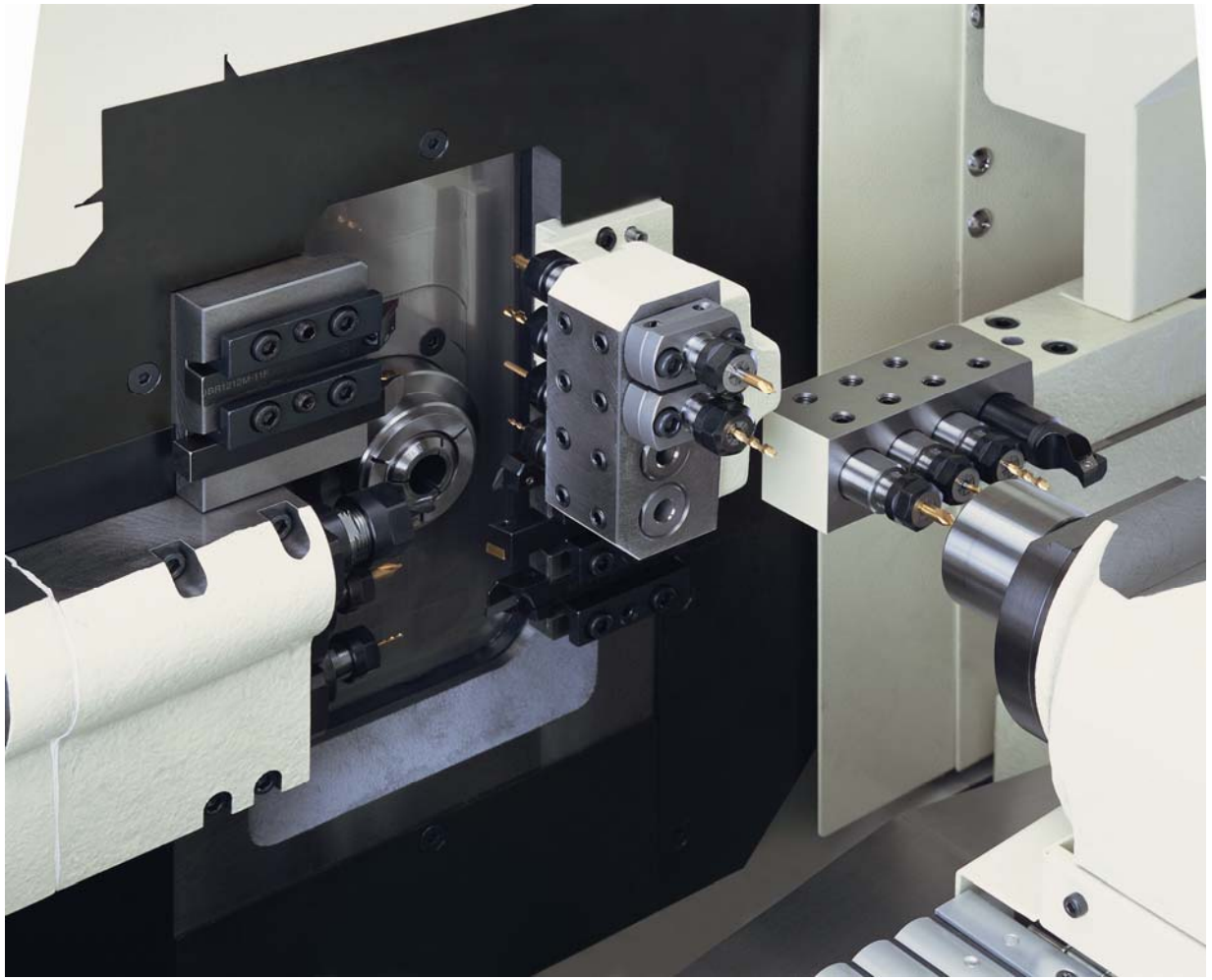
2 tools systems

2个独立的刀具系统

2 simultaneous tools

Up to 20 mm

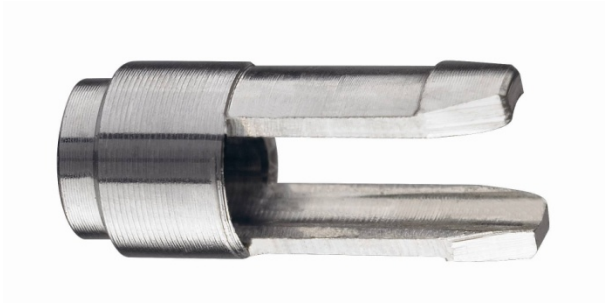
最大加工直径20毫米



# Delta 12 and 20

TORNOS





- Locking/cover screws
- 锁钉 / 盖钉

- Toolings
- 工具

- Medical devices standard components
医疗器械标准组件

- Dental burs
- 牙科愈合帽

# Multi spindles

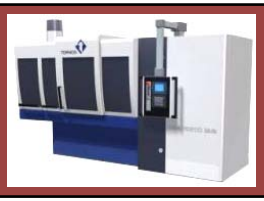
## 多主轴自动车床产品线

# Multi spindles 多主轴自动车床产品线

TORNOS

Ø16 | Ø20-24 | Ø32

MultiAlpha
(6/8 spindles)
（6个或8个主轴）



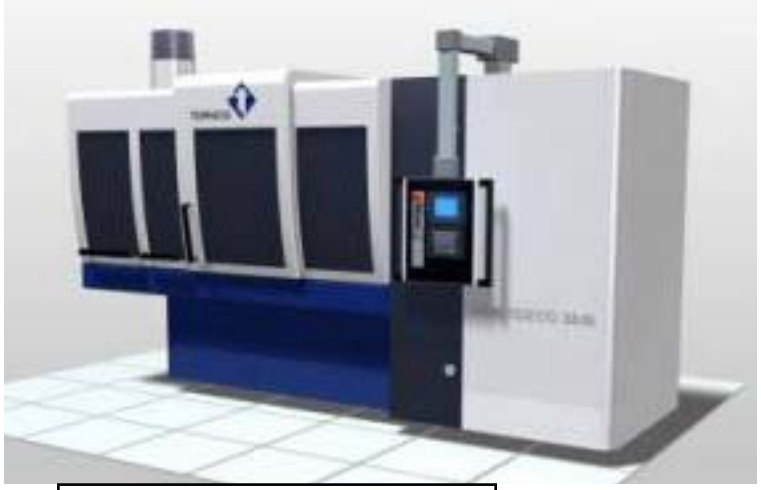
MultiSigma
(8 spindles)
（8个主轴）


MultiDeco
(6/8 spindles)
（6个或8个主轴）

SAS (6 spindles)
（6个主轴）（凸轮式）

# MultiAlpha 8 x 20

TORNOS

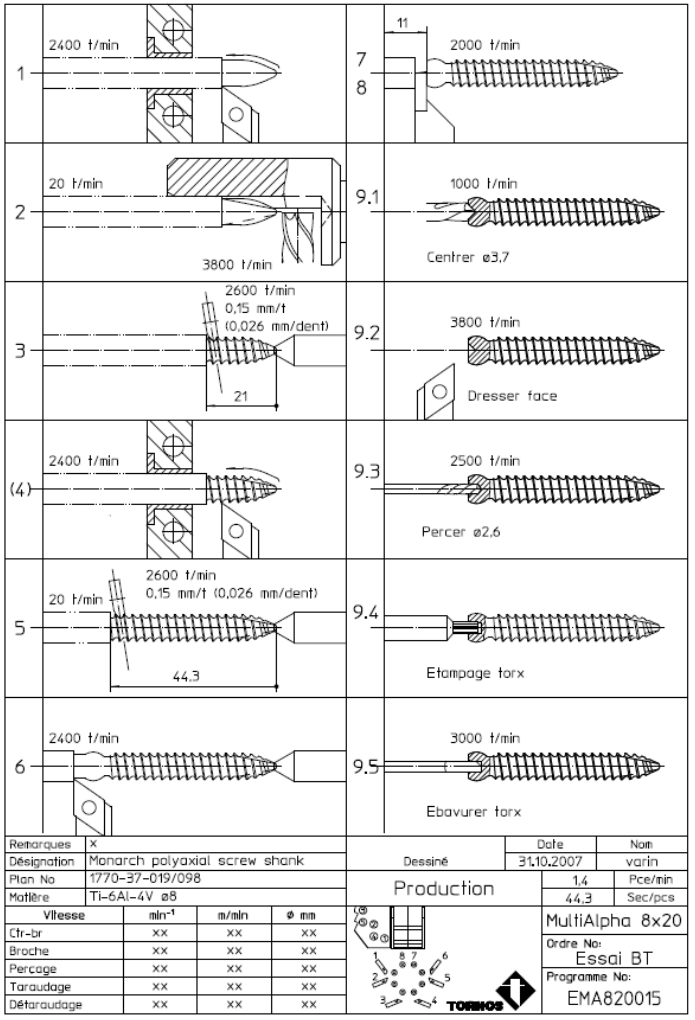


- Polyaxial heads and locking nuts.

万向椎弓根钉头和锁母

- Bone screws ( part length limitations)

骨钉（长度受限）



# Machining centers

## 加工中心产品线

# Machining centers
# 加工中心产品线

TORNOS

Machining centers
加工中心

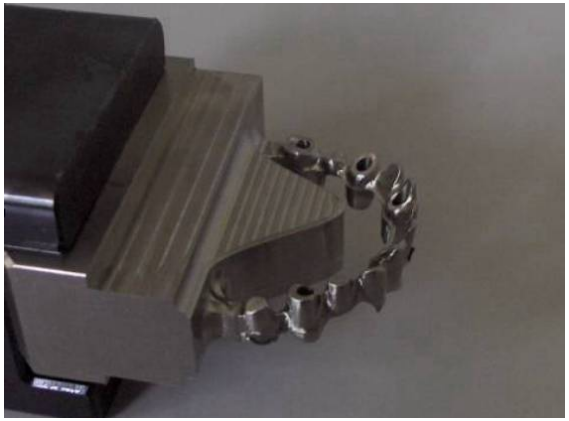


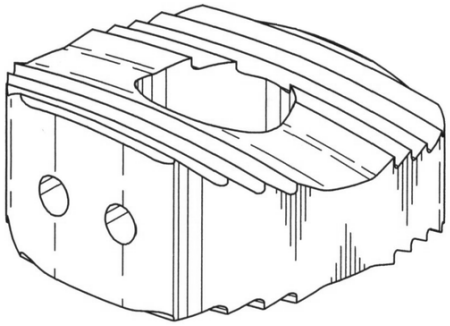
HSC milling and turning centers
高速铣车中心



Special machines
专门用途机床


# CU 1007 4-6 axes (machining center)
# CU1007 4-6 轴加工中心
# FB 1005 (bar milling machine)
# FB1005棒材铣削加工中心



- Dental prothesis
  义齿
- Angulated abutments
  角度基台
- Orthodontic brackets
  牙托
- Intervertebral cages made in PEEK
  椎间融合器（PEEK材料）

TORNOS

# Main materials being used for Medtec applications

医疗行业　主要材料应用

# Principal materials to be machined and their Bio-compatibily
# 材料及生物学相容性

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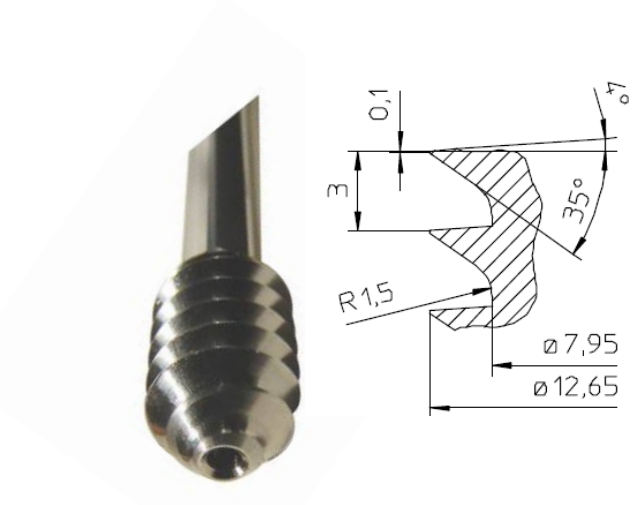
| Materials<br>材料 | Bio-compatibility<br>生物学相容性 | Remarks<br>主要应用行业说明 |
|---|---|---|
| Non ferrous (brass/Al/copper )<br>无铁材料（黄铜/铝/青铜） | No<br>否 | Instrumentation , apparatus<br>仪器仪表 |
| Stainless steels martensitic / austenitic<br>奥氏体不锈钢 / 马氏体不锈钢 | no / yes<br>否 / 是 | Surgical ancillaries , implants , apparatus<br>手术辅助设备，植入物，仪器仪表 |
| Titanium<br>纯钛及钛合金 | Yes<br>是 | Implants , ancillaries<br>植入物，手术辅助设备 |
| Cobalt – Chrome<br>钴铬合金 | Yes<br>是 | Implants , ancillaries<br>植入物，手术辅助设备 |
| Ceramics<br>陶瓷 | Yes<br>是 | Dental implants , protheses<br>种植体，义齿 |
| Peek (polyetheretherketon)<br>聚醚醚酮 | Yes<br>是 | Spinal implants , cages<br>脊柱创伤植入物，椎间融合器 |
| Carbon fiber , composites<br>碳纤维 ， 复合材料 | No<br>否 | Ancillaries , apparatus<br>手术辅助设备，植入物，仪器仪表 |
| Tantalum<br>钽合金 | Yes<br>是 | Electronic connectors , tubes , inserts<br>电子连接器，套管支架，镶嵌片 |
| Nitinol ( memory shape steel)<br>镍钛记忆合金 | Yes<br>是 | Cutting tools , stents , tubes<br>切削工具，支架，套管 |
| Bioabsorbable materials<br>可吸收生物材料 | Yes<br>是 | Implants , sutures<br>植入物，缝合线 |
| Polyethylene<br>聚乙烯高分子材料 | Yes<br>是 | Protheses<br>假肢 |

# Machining highlights :Threadwhirling proces

## 外螺纹加工工艺亮点：先进的旋风铣工艺




!!! Bone screws , orthopaedic and dental implants are designed with complex forms of threads to match perfectly with the different bone structure and locations.

!!! 骨科螺钉、牙科种植体植入部分需通过设计复杂形状的螺纹来完美适应人体不同位置和结构的骨骼。

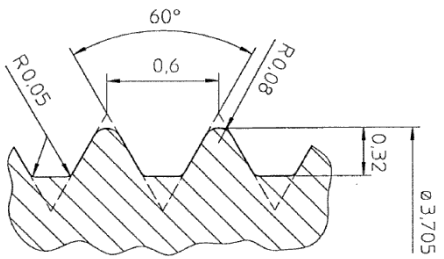
!!! The materials for orthopedic and dental implants are mainly, Titanium grade I – VI,

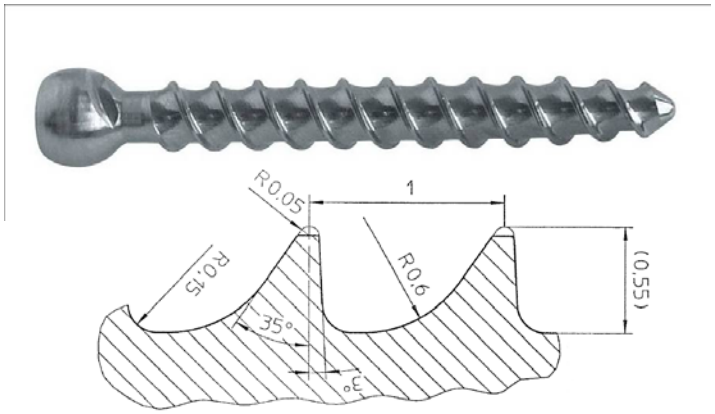
Stainless Steel 316 LVM , Cobalt-Crome and Bio resorbable materials , Peek

!!! 骨科螺钉和牙科植体主要材料包括为：纯钛及钛合金（等级I-VI）、不锈钢316 LVM, 钴铬合金和可吸收生物材料、聚醚醚酮等。

!!! The high quality , surface finish and tolerances needed for the medical/dental threads can be achieved in production with the **threadwhirling technology.**

!!! 旋风铣螺纹加工技术可大幅有效的提升骨科植入物的螺纹质量、表面光洁度的和严格的公差要求，从而完美适应各种高等级的骨钉和/牙科种植体的加工要求。



# Machining highlights : Threadwhirling proc
# 工艺亮点：旋风铣外螺纹加工工艺

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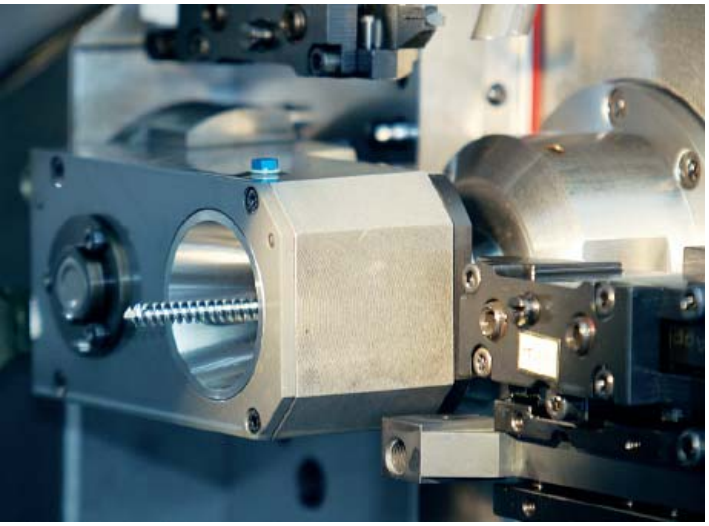
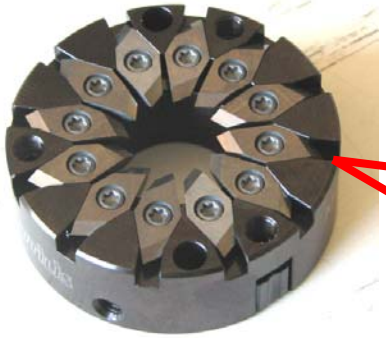
**External Threadwhirling attachment**

外螺纹旋风铣加工





**Standard inserts**

标准形式刀片

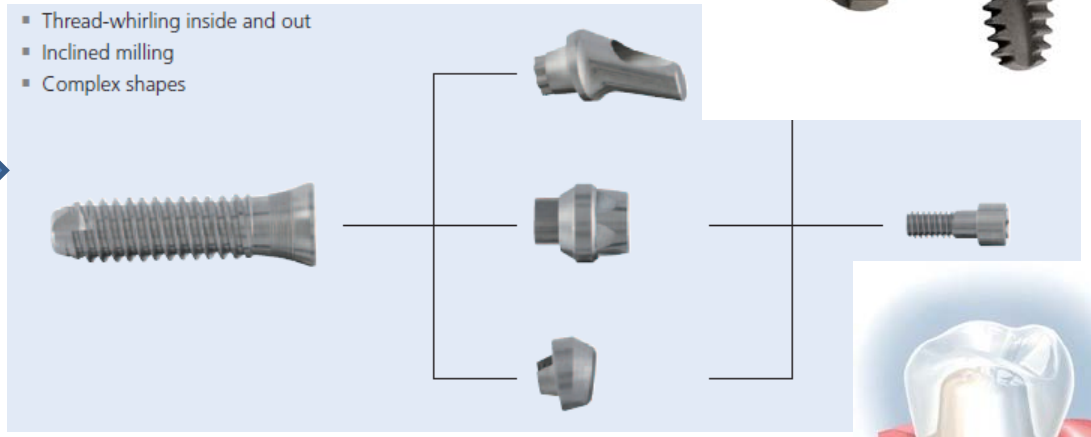
刀片数量**(5,6,9,12)**

**Cutters with constant profile**

圆形刀片，刀片可多次重复修磨

# All in one !

图示组件全部都可以在同一台车床上一次搞定！

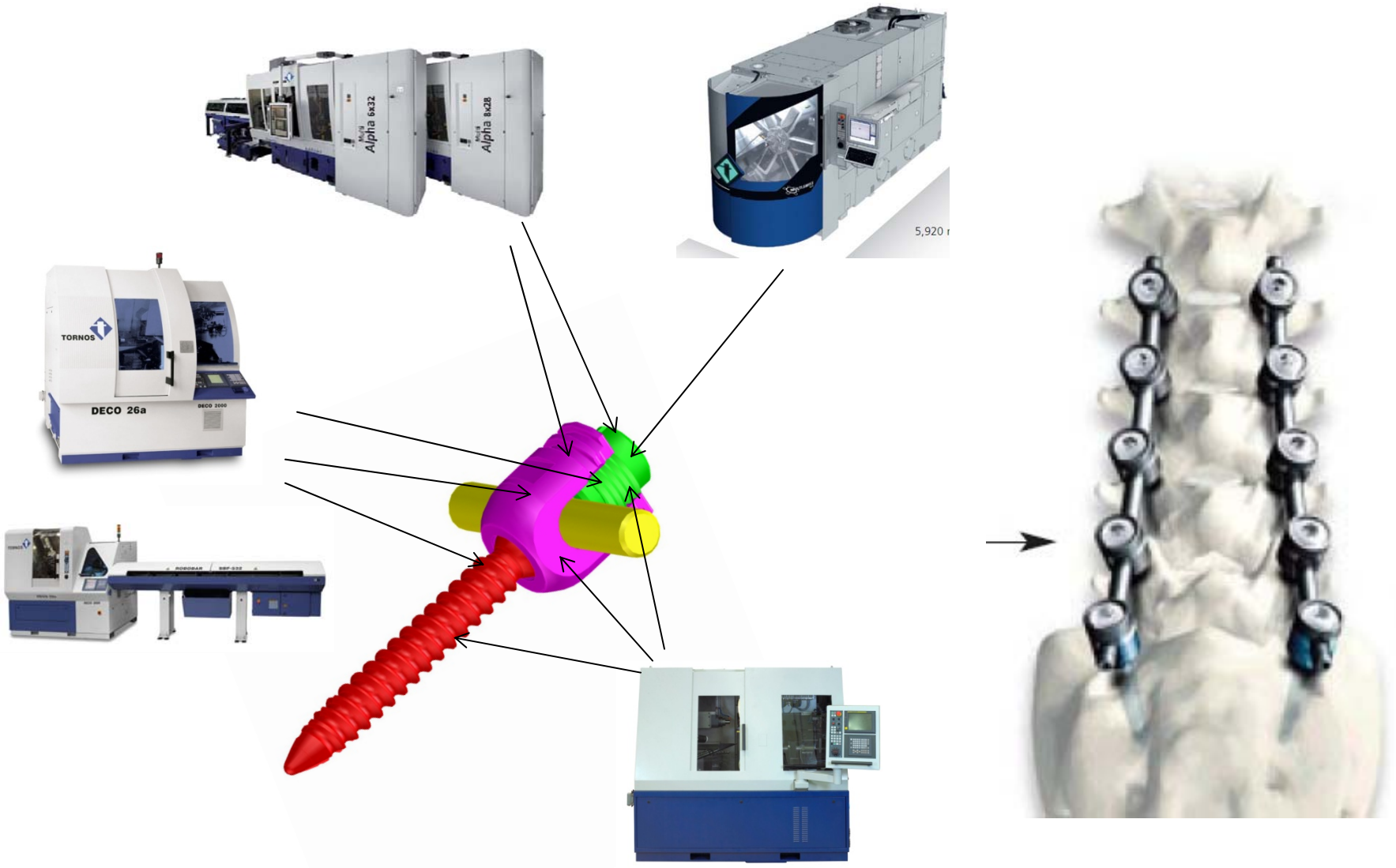




Ex.:dental industry 种植牙行业

- dental implants 种植体
- straight or angulated abutments 直 / 角度 基台
- fixation / cover screws 中央螺丝

# All for one !

# 多种加工方案一站式解决!



# Solutions provider

# 全套解决方案的提供者：Tornos

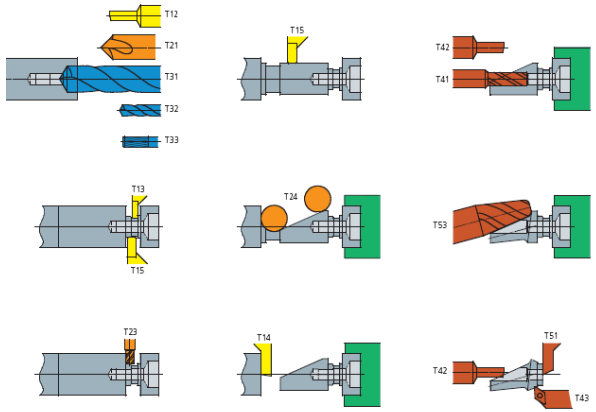
TORNOS

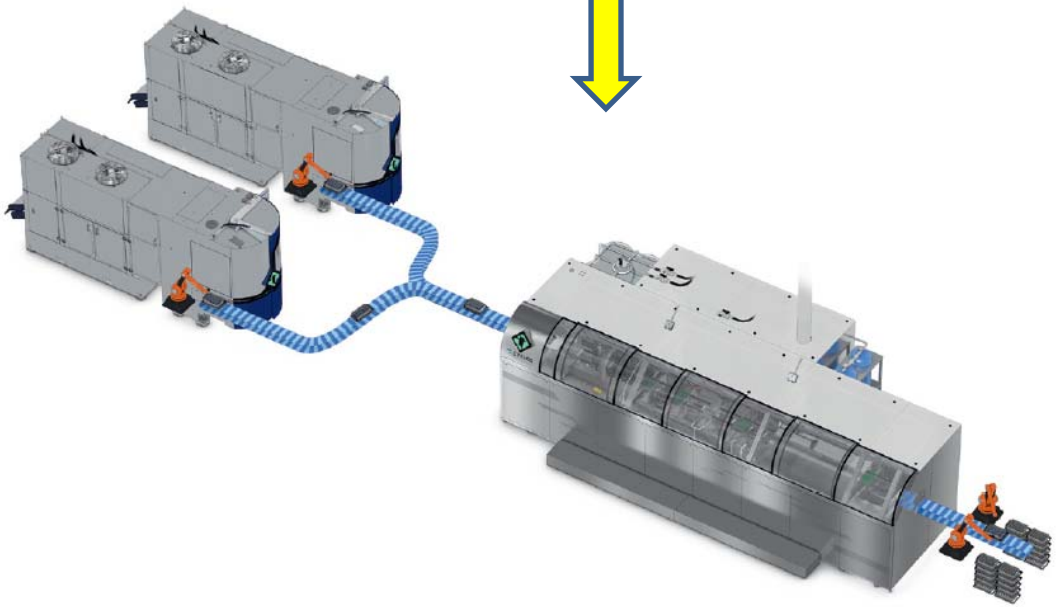
Customers needs 客户需要

Product definition 产品定义

Equipment/ peripherals definition

Machining process proposals加工程序

Customer part
角度基台

# Lean manufacturing enabler.

精益生产力的推动者：**Tornos**

**(from bars to complete finished anodized parts)**

**(棒材 = > 零件 = > 去毛刺 = > 除油 / 清洗 = > 阳极氧化 = > 干燥）**

TORNOS


**USP**

TORNOS

# Our Customer’sapplications

## 医疗器械客户的实际行业应用简介

# Cardiology
# 心脏内科

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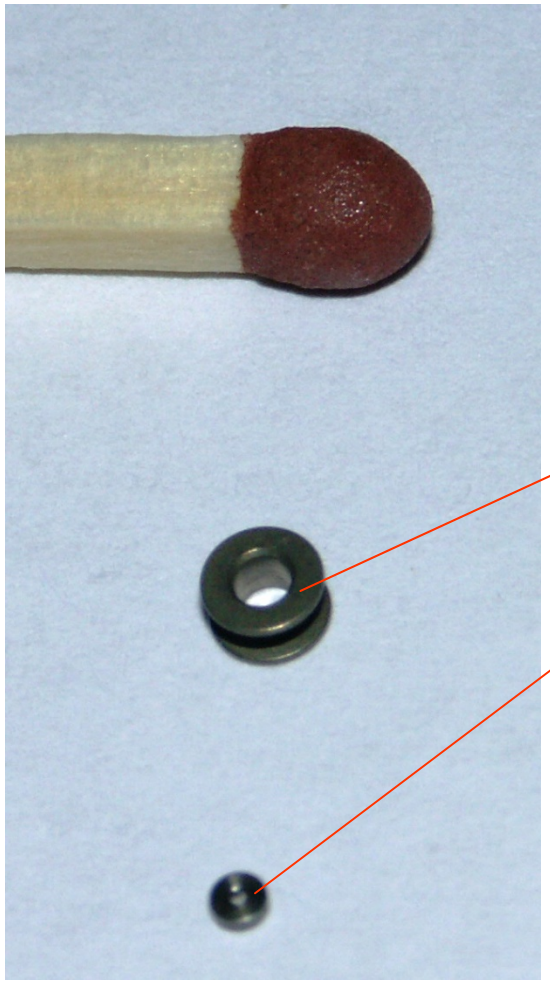
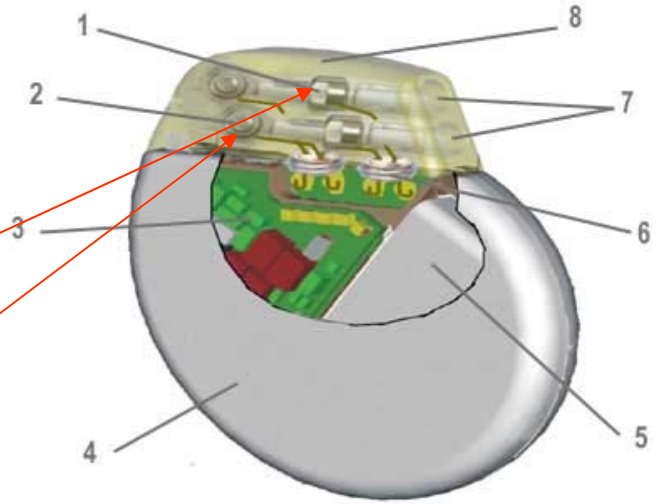


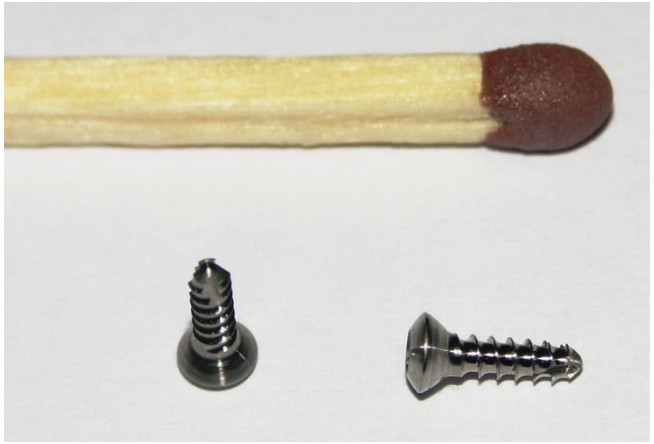



**-Connectors ,sleeves for  Pacemaker / ICD / Neurostimulator**
**Material : Titanium**

**-连接器,套筒等，用于：心脏起搏器 / ICD /** 神经刺激器
材料:钛合金

# **CMF** ( surgery  cranio – maxillo –facial)

## 颅骨 / 颌面 创伤修复



source Synthes

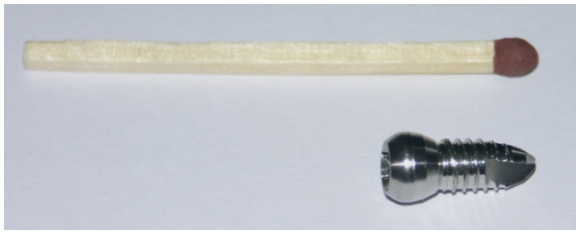
**-Maxillo facial screw** 颌面钉

**Material : Titanium** 材料：钛合金

# Traumatology (distal radius plate)

## 创伤骨科 （远端桡骨板）

TORNOS



-Screw for radius ( hex / torx )

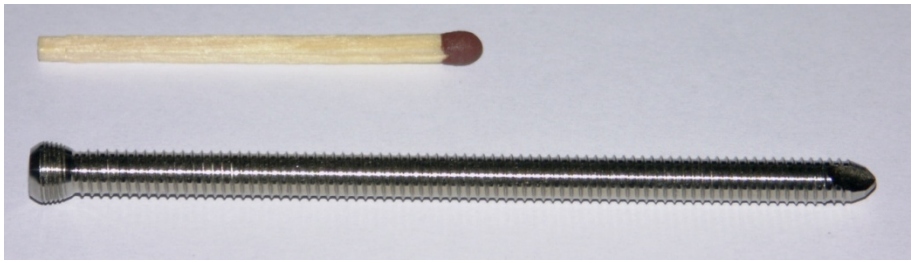
-骨板螺钉（内六方，内梅花）

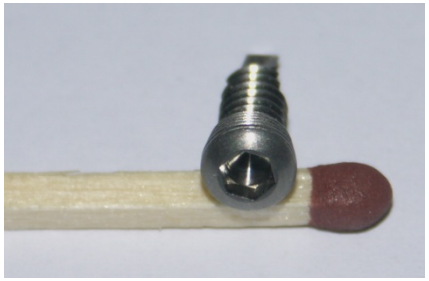
-Bone plate

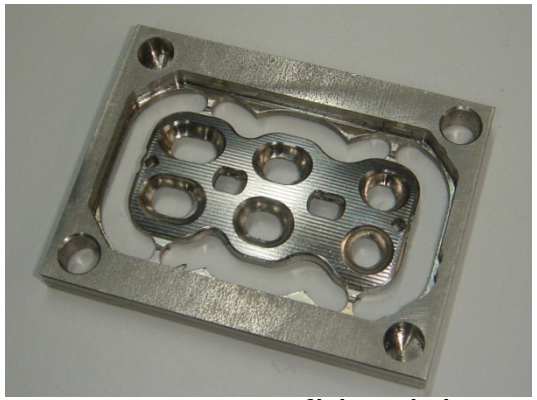
-骨板

- Material : Titanium

-材料：钛合金



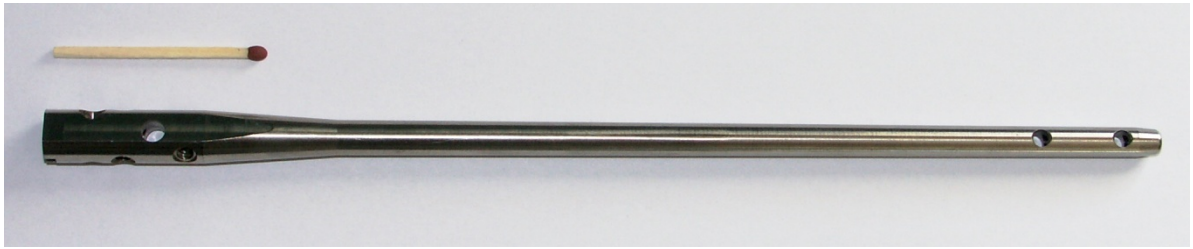


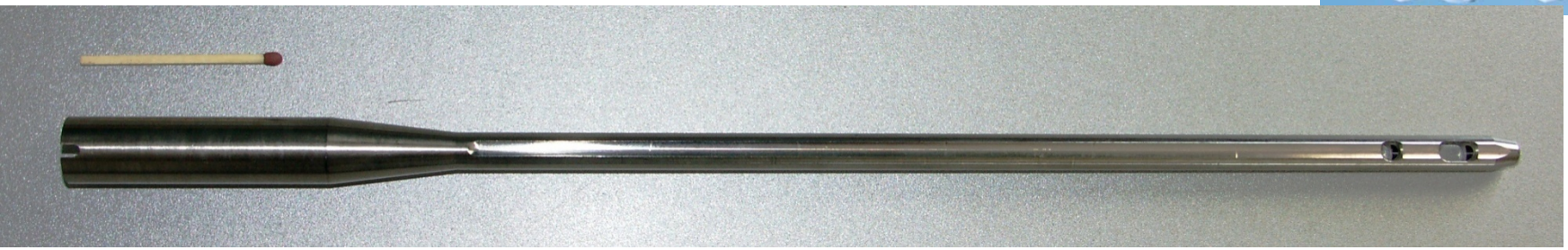


source Synthes

# Traumatology
# 创伤骨科

TORNOS

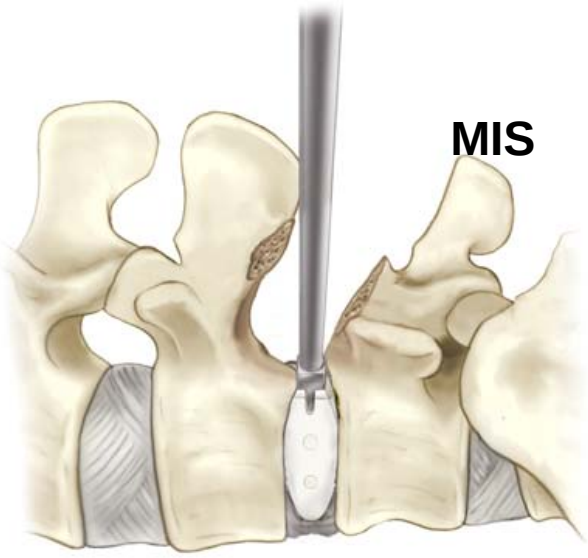


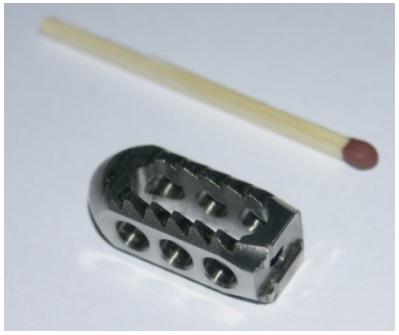


- **Orthopaedic nails** 髓内钉
- **Material : Titanium / Stainless 316 L** 材料：钛合金 / 316L不锈钢

source Synthes

## Spine ( cervical , thoracic , lombosacral )
## 脊柱创伤修复



**-Intervertebral cage ( fusion)**
椎间融合器
**-Hooks**
椎弓根钉钩
**Material : PEEK( polyetheretherketon) / Titanium**
材料： **PEEK（聚醚醚酮） / 钛合金**

# Dental
## 齿科植入( 种植牙系统 )

source Dentsply Friadent

**-Angulated pilar**

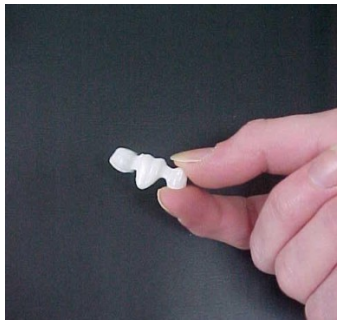
**角度基台**

**Material :Titanium / Ceramics ( Almac)**

**材料: 钛合金 / 陶瓷（Almac)**

# Dental ( orthodontic / prothesis )

## 齿科矫正整形 / 义齿



**-Dental crown**

**-牙冠**

**-Dental prothesis**

**-义齿**

**-Brackets**

**-牙托**

**Material : Ceramics , Titanium, Stainless, Cobalt Chrome**

**- 材料: 陶瓷、钛合金 、 不锈钢 、氧化锆、钴铬合金**

# « Leitmotiv » : Quality first !

品质至上


**Our objectives :**

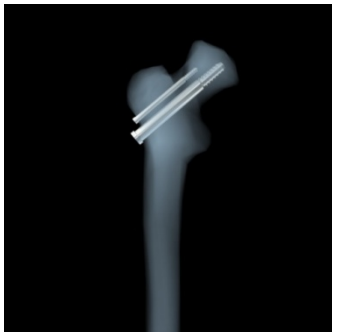
- be the Leader in this very and challenging market.
- offer turnkeys solutions and the best productivity
- support and follow our customers Worldwide

我们追求的目标：

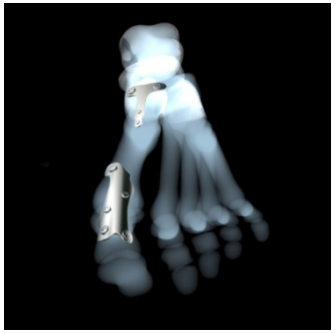
- 在当今具有挑战性的市场成为领跑者
- 提供最佳的解决方案和追求最高加工效率
- 尽心，尽力支持服务于全球客户

**DENTAL**
齿科

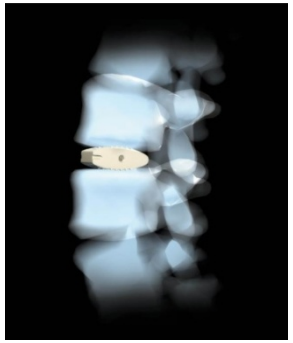
**TRAUMA**
创伤修复



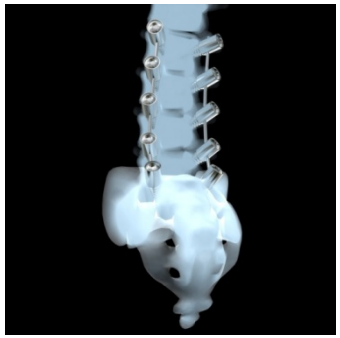
TORNOS



**MOTION**
运动损伤修复



**INTER BODY FUSION**
椎间融合器



**SPINAL DEFORMITY**
脊柱创伤修复修复

**ORTHODONTIC**
齿科矫正整形