MATHYS
European Orthopaedics

Preservation in motion

For healthcare professional use only. The illustrated image does not represent a connection between the use of the medical device described, nor its performance.

twinSys

Product information

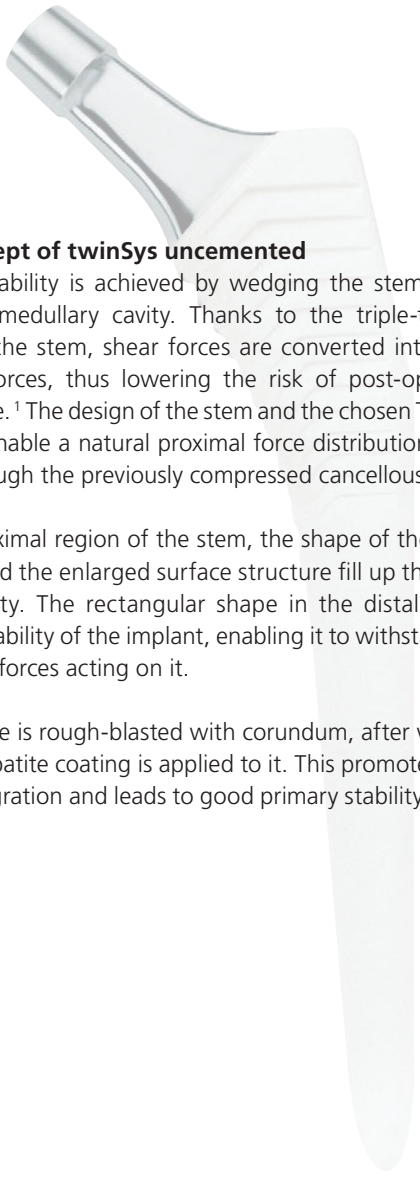
Building on our heritage
Moving technology forward
Step by step with our clinical partners
Towards a goal of preserving mobility

***Preservation** in motion*

As a Swiss company, Mathys is committed to this guiding principle and pursues a product portfolio with the goal of further developing traditional philosophies with respect to materials or design in order to address existing clinical challenges. This is reflected in our imagery: traditional Swiss activities in conjunction with continuously evolving sporting equipment.

twinSys
Idea and concept

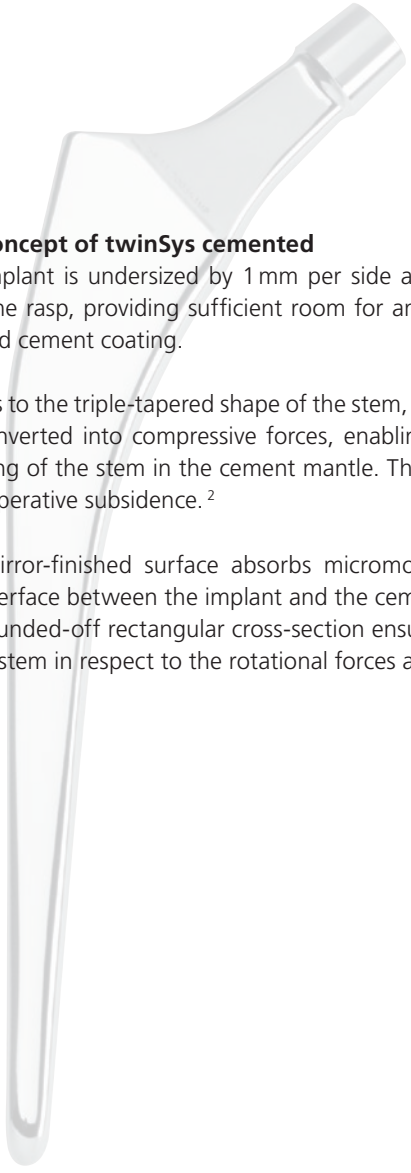
The twinSys Family is based on the philosophy of the tapered straight stem that has been proving its worth clinically for decades now. Among other things, its rounded-off shoulder design makes it an implant of choice for all minimally invasive approaches. The possibility of choosing between uncemented or cemented treatment using the same instrument set provides high intra-operative flexibility.



The concept of twinSys uncemented
Primary stability is achieved by wedging the stem in the prepared medullary cavity. Thanks to the triple-tapered shape of the stem, shear forces are converted into compressive forces, thus lowering the risk of post-operative subsidence. [1] The design of the stem and the chosen Ti6Al4V material enable a natural proximal force distribution in the bone through the previously compressed cancellous tissue.

In the proximal region of the stem, the shape of the cross-section and the enlarged surface structure fill up the medullary cavity. The rectangular shape in the distal region ensures stability of the implant, enabling it to withstand the rotational forces acting on it.

The surface is rough-blasted with corundum, after which a hydroxylapatite coating is applied to it. This promotes rapid osseointegration and leads to good primary stability consequently. [1]



The concept of twinSys cemented
The implant is undersized by 1 mm per side as compared with the rasp, providing sufficient room for an evenly distributed cement coating.

Thanks to the triple-tapered shape of the stem, shear forces are converted into compressive forces, enabling optimum wedging of the stem in the cement mantle. This minimises post-operative subsidence. [2]

The mirror-finished surface absorbs micromovements at the interface between the implant and the cement mantle. The rounded-off rectangular cross-section ensures stability of the stem in respect to the rotational forces acting on it.

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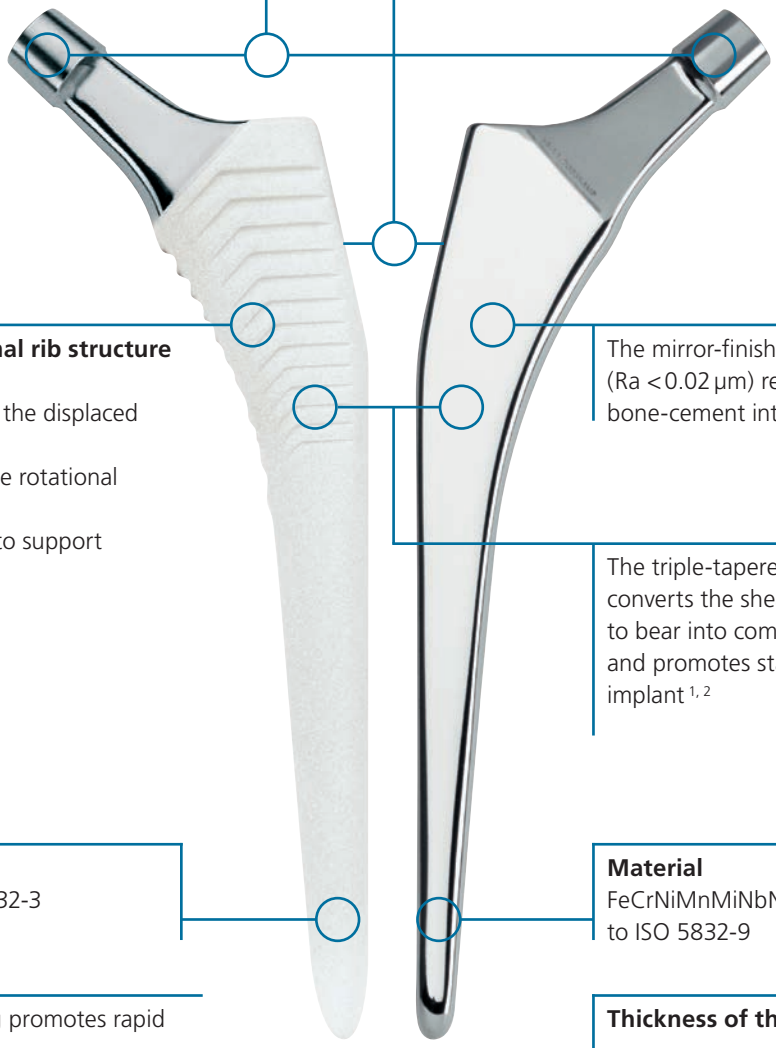
The facts

The 12/14 size cone ensures the greatest possible variety of articulation. CCD angle: 134°

Superolateral flattening for preserving the bone in the region of the greater trochanter [3]



Advantages of the proximal rib structure

- Press-fit effect
- Additional compression of the displaced cancellous bone
- Enhanced absorption of the rotational forces coming to bear
- Increased contact surface to support osseointegration

The mirror-finished surface (Ra < 0.02 µm) reinforces the bone-cement interface

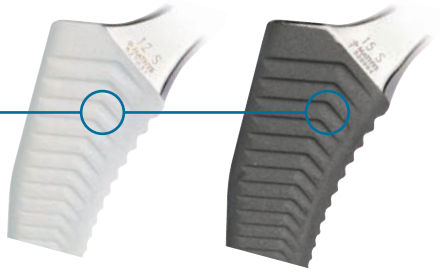
The triple-tapered stem design converts the shear forces coming to bear into compressive forces and promotes stability of the implant [1, 2]

Material
Ti6Al4V according to ISO 5832-3

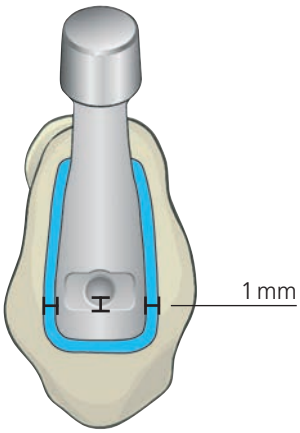
Material
FeCrNiMnMiNbN according to ISO 5832-9

The 150 µm thick HA coating promotes rapid osseointegration [1]

Beneath the HA coating the surface is roughened by corundum blasting



Thickness of the cement coat



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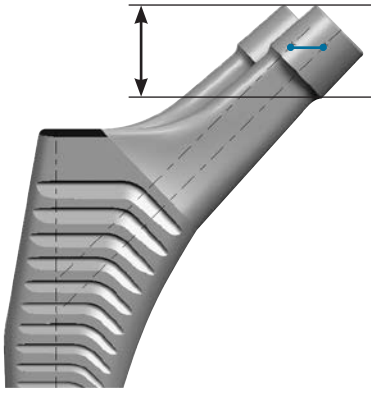
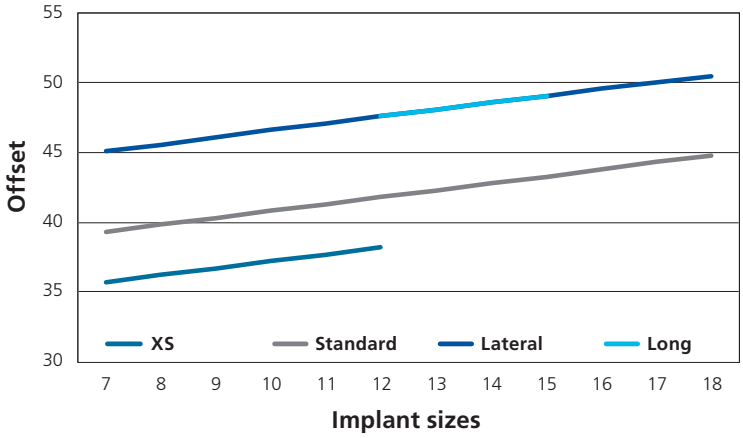
Product range

Lateralisation is achieved by displacing the cone in the medial direction.
Advantage: No change in the leg length in the event of an intra-operative switch from the standard version of the stem to the lateral version.



Offset design of the twinSys range



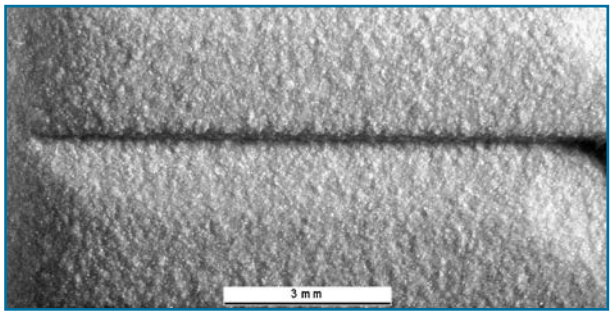
twinSys XS
6 twinSys XS sizes (7 – 12) with a shorter neck length and a smaller offset, for treating special anatomical deformities such as dysplastic hips

twinSys Long
- 4 twinSys Long sizes (12 – 15)
- Longer stem for optimal revision treatment
- To ease insertion, the slim distal part of the stem is slotted

twinSys

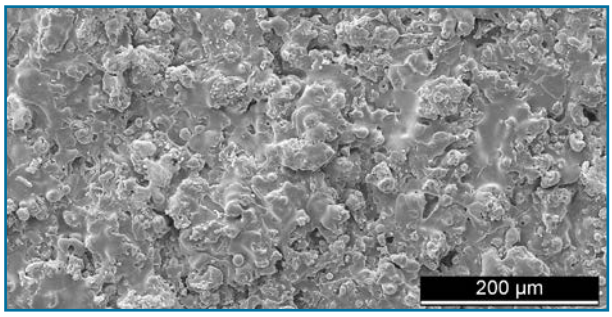
The hydroxylapatite coating

The Plasma-sprayed hydroxylapatite (HA) layers on the twinSys uncemented stimulate the on-growth of bone.



Surface of the femoral stem in the proximal region
(light-optical microscope image)

HA is the natural bone mineral, 60–70 % of the human bone mass consist of this compound. [4] The motivation of the clinical use of HA was the idea to apply a material similar to the mineral phase of bone. Additionally, calcium phosphate dissolution can provide a local source of calcium and phosphate ions, which serve as the raw materials from which new bone can be constructed by osteoblast cells.



Surface of the femoral stem in the proximal region
(scanning electron microscope image)

Hydroxyapatite (HA) is chemically identical to the mineral component of bone. HA has proven its worth as bone replacement material as well as plasma-sprayed coating material on implant surfaces for osseous contact. [4] The very slow rate of dissolution and the tiny amount of dissolution show that such a HA coating is highly stable over time.

References

1 Clauss M.V.D.S., C.;Goossens, M. Prospective five-year subsidence analysis of a cementless fully hydroxyapatite- coated femoral hip arthroplasty component. Hip Int, 2014. 24(1): p. 91-7.

2 Siepen W., Zwicky L., Stoffel K.K., Ilchmann T., et al. Prospective two-year subsidence analysis of 100 cemented polished straight stems - a short-term clinical and radiological observation. BMC Musculoskelet Disord, 2016. 17(1): p. 395

3 Jerosch J. Kurzschaftendoprothesen an der Hüfte. 2017: Springer. 315.

4 Wintermantel E. and Ha S.W. Medizintechnik, Life Science Engineering. Book, 2009. 5. Auflage.

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Ordering information

Uncemented implants

Standard	Lateral	XS	Long	Size	Length
52.34.1157	52.34.1159	56.11.1068	–	7	125
52.34.1158	52.34.1160	56.11.1069	–	8	130
56.11.1000	56.11.1010	56.11.1070	–	9	135
56.11.1001	56.11.1011	56.11.1071	–	10	140
56.11.1002	56.11.1012	52.34.1161	–	11	145
56.11.1003	56.11.1013	52.34.1162	56.11.3003	12	150/180 (Long)
56.11.1004	56.11.1014	–	56.11.3004	13	155/190 (Long)
56.11.1005	56.11.1015	–	56.11.3005	14	160/200 (Long)
56.11.1006	56.11.1016	–	56.11.3006	15	165/210 (Long)
56.11.1007	56.11.1017	–	–	16	170
56.11.1008	56.11.1018	–	–	17	175
56.11.1009	56.11.1019	–	–	18	180

Cemented implants

Standard	Lateral	Size	Length
56.11.2000NG	56.11.2010NG	9	135
56.11.2001NG	56.11.2011NG	10	140
56.11.2002NG	56.11.2012NG	11	145
56.11.2003NG	56.11.2013NG	12	150
56.11.2004NG	56.11.2014NG	13	155
56.11.2005NG	56.11.2015NG	14	160
56.11.2006NG	56.11.2016NG	15	165
56.11.2007NG	56.11.2017NG	16	170

Instruments

Item no.	Description
51.34.1080A	twinSys Instrumentation

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