

MATHYS 
European Orthopaedics



**20 YEARS
CLINICAL
EXPERIENCE**

balanSys BICONDYLAR



PROVEN

Safety coupled with functionality: Clinical studies confirm excellent long-term results and highlight the benefit for patients.

balanSys BICONDYLAR

Patients today want to remain mobile and maintain their active lifestyles. Their requirements in relation to an enhanced knee system are stability and longevity supported by clinical evidence, standards that need to be continuously met in the future.

The enhanced balanSys BICONDYLAR implants are based on Swiss precision engineering and uncompromising quality standards.

20 years of clinical experience and exceptionally low revision rates speak volumes for the balanSys BICONDYLAR. This knee system demonstrates clinical reliability with a published survival rate of 97.0% after 12.4 years. It also rates highly in terms of patient satisfaction.¹

Mathys is continually driving the development of the proven balanSys BICONDYLAR knee system forward. The expectations of the implant in terms of stability, precision, enhanced technology and longevity are combined and continued in the balanSys BICONDYLAR PLUS.

A proven prosthesis with extra PLUS' – PLUS leggera instruments – PLUS vitamys inlays – PLUS refined inlay thickness increments, to guarantee surgeons real added value in the operating theatre.

balanSys BICONDYLAR – it's a PLUS.

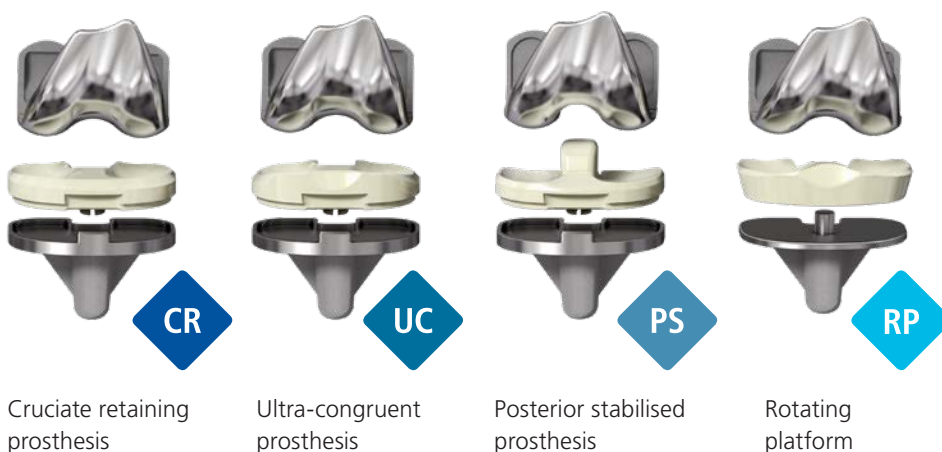


¹ Heesterbeek, P.: Superior long-term survival for fixed bearing compared with mobile bearing in ligament-balanced total knee arthroplasty. Knee Surg Sports Traumatol Arthrosc, 2017.

PROVEN

PHILOSOPHY

The balanSys BICONDYLAR offers a complete prosthesis portfolio based on four philosophies covering all clinical requirements.



MULTIPLE SIZES

To accommodate patients' anatomical variation, there are eight sizes of prosthesis available irrespective of the patient's age, gender or stature.





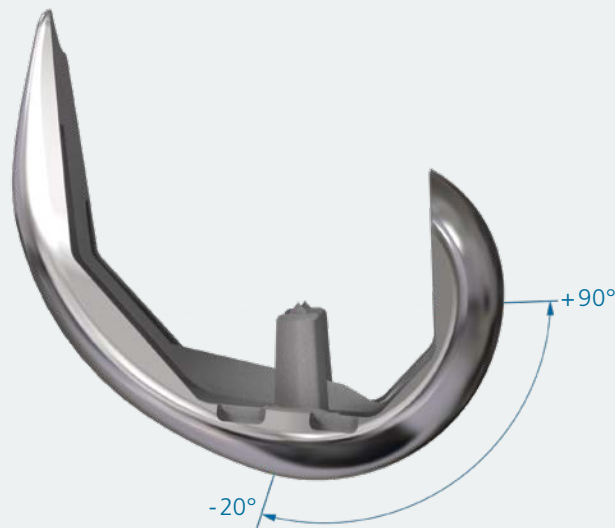
STABLE

The unique balanSys BICONDYLAR design allows joint line preservation and restoration of ligament tension, achieving stability throughout the entire range of motion.

STABLE

SINGLE-RADIUS DESIGN

Studies of its kinematic and biomechanical properties have confirmed that the native knee has a constant radius which is centred in the trans-epicondylar axis ensuring stability throughout its range. The balanSys BICONDYLAR's single-radius design has a constant cross-sectional arc of between -20 degrees and +90 degrees. This ensures maximum stability through a range from extension to flexion.



ANTERIOR FLANGE

The 5-degree anterior flange of the balanSys BICONDYLAR femur gives surgeons the flexibility of reducing the size of the femoral components while minimising the risk of notching of the anterior cortex of the femur. This characteristic allows the surgeon to implant the optimal prosthesis size for the patient.

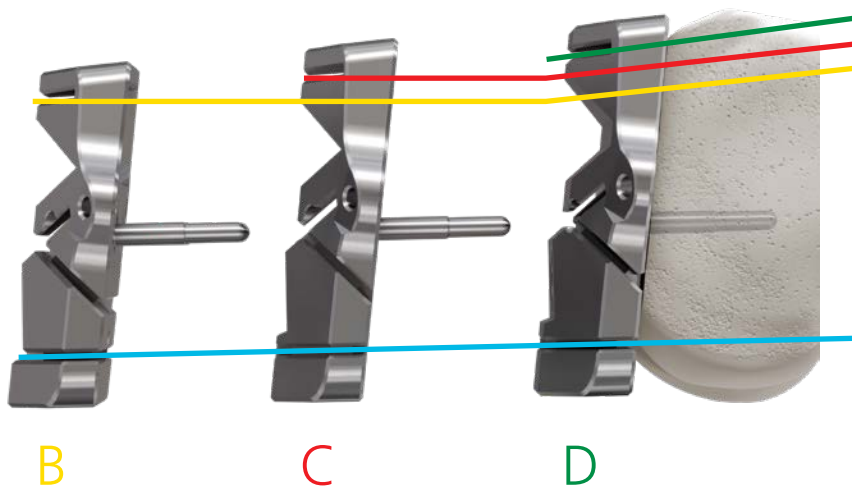




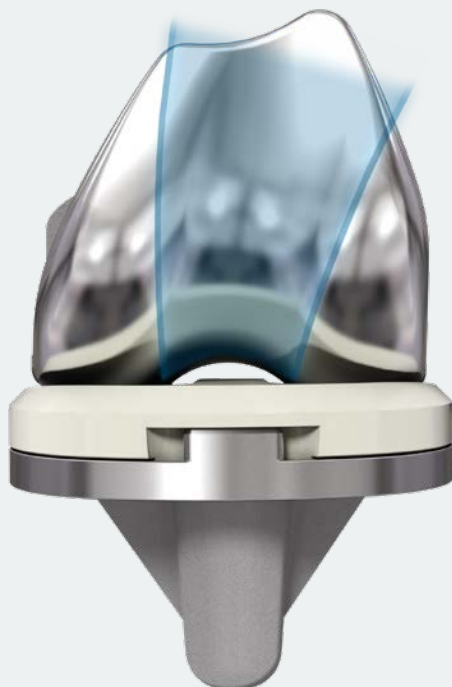
POSTERIOR REFERENCING

The balanSys BICONDYLAR knee system follows the philosophy of «posterior referencing». This means that the distance between the posterior cut and the pin-fixation remains the same across the entire range of incision blocks, ensuring a constant flexion gap between sizes.

The anterior-posterior size increments of the balanSys BICONDYLAR femoral components are three millimetres.



STABLE



Q ANGLE

The wide Q angle of the balanSys BICONDYLAR femoral design establishes a smooth transition for the patellar bearing. This ranges from a larger radius in extension to a smaller one in flexion.



PATELLA GROOVE

The articulation, positioned low down, promotes stable patellar control and reduces pressure on the patella and patellar tendon, allowing a wider range of motion while minimising the risk of subluxation – with or without patellar resurfacing.

The elongated extension of the anterior femoral flange ensures that the patella is continuously stabilised even in extension.

All of these factors combined achieve physiological control of patella tracking over the entire range of motion for a knee with maximum stability.

Patients with a balanSys BICONDYLAR knee prosthesis enjoy a reduced risk of secondary patellar resurfacing.²

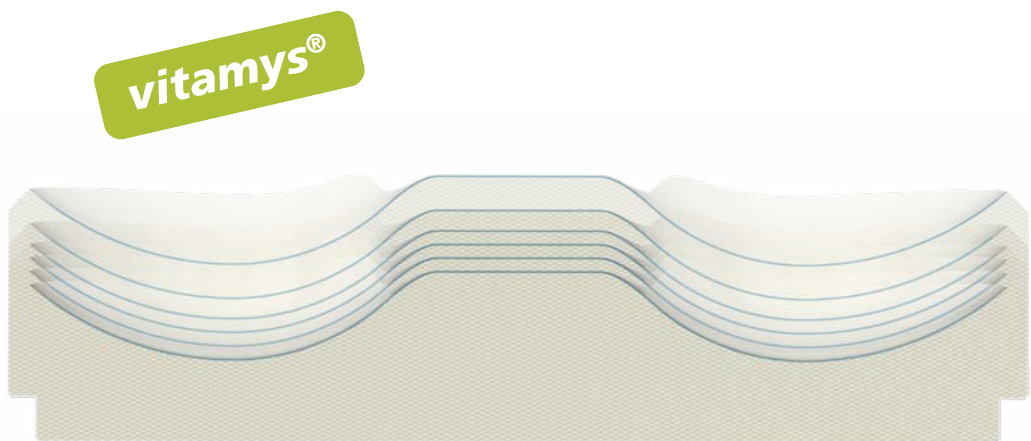
² Werth, L.: The need for secondary resurfacing is affected by trochlear height in total knee arthroplasty. *Knee Surg Sports Traumatol Arthrosc*, 2016

REFINED HEIGHT INCREMENTS

The balanSys BICONDYLAR knee system offers vitamys inlays with refined height increments:

These refined increments allow precise balancing of the flexion and extension gaps in order to re-establish natural ligament tension. The result? Superb stability throughout the entire range of motion.

With refined height increments, the surgeon gains intra-operative flexibility and can fine-tune the stability with just a few actions before the operation is over.



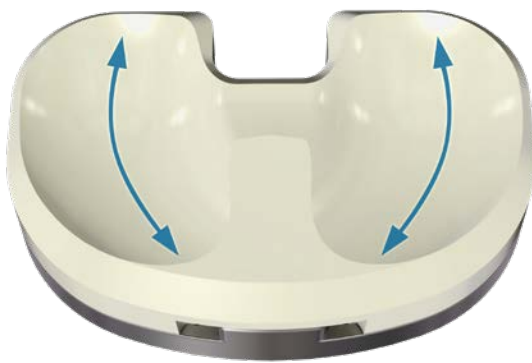
STABLE

CONGRUENCE

The articular surface between the balanSys BICONDYLAR femur and the tibial insert has a high degree of congruence over the entire range of motion. This is true irrespective of whether fixed or mobile bearing implants are chosen.

ROTATION

Despite this high congruence, the inlay allows the femoral component a degree of natural rotation around its central point. The special shape of the inlay also permits a rolling, gliding movement of the femoral condyle.



CONGRUENCE



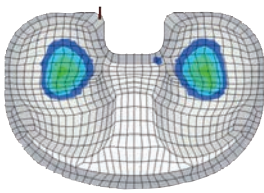


LESS WEAR – HIGH STABILITY

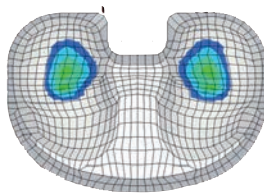
The correspondingly shaped inlays evenly accommodate the femoral condyles, which correspond to an arc in cross-section.

The special design of the inlay in combination with the femoral condyles optimises force distribution, produces less surface pressure and allows control throughout the entire range of motion. Coupled with the single-radius of the femur, this means less wear and high stability.³

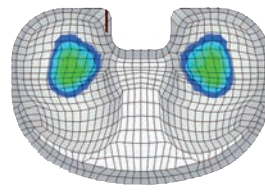
³ Data on file at Mathys Ltd Bettlach



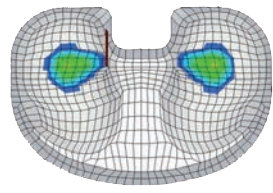
EXTENSION



FLEXION 30°



FLEXION 60°



FLEXION 90°



POSTERIOR STABILISED PROSTHESIS

DEEP KNEE FLEXION

In the posterior region of the femoral condyle, balanSys BICONDYLAR PS includes an additional smaller radius which enlarges the contact surface between the femur and polyethylene insert. Thanks to this technical concept, the range of motion of the knee increases while the potential for delamination of the polyethylene insert is reduced.

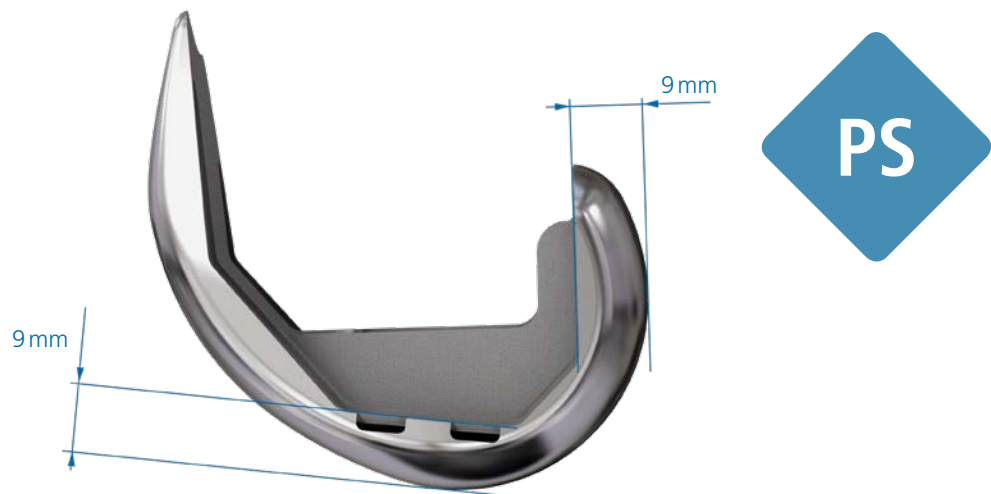
The post-cam mechanism ensures active patients can perform deep flexion of up to 155 degrees achieving optimised physiological posterior rotation with all-round stability for the femur.⁴



⁴ Data on file at Mathys Ltd Bettlach

BONE PRESERVING

The components of the balanSys BICONDYLAR knee system have been deliberately designed to maximise bone preservation. To preserve the femur, a resection of only 9 millimetres is required distally and posteriorly with the PS design. In addition, the femoral box for the post-cam mechanism has been made as small as possible.



ROUNDED EDGES

Rounded, soft edges on inlay posts and femoral condyles enhance the low-wearing and durable design, facilitating a freedom of rotation of up to 10 degrees – and depending on the size combination or flexion up to 20 degrees – maintaining physiological kinematic properties.⁴





DURABLE

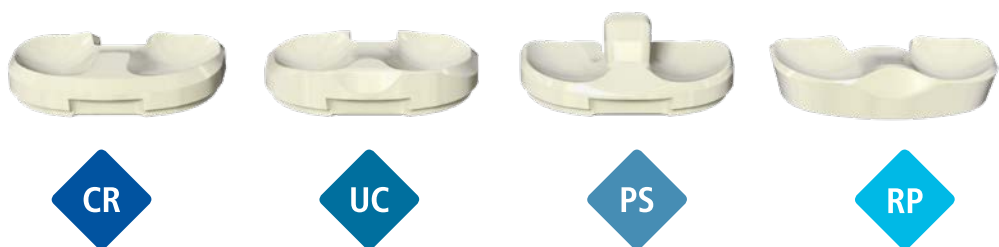
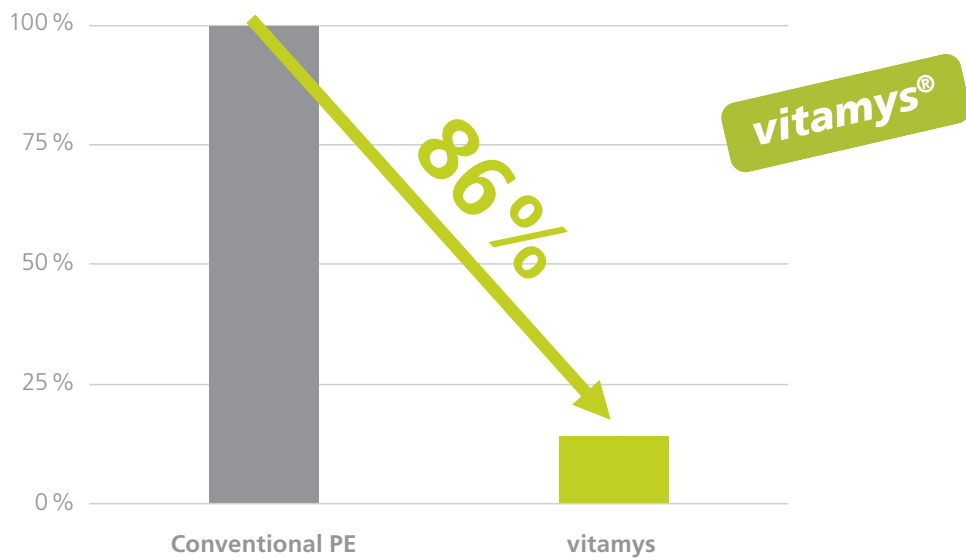
Stable anchoring of the components with congruent articulation in combination with the proven vitamys material and femoral single-radius design, achieves a durable total knee replacement.

VITAMYS INLAYS

The vitamin E-enhanced, highly cross-linked vitamys is designed to deliver maximum resilience and a long service life. Properties such as high resistance to oxidation, high ageing and wear resistance and excellent mechanical properties are the hallmarks of this tried-and-tested material and guarantee long-term survival of the endoprosthesis, even in active patients.⁵

86 % REDUCTION IN WEAR³

% wear reduction vitamys vs. conventional PE balanSys BICONDYLAR

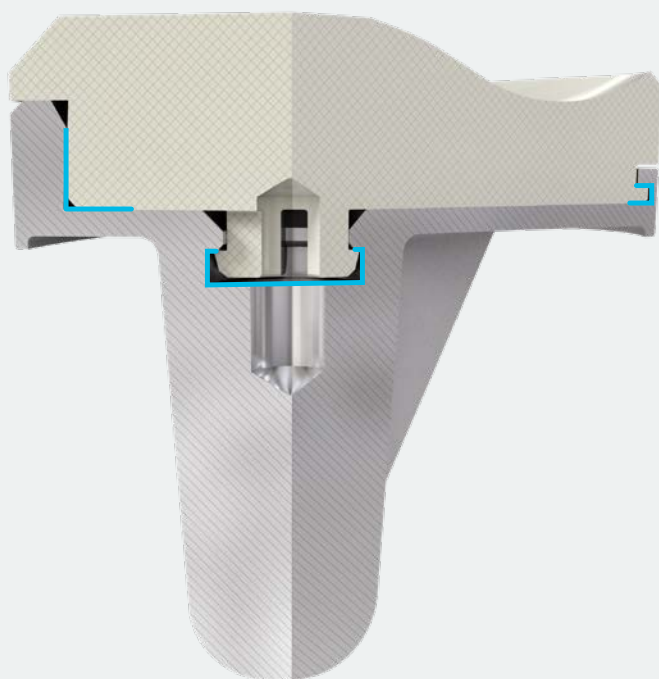


^{3/5} Data on file at Mathys Ltd Bettlach

DURABLE

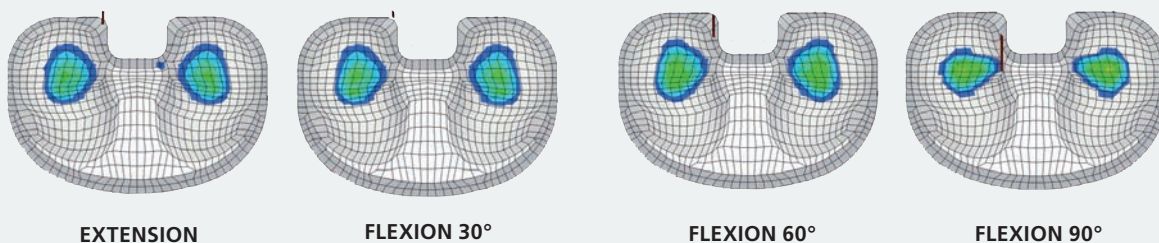
4-POINT FIXATION

The proven 4-point fixation of the inlay in the tibial plateau reduces micro-movement and reduces back side wear.³



OPTIMAL FORCE DISTRIBUTION

The design of the balanSys BICONDYLAR inlay allows optimal distribution of force. The resulting low surface pressure reduces material wear and increases the longevity of the prosthesis



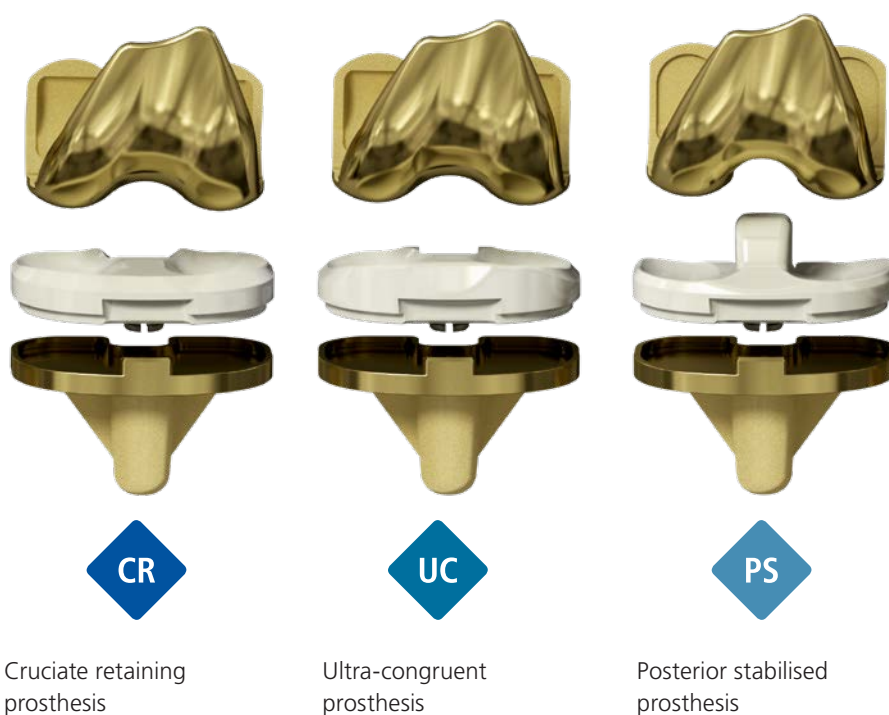
³ Data on file at Mathys Ltd Bettlach

REDUCED ALLERGY RISK

TiNBN-IMPLANTS

Coated implants designed for patients with hypersensitivity

Some patients may be concerned that metal ions could cause allergic reactions. For those patients, we offer TiNbn* coated tibial and femoral components as part of the balanSys portfolio. This special TiNbn coating is a wear-resistant layer which reduces metal-ion release into the patient and can reduce the risk for allergic reactions to the implant.



*TiNbn = Titanium niobium nitride

CONTINUUM OF CARE

balanSys UNI

A fixed-bearing, unicondylar prosthesis that can be implanted using two surgical techniques. The first is a spacer block technique, while the second is a ligament tensioner technique. This minimally invasive partial joint replacement prosthesis allows the cruciate ligaments to be preserved promoting good proprioception.

balanSys BICONDYLAR

A proven knee prosthesis with its leggera instruments, vitamys inlays and refined height increments that will satisfy surgeons' exacting demands in terms of systematics, reliability and ergonomics, as well as providing stability and functionality.

balanSys REV

A modular revision system allowing anatomical reconstruction in cases of bone loss or instability of the knee joint. Its simple surgical technique allows the correct leg axis and biomechanics to be restored allowing the production of a balanced joint space in the medio-lateral plane and in flexion/extension.

CONTINUUM OF CARE

*An entire system family is available
providing complete Continuum of Care.*



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