MAGNEZIX

METALLIC AND TRANSFORMABLE

TAKE A NEW LOOK AT IMPLANTS

THIS METAL SCREW TURNS INTO BONE!

Intelligent innovations for a better life.
www.syntellix.com

SYNTELLIX

The advantages are obvious – an overview

Suitable for
MRI and CT diagnostics.

Virtually no
radiological artifacts.

Metallic and
transformable.

Osteoconductive.

Reduced risk
of infection.

Similar stability to titanium and
considerably stronger than polymer
implants (PLA/PGA).

Avoids stress shielding.

No remaining foreign material.

Very good biocompatibility,
no known allergies.

Free of cobalt, chrome,
nickel and aluminium.

MAGNEZIX

MAGNEZIX®

REVOLUTIONARY AND PIONEERING

Metal that turns into bone. You think that's impossible? We can prove it – it really does work! Innovative material MAGNEZIX® is the start of a medical revolution.

The metallic MAGNEZIX® CS are much more resilient than conventional polymer implants. However, unlike normal metal screws or wires, they do not need to be removed - instead, they degrade completely within the body and are **replaced by endogenous tissue,** which is a clear advantage for both patients and surgeons.

The ideal solution: MAGNEZIX® implants are suitable for all indications that require temporary and **secure fixation** of the bone, but for which remaining material or a surgical removal of the metal following the healing process is not desirable. They define a new standard of implants.

CE

MAGNEZIX® is the first implant of its kind in the world to have CE and HSA approval, **satisfying the highest safety standards.** It offers surgeons, patients and cost providers unique advantages.

cdgw Preisträger 2016 Deutscher Zukunftspreis Gesundheitswirtschaft

TOP 100 top100.de Top-Innovator 2015 & 2016

INNOVATIONSPREIS DER DEUTSCHEN WIRTSCHAFT Sieger 2012/13

Syntellix AG is an internationally operating German medical technology company specialised in the research, development and marketing of bioabsorbable metallic implants made of magnesium.

We have received numerous awards for our work: in 2013, the "German Industry Innovation Award", in 2015 and repeatedly in 2016 the "Top Innovator Award" among German mid-sized businesses, as well as the "German Future Prize Healthcare" in the same year.

UNIQUE PROPERTIES

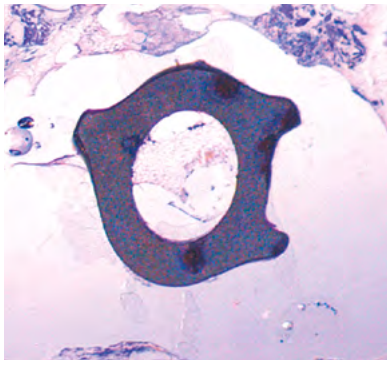
OSTEOCONDUCTIVE AND REDUCED RISK OF INFECTION

MAGNEZIX® has osteoconductive properties. Human osteoblasts have not only to great vitality in vitro but in addition they are stimulated in proliferation tests. The formation of new bone (osteoids) has been proven histologically at the surface of the degrading implant.

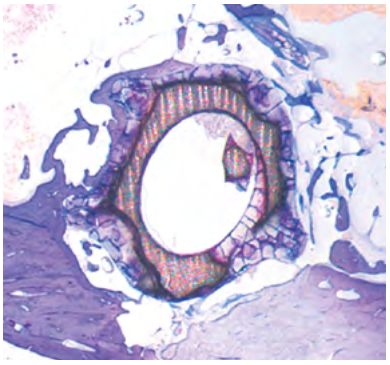
MAGNEZIX® implants help **reduce the risk of infection** because they are delivered as sterile devices. The degradation of the screw through corrosion further creates an alkaline bactericidal environment in the immediate vicinity of the implant such that MAGNEZIX® is anticipated to have anti-infectious properties.

Supporting the healing process

Histological sections show the implant's conversion process. The images show a cross-section of the cannulated MAGNEZIX® CS at various times post-OP.



Histological preparation of an implanted MAGNEZIX® CS after a few days.



Conversion of MAGNEZIX® CS in progress after several months.

MAGNEZIX® CS conversion into calcium phosphate after 12 months with clear evidence of bone ingrowth.

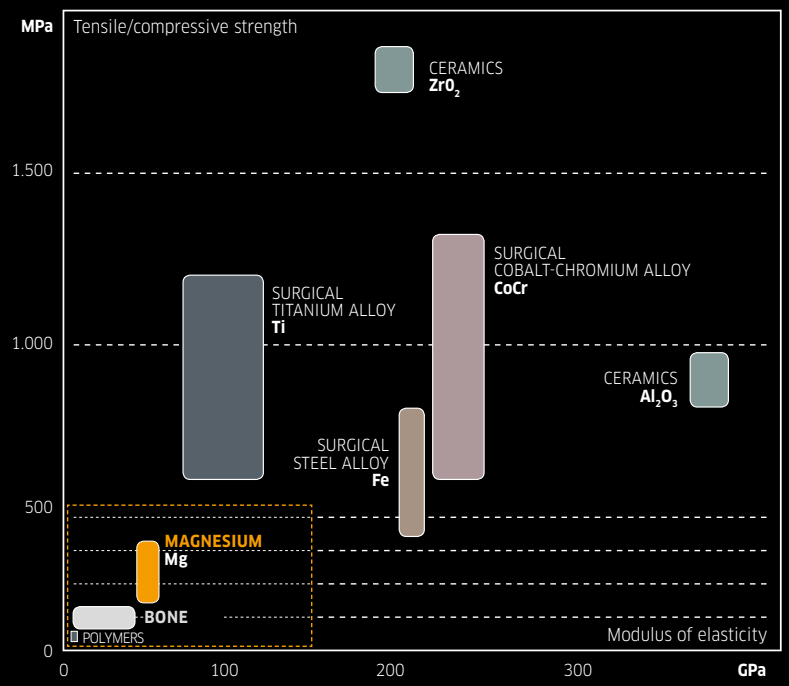
Source: Waizy H. | Diekmann J. | Weizbauer A. et al. (2014). In vivo study of a biodegradable orthopedic screw (MgYREZr-alloy) in a rabbit model for up to 12 months. In: J Biomater Appl 28 (5), 667-75.

MAGNEZIX

HEAL FIRST, THEN DISSOLVE

METALLIC AND TRANSFORMABLE

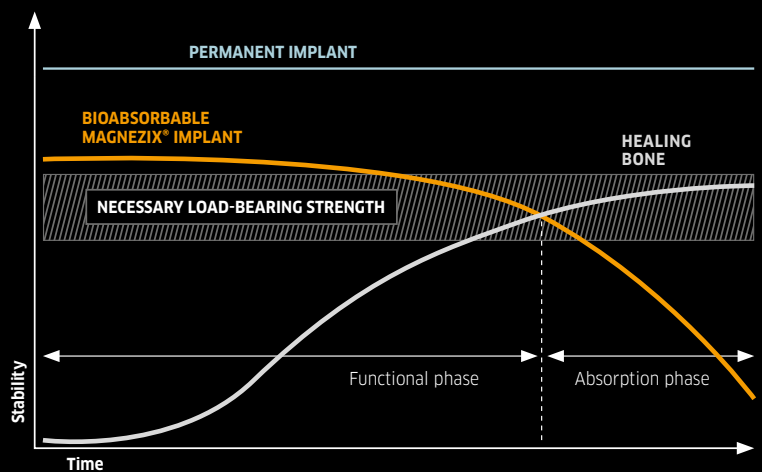
Bone-like properties [1]



Stability alone is not enough – the ideal implant can do more.

MAGNEZIX® has mechanical stability values which are far above the values of those bioresorbable materials previously available. The good bone-like stress-strain ratio (modulus of elasticity) effectively counteracts stress shielding effects, which can result in loss of bone density (osteopenia).

Controlled degradation process (schematic)



MAGNEZIX® is based on a magnesium alloy with stable metallic properties. Over the course of time it is completely degraded in the body and is replaced by the body's own bone tissue.

[1]Image based on: Wintermantel, E. (1996) Biocompatible materials and building methods. Published by Springer, Berlin

INDICATIONS

VERSATILE AND RELIABLE

MAGNEZIX® implants are ideally suited for indications in the acute or elective orthopaedic surgery, where you want reduce and **fix fractures safely** for healing without leaving external material in the body afterwards - a **clear advantage** for you and your patients.

The indications for MAGNEZIX® CS implants are reconstructive procedures after fractures and malpositions of the human skeleton, for example:

- Intra-articular and extra-articular fractures of small bones and bony fragments
- Arthrodeses, osteotomies and pseudarthroses of small bones and joints
- Small bony avulsions of ligaments and tendons

MAGNEZIX® CS 2.0 among others:

- Phalanges, metacarpalia
- Processus styloideus radii et ulnae
- Capitulum and caput radii
- Osteochondrosis dissecans

MAGNEZIX® CS 2.7, 3.2 among others:

- Carpalia, metacarpalia, tarsalia and metatarsalia
- Epicondylus humeri
- Processus styloideus radii et ulnae
- Capitulum and caput radii
- Hallux-valgus-corrections

A QUICKER RETURN TO FITNESS!

*MAGNEZIX® implants stimulate **bone growth,** support the **healing process** and help to avoid unnecessary sick days and risks, as **no foreign material** that could cause problems and requires removal remains within the body.*

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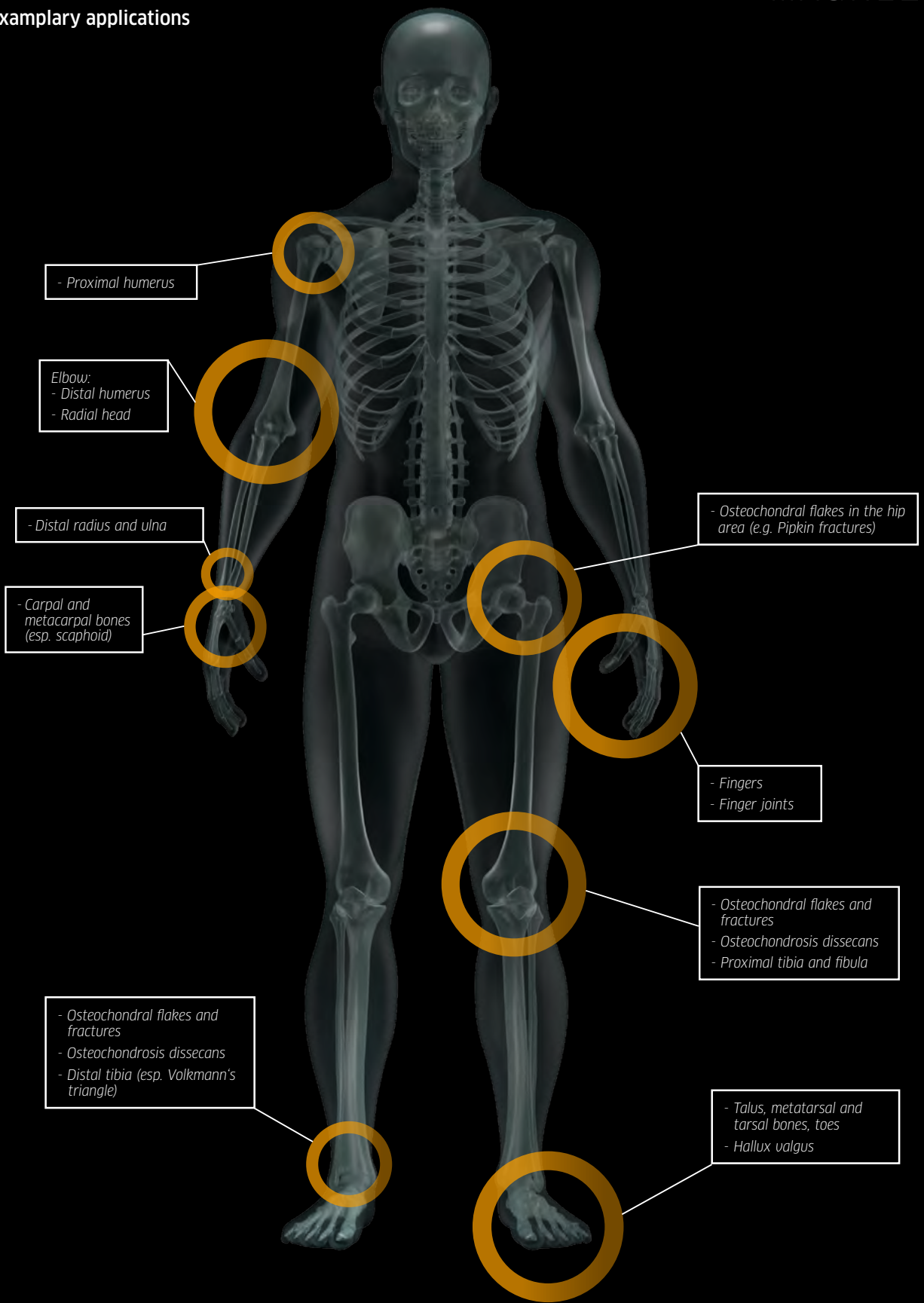
Examplary applications



FEWER ARTIFACTS

A NEW DIMENSION IN DIAGNOSTIC IMAGING

MAGNEZIX® CS is a metallic implant. Nonetheless interference signals are greatly reduced both in computer tomography as well as MRI diagnostics – the implants generate very few artifacts. **This helps considerably improve the analysis of images by surgeons and radiologists.**

Unlike conventional screws made of steel and titanium, implants made of MAGNEZIX® do not generate any noticeable temperature increases during MRI.

SATISFIED PATIENTS

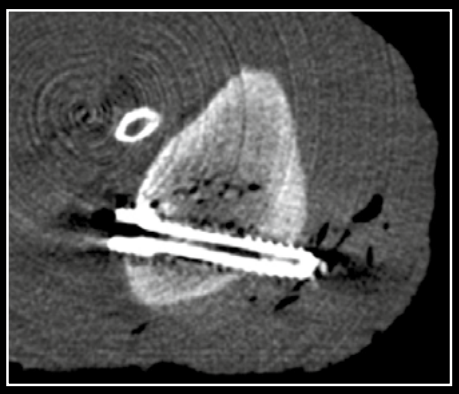
PROGRESS, WHICH PAYS OFF

Patients don't like the thought that after an operation there will be metal in their bodies permanently. But they also don't like having the metal removed because they are aware of the risk of infection and would like to stay mobile. The funding agencies are also backing Syntellix' efforts to avoid the need for a second operation and the associated costs.

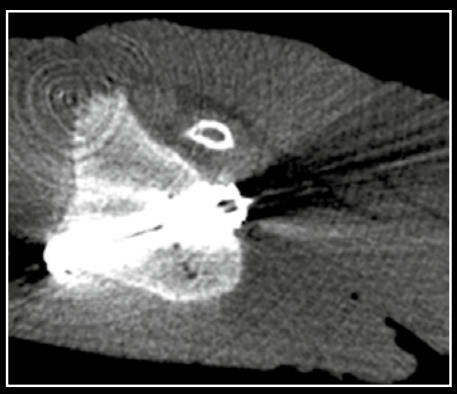
Patient satisfaction is high, and that is the talk of the town. You would be effectively creating your own USP in your region by offering patients the choice of innovative MAGNEZIX® technology – the use of MAGNEZIX® demonstrates that you are a front-runner, in tune with your patients' wishes!

Right side
Views of MAGNEZIX® CS compared with titanium in computer tomography (CT scan). The X-rays show examples of typical indications on feet and hands.

CT



MAGNEZIX® CS:
Minimal interference signals



Titanium:
Considerable interference signals

Hallux valgus correction

MAGNEZIX® CS after 6 weeks.

MAGNEZIX® CS after one year.

Titanium after one year.

Scaphoid fracture

MAGNEZIX® CS after 3 days.

MAGNEZIX® CS after 3 months.

During radiological control the phenomenon of radiolucent zones may temporarily occur around the implant. This is associated with the degradation process of MAGNEZIX® and based on clinical experience to date is considered harmless.

Source of CT images: Hannover Medical School, Institute for Diagnostics and Interventional Radiology

THE IMPLANTS

PRODUCT OVERVIEW

According to its respective dimension, MAGNEZIX® CS can be used for adaption- and exercise-stable fixation of bones and bone fragments in children, adolescents and adult persons.

IMPLANT	DIMENSIONS		LENGTHS
MAGNEZIX® CS 2.0 	**Diameter** **Head diameter**	2.0 mm 2.5 mm	8 to 24 mm (in 2-mm steps), non-cannulated
MAGNEZIX® CS 2.7 	**Diameter** **Head diameter** **Guide wire**	2.7 mm 3.5 mm 1.0 mm	10 to 34 mm (in 2-mm steps), cannulated
MAGNEZIX® CS 3.2 	**Diameter** **Head diameter** **Guide wire**	3.2 mm 4.0 mm 1.2 mm	10 to 40 mm (in 2-mm steps), cannulated

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OTHER MAGNEZIX® IMPLANTS

PIN	DIMENSIONS		LENGTHS
MAGNEZIX® Pin 1.5 	**Diameter** **Head diameter**	1.5 mm 2.5 mm	8 to 30 mm (in 2-mm increments)
MAGNEZIX® Pin 2.0 	**Diameter** **Head diameter**	2.0 mm 3.0 mm	8 to 40 mm (in 2-mm increments)
MAGNEZIX® Pin 2.7 	**Diameter** **Head diameter**	2.7 mm 4.0 mm	12 to 50 mm (in 2-mm increments)
MAGNEZIX® Pin 3.2 	**Diameter** **Head diameter**	3.2 mm 5.0 mm	12 to 50 mm (in 2-mm increments)

CBS	DIMENSIONS		LENGTHS
MAGNEZIX® CBS 2.0 	**Diameter** **Head diameter**	2.0 mm 4.0 mm	6 to 20 mm (in 2-mm increments)
MAGNEZIX® CBS 2.7 	**Diameter** **Head diameter**	2.7 mm 5.0 mm	6 to 30 mm (in 2-mm increments)
MAGNEZIX® CBS 3.5 	**Diameter** **Head diameter**	3.5 mm 6.0 mm	8 to 40 mm (in 2-mm increments)

ADDITIONAL REFERENCES

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Implants are manufactured in Germany
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