erbe
power your performance.

VIO® 3 and APC 3

Presentation

VIO® 3

High-tech and safety

VIO® 3


VIO 3
Offener Eingriff allgemein
Hautschnitt
Laparatomie
Mobilisation
Darmpräparation
Elektrodengriff
monopolar
Pinzette
bipolar
DRY CUT
4.7
FORCED COAG
2.4
Menü
NESSY
APC 3

VIO® 3

1. Reproducible tissue effects
2. Simple setting: only mode and effect
3. Improved and new modes
4. stepGUIDE – new, visual and instrument-oriented operator guidance
5. Extension of the ReMode® technology
6. Up to six instruments may be connected with the APC 3
7. Supports hybrid instruments together with ERBEJET® 2
8. May be extended as workstation
9. WLAN connection
10. For all specialist disciplines

VIO® Workstation

- VIO® 3 electrosurgical unit
- APC 3 argon plasma module
- ERBEJET® 2 waterjet surgery unit
- IES 2 Intelligent Evacuation System
- or ESM 2 Erbe Suction Module
- or EIP 2 Erbe Irrigation Pump

VIO® Workstation

VIO® 3

VIO® Workstation

With APC 3

VIO® Workstation

With ERBEJET® 2

VIO® Workstation

With IES 2

VIO® Workstation

With ESM 2 and suction container

VIO® Workstation

With EIP 2

VIO® Workstation

With basket

Main changes versus VIO® 300 D

Overview

Technique
- ☑ Optimized power supply unit
- ☑ Multi-processor technology
- ☑ State-of-the-art sensor technology

Footswitch
- ☑ Flexible cable
- ☑ Easy-fit connectors

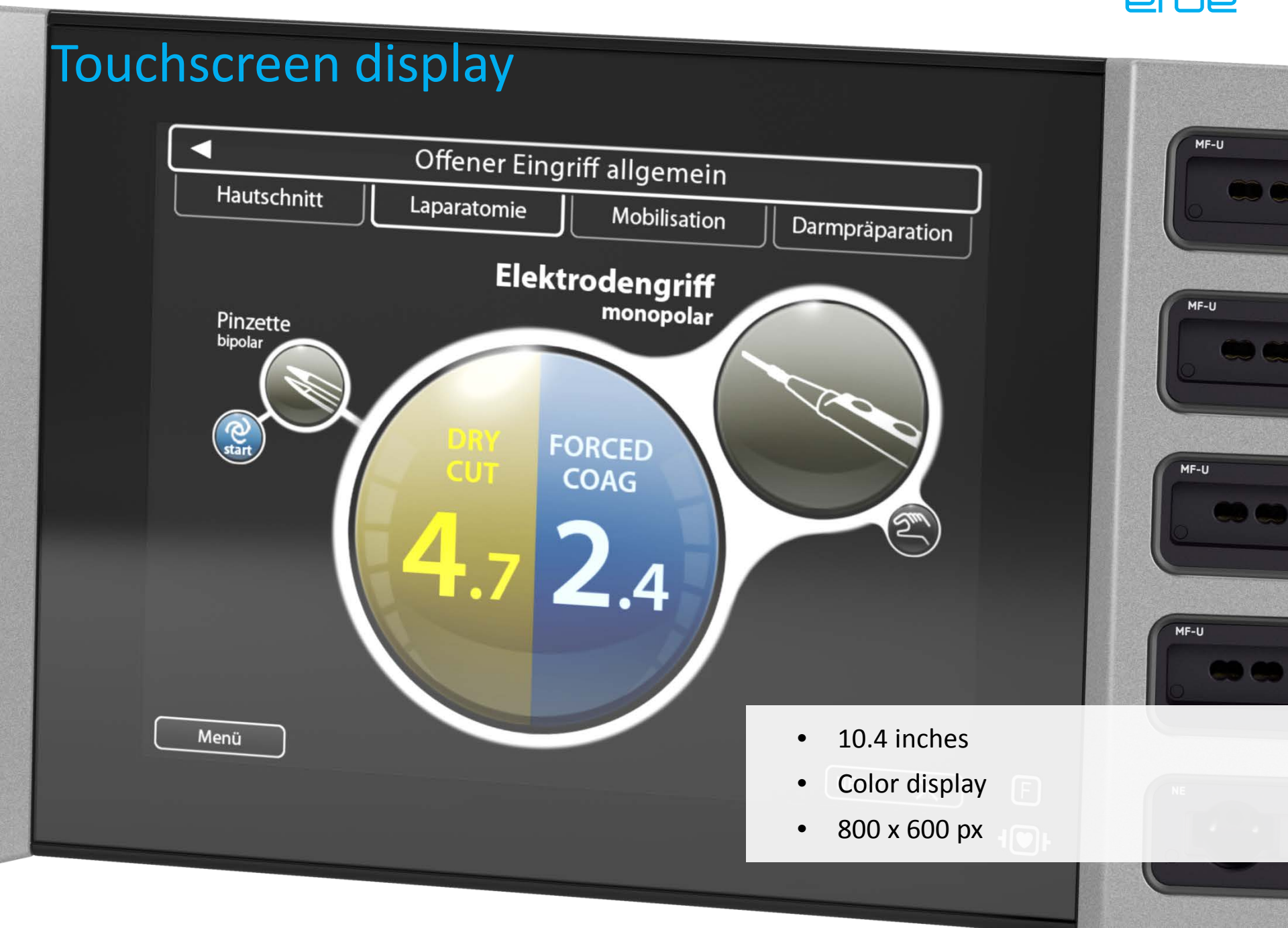
Modes
- ☑ New modes: preciseSECT, thermoSEAL, highCUT bipolar
- ☑ Revised modes
- ☑ 19 integrated modes, no upgrades
- ☑ Harmonized settings
- ☑ No adapter bipolar resection
- ☑ No plasma control (preciseAPC)
- ☑ No constant power control

Operation
- ☑ Large touchscreen with graphic user interface
- ☑ Power limitation connected to effect
- ☑ stepGUIDE
- ☑ Pre-programmed programs with a choice of up to six sub-programs per ReMode®

Sockets
- ☑ New MF-U-socket
- ☑ Free slot selection for other sockets (except NE and APC)

NESSY®
- ☑ Dynamic, maximum 120 Ohm (accepts single-surface neutral electrodes after confirmation)

Touchscreen display

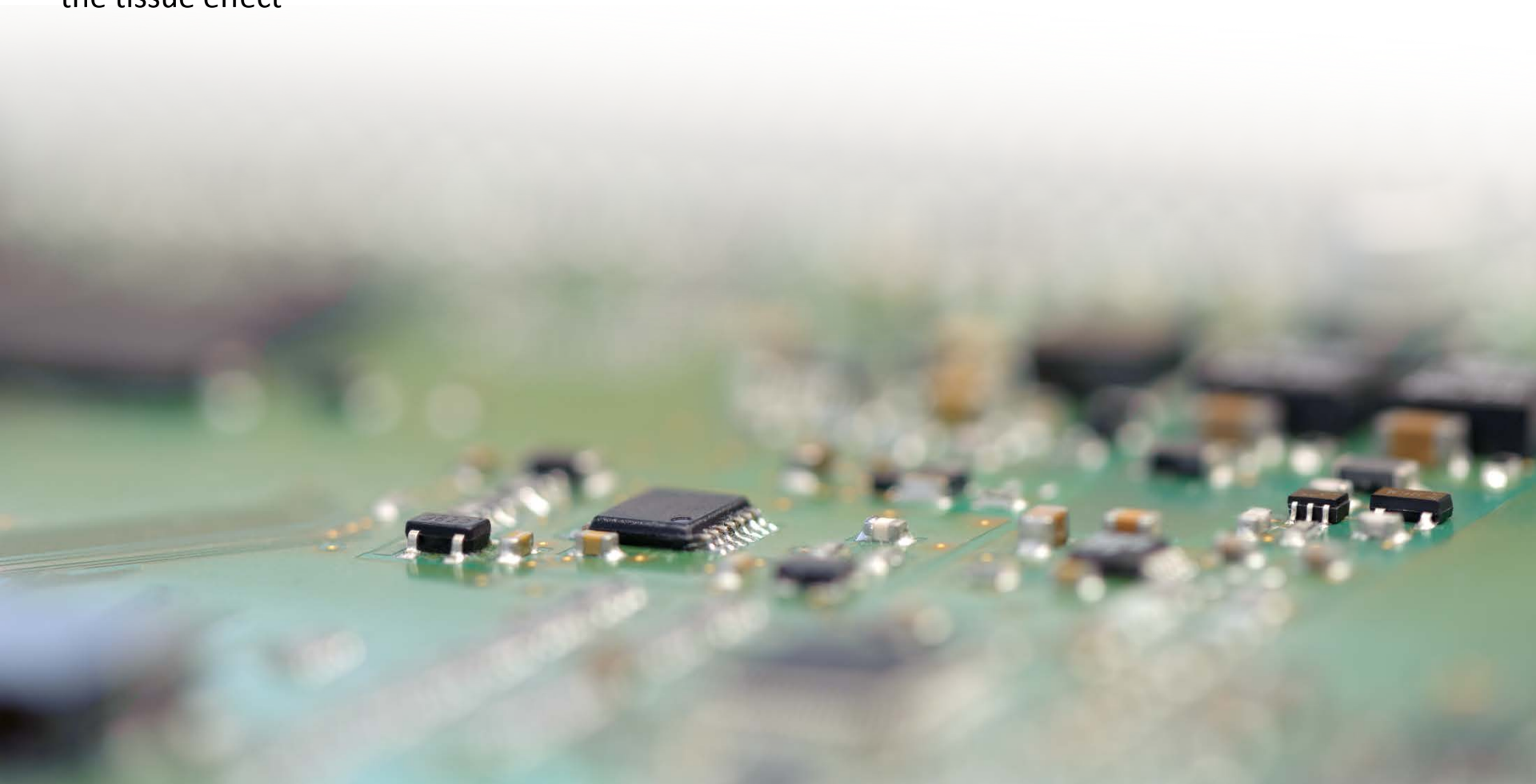


- 10.4 inches
- Color display
- 800 x 600 px

Latest digital signal processors

25 million measuring cycles per second

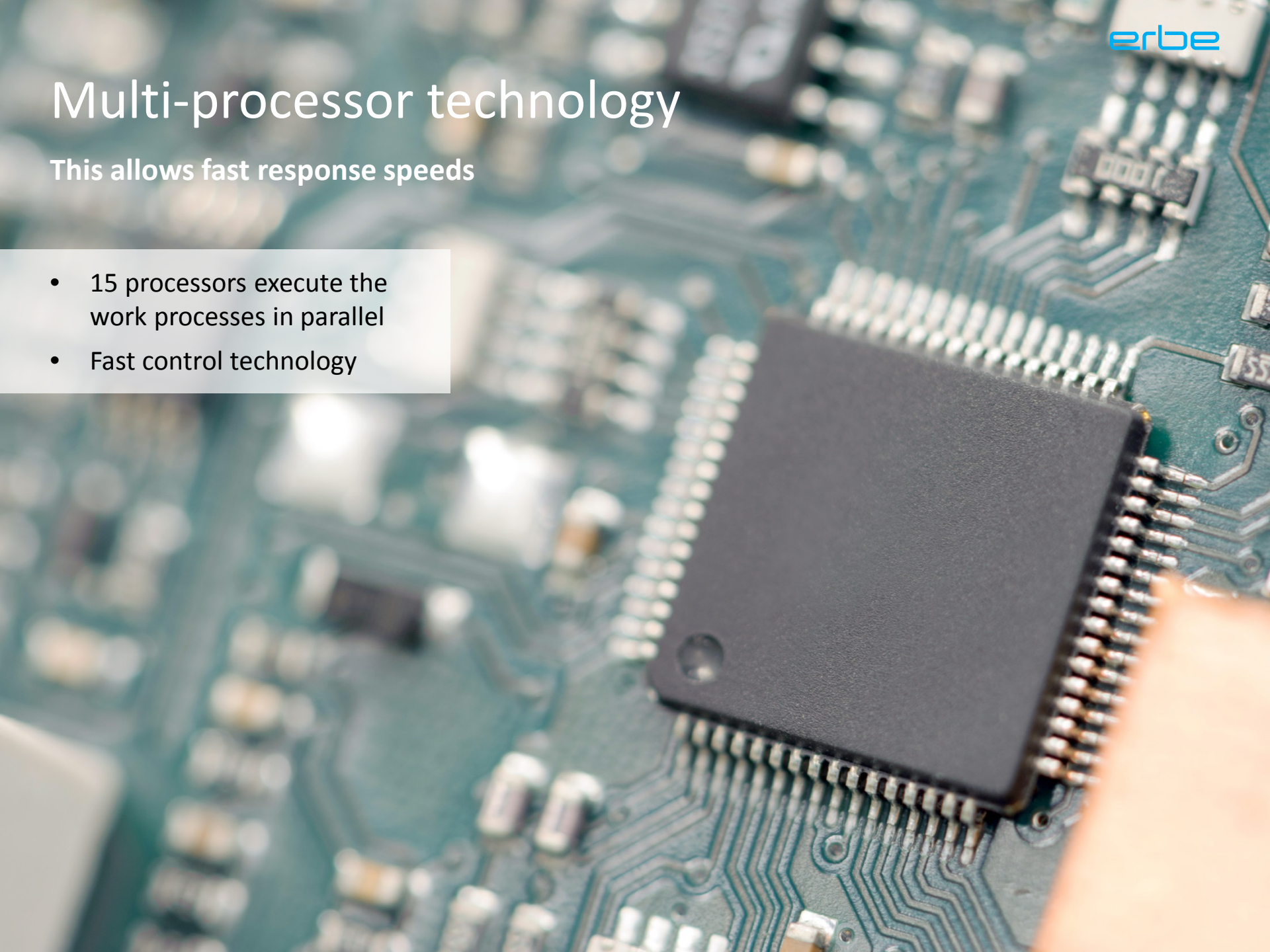
This allows high reproducibility of
the tissue effect



Multi-processor technology

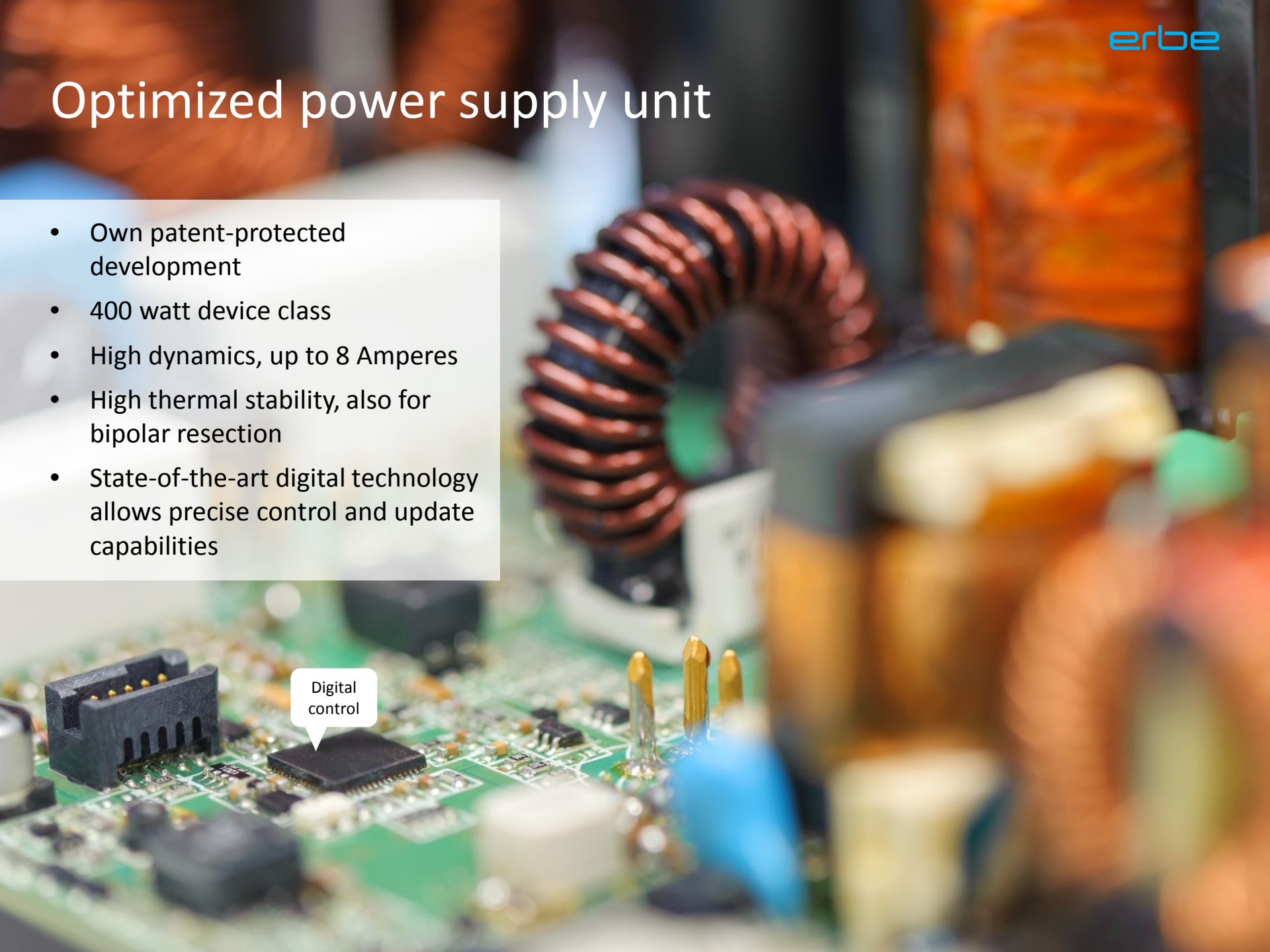
This allows fast response speeds

- 15 processors execute the work processes in parallel
- Fast control technology



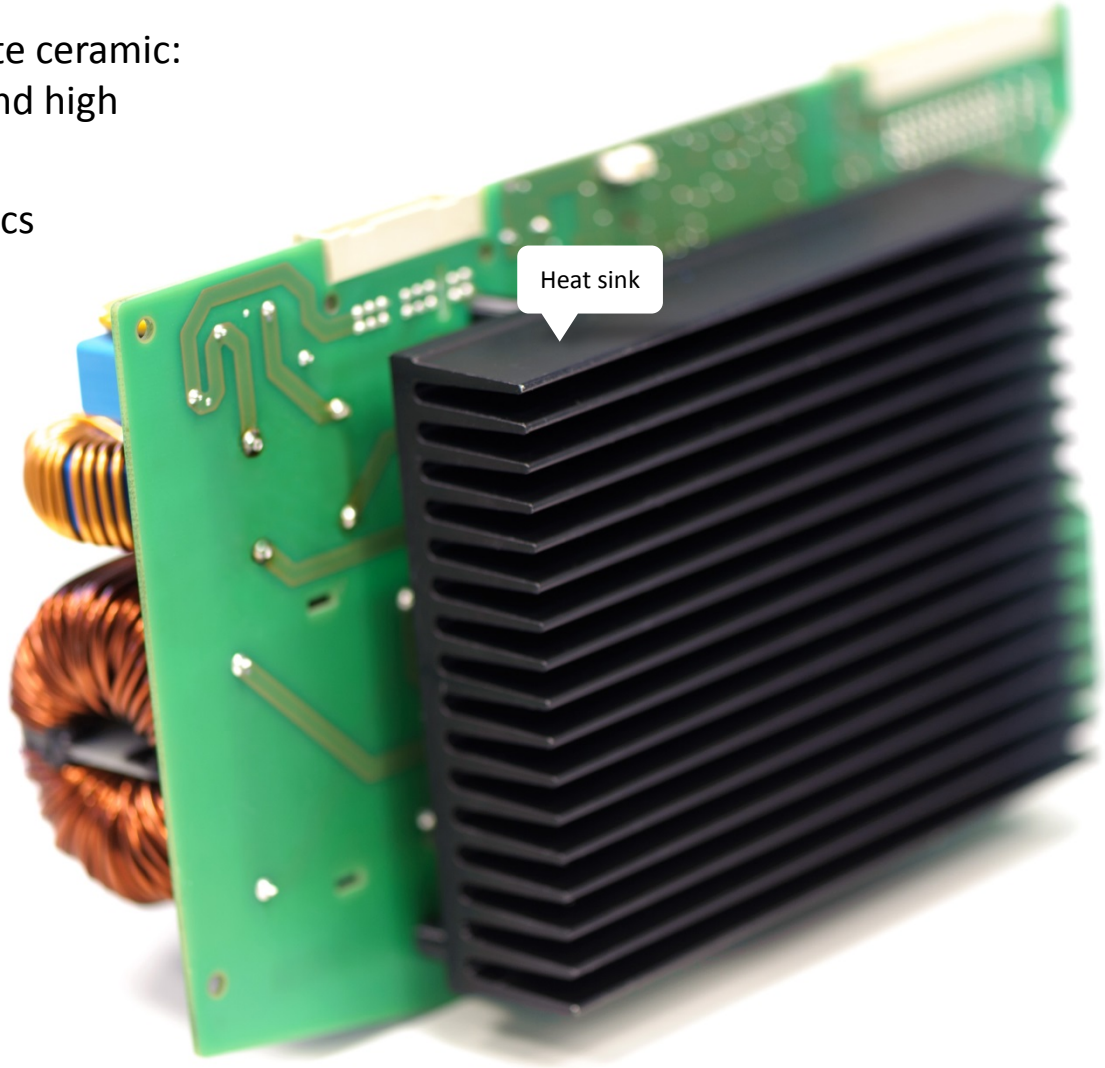
Optimized power supply unit

- Own patent-protected development
- 400 watt device class
- High dynamics, up to 8 Amperes
- High thermal stability, also for bipolar resection
- State-of-the-art digital technology allows precise control and update capabilities



Hybrid technology for optimal cooling

- Power electronics on aluminum nitrite ceramic: extreme high thermal conductivity and high electrical insulation at the same time
- Heat sink directly on power electronics



WLAN

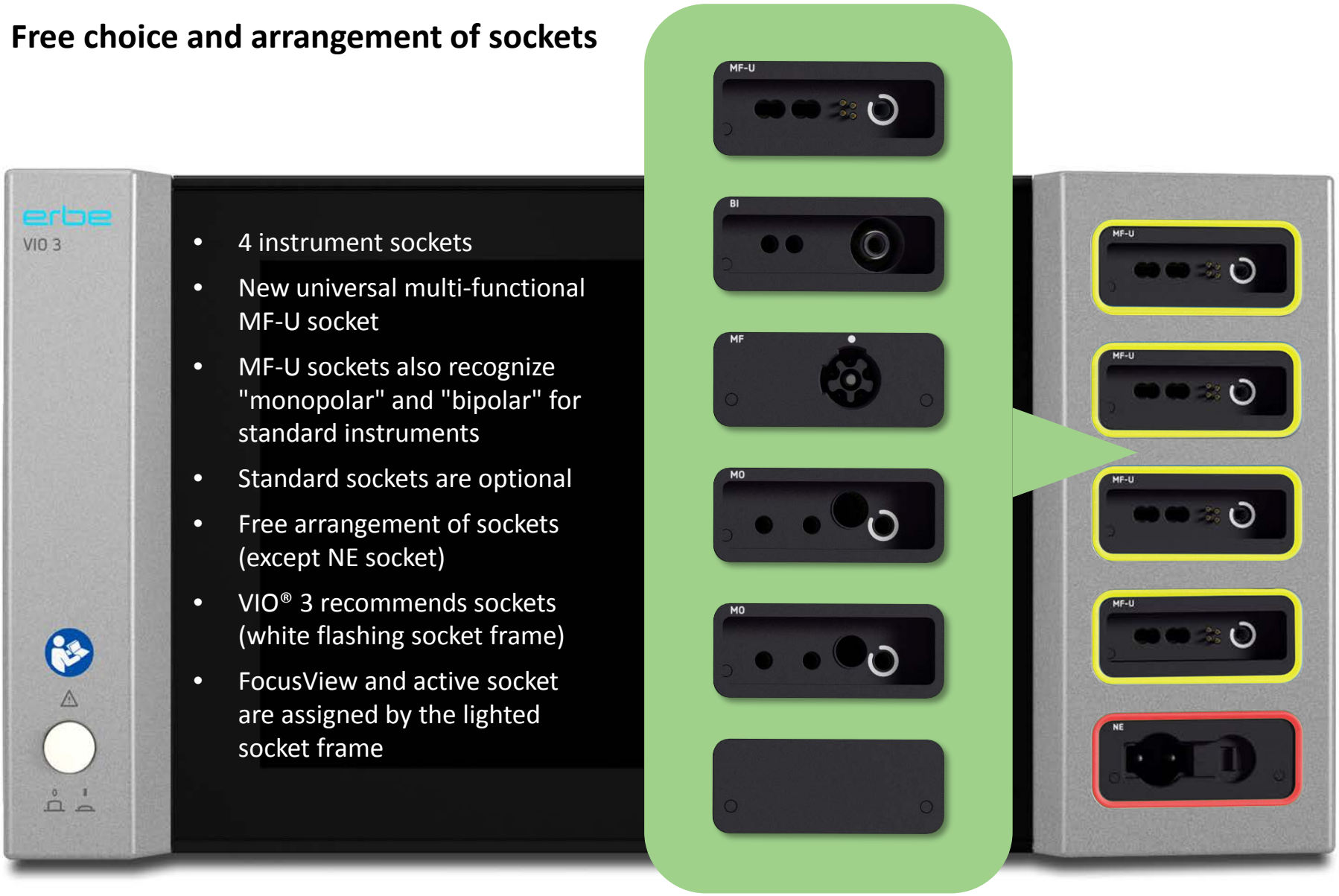
Communication interface with iPad

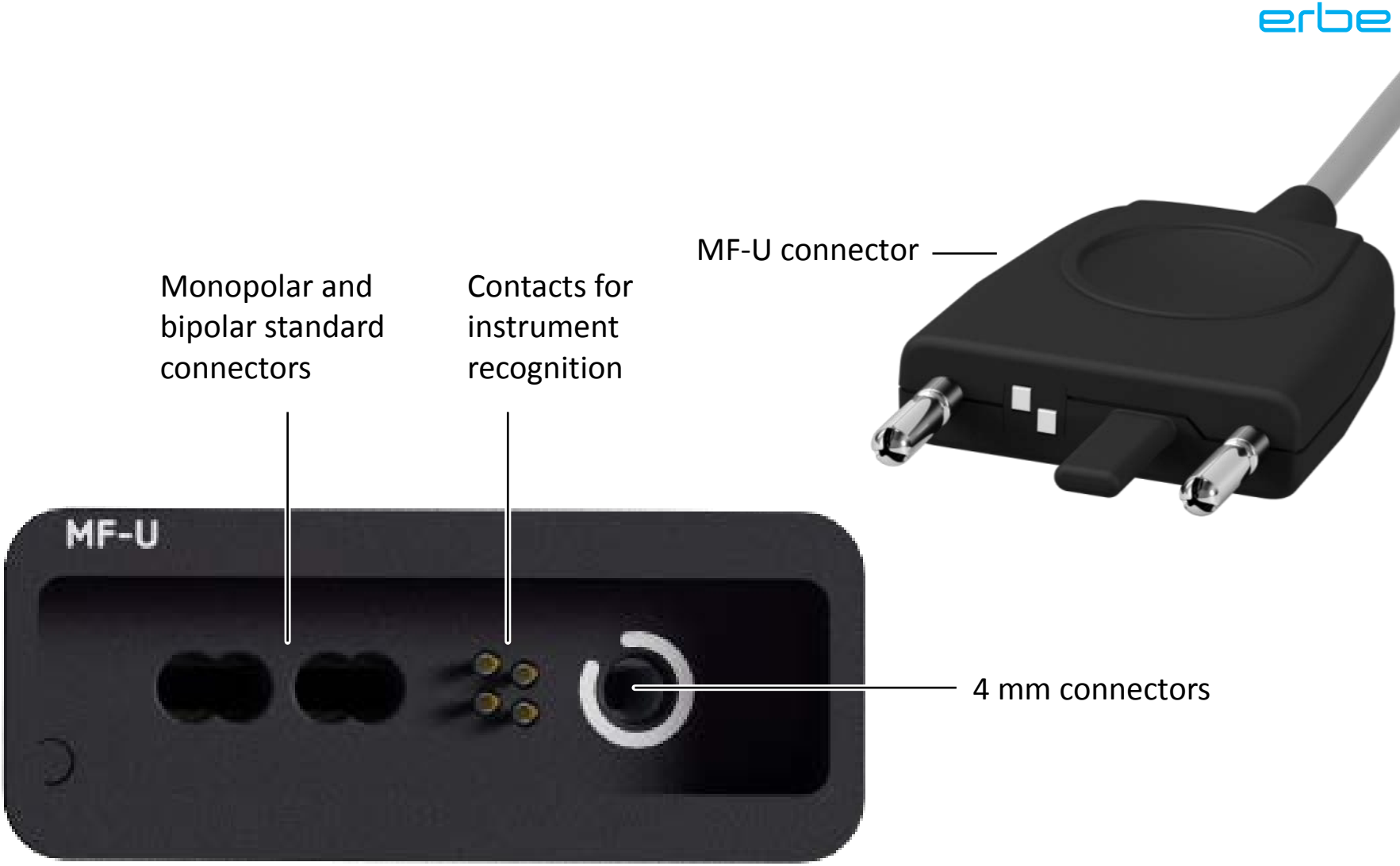
- Sales: wireless programming, updates, copying, archiving
- Service: error analysis
- Key-users: transferable programs

Compatibility of connectors

Free choice and arrangement of sockets

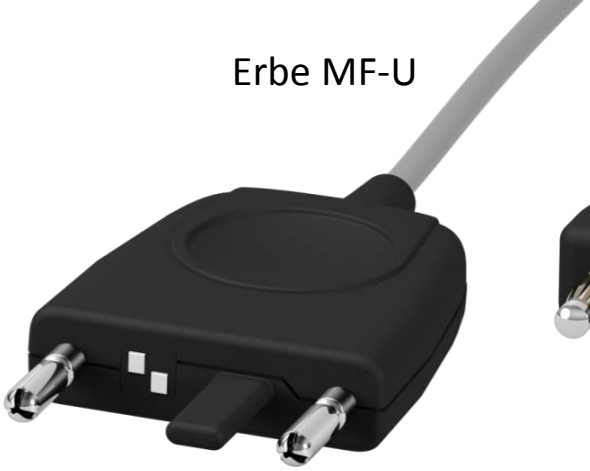
- 4 instrument sockets
- New universal multi-functional MF-U socket
- MF-U sockets also recognize "monopolar" and "bipolar" for standard instruments
- Standard sockets are optional
- Free arrangement of sockets (except NE socket)
- VIO® 3 recommends sockets (white flashing socket frame)
- FocusView and active socket are assigned by the lighted socket frame





Universal multi-functional MF-U socket

Erbe MF-U



MO 3 pin

MO 4 mm

BI 22 mm

BI 28 mm

Erbe MF (requires adapter)

Universal multi-functional MF-U socket

Optional bipolar socket

Erbe MO 9/5

MO 3 pin

MO 4 mm

Optional monopolar socket with Erbe connector

Bovie

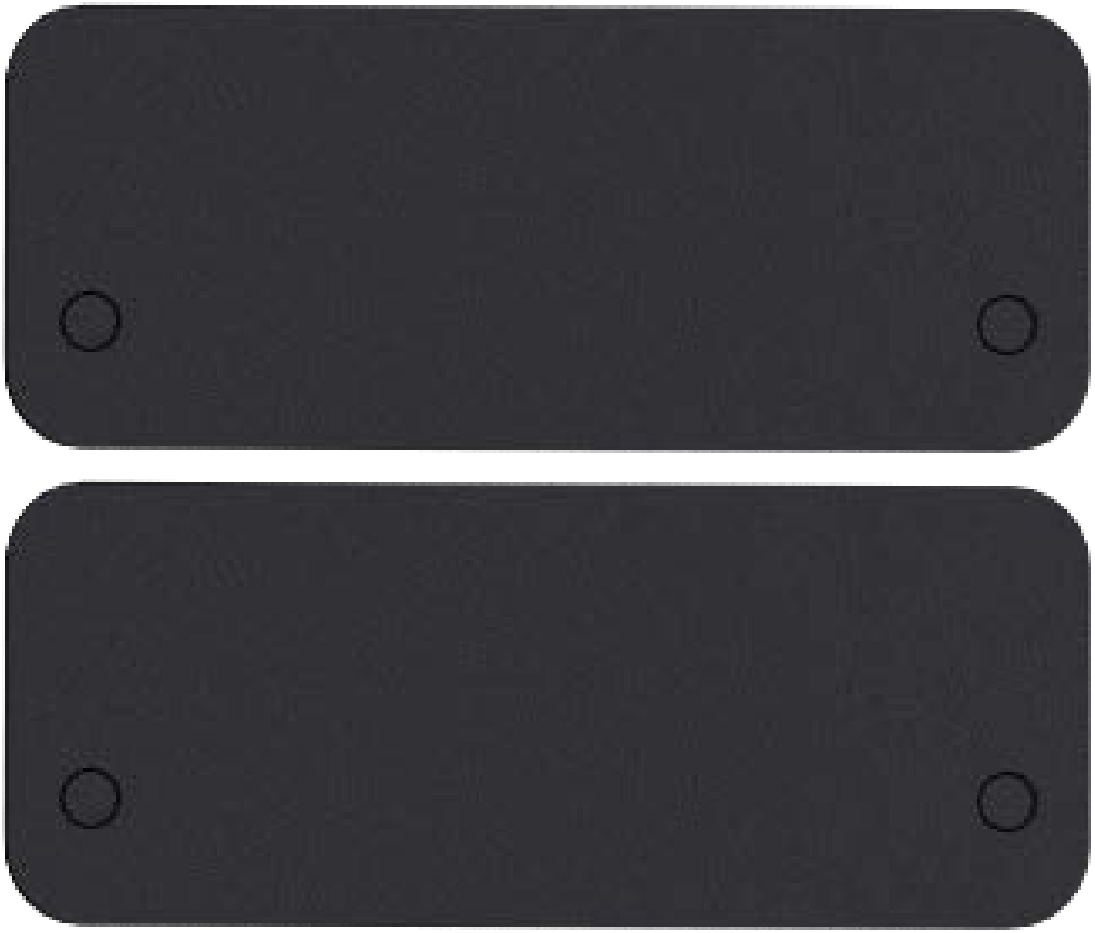
MO 3 pin

MO 4 mm

Optional monopolar socket with Bovie connector

Erbe MF

Optional multifunctional socket



A maximum of two slots may be covered with socket covers

Optional socket cover

NE 2 pin

Erbe NE 6

Neutral electrode socket

Simple socket exchange

- Simple exchange from the front using own tools
- It is not necessary to open the unit
- A safety check is not necessary
- Patent pending

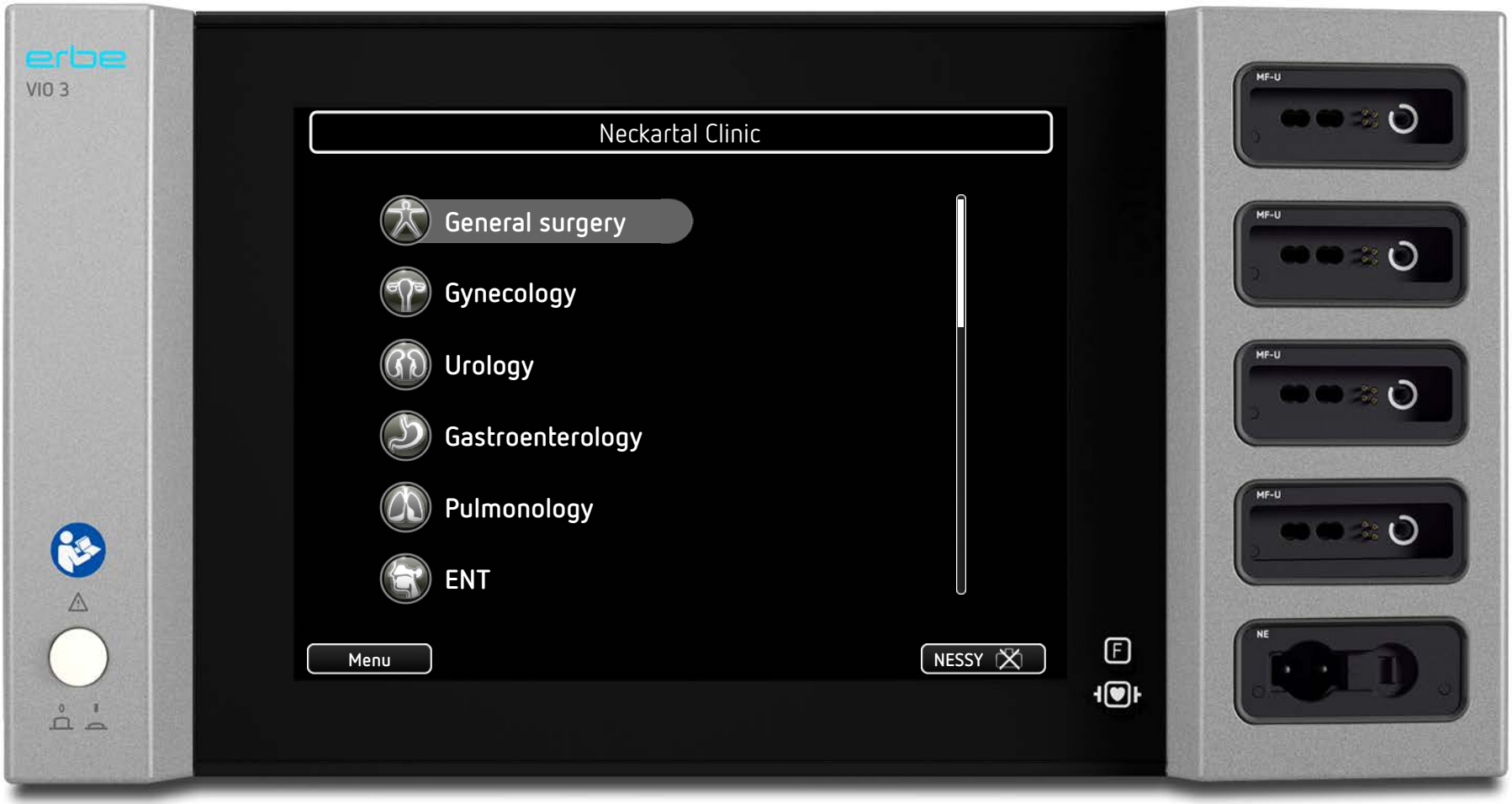
Simple socket exchange

- Touchscreen display 800 x 600 px
- Modifiable program groups and programs, optionally with or without pre-configuration
- Up to six sub-programs with ReMode®
- Fine tuning of modes with effects
- Voltage and power limitation are both set together with the effect
- Guided operation with stepGUIDE
- FocusView
- Multilingual
- Guided troubleshooting, integrated instructions for use

User-tested operating concept

Program groups

Up to 20 program groups may be configured,
optionally with or without pre-configured programs

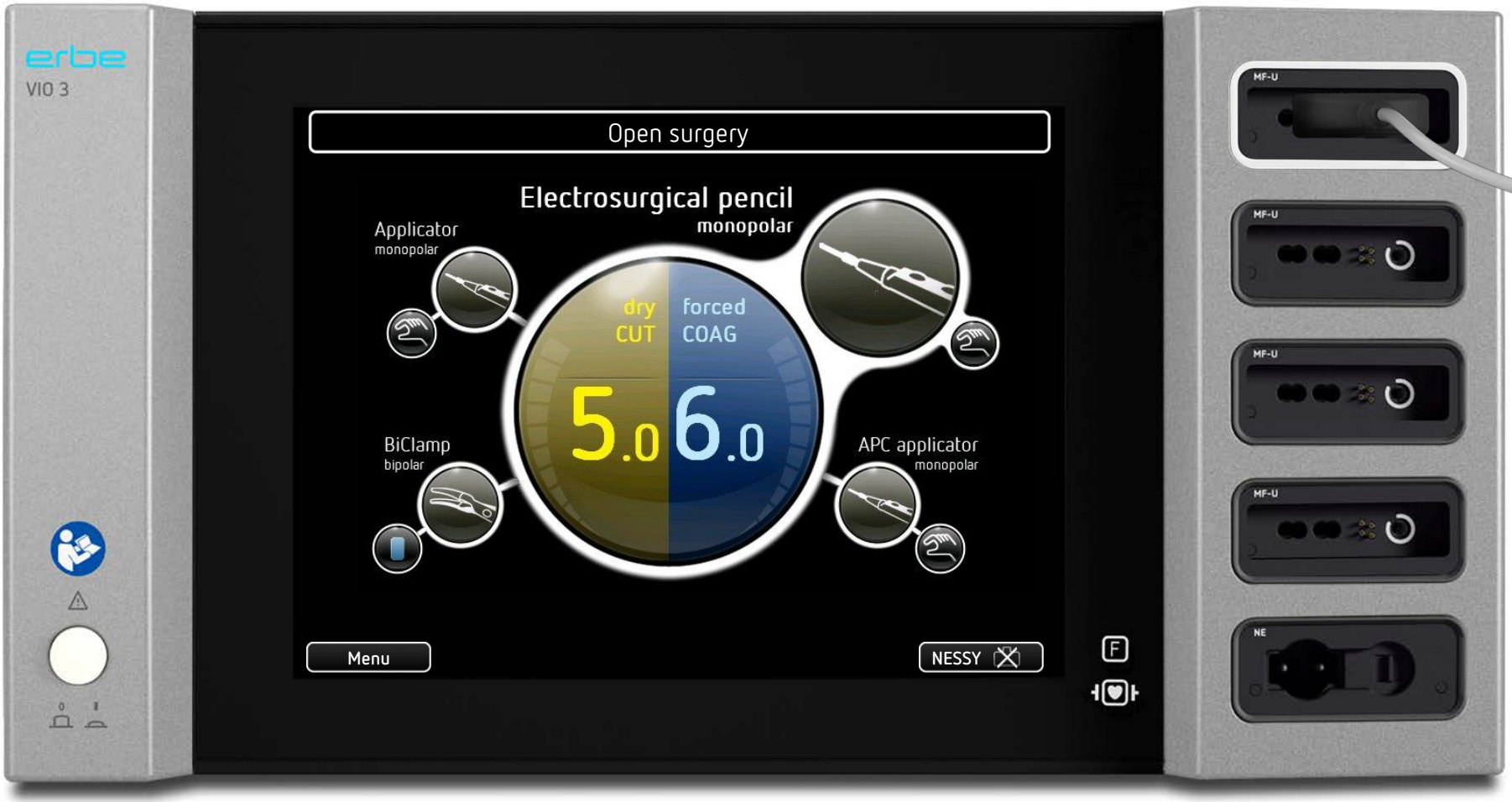


Programs

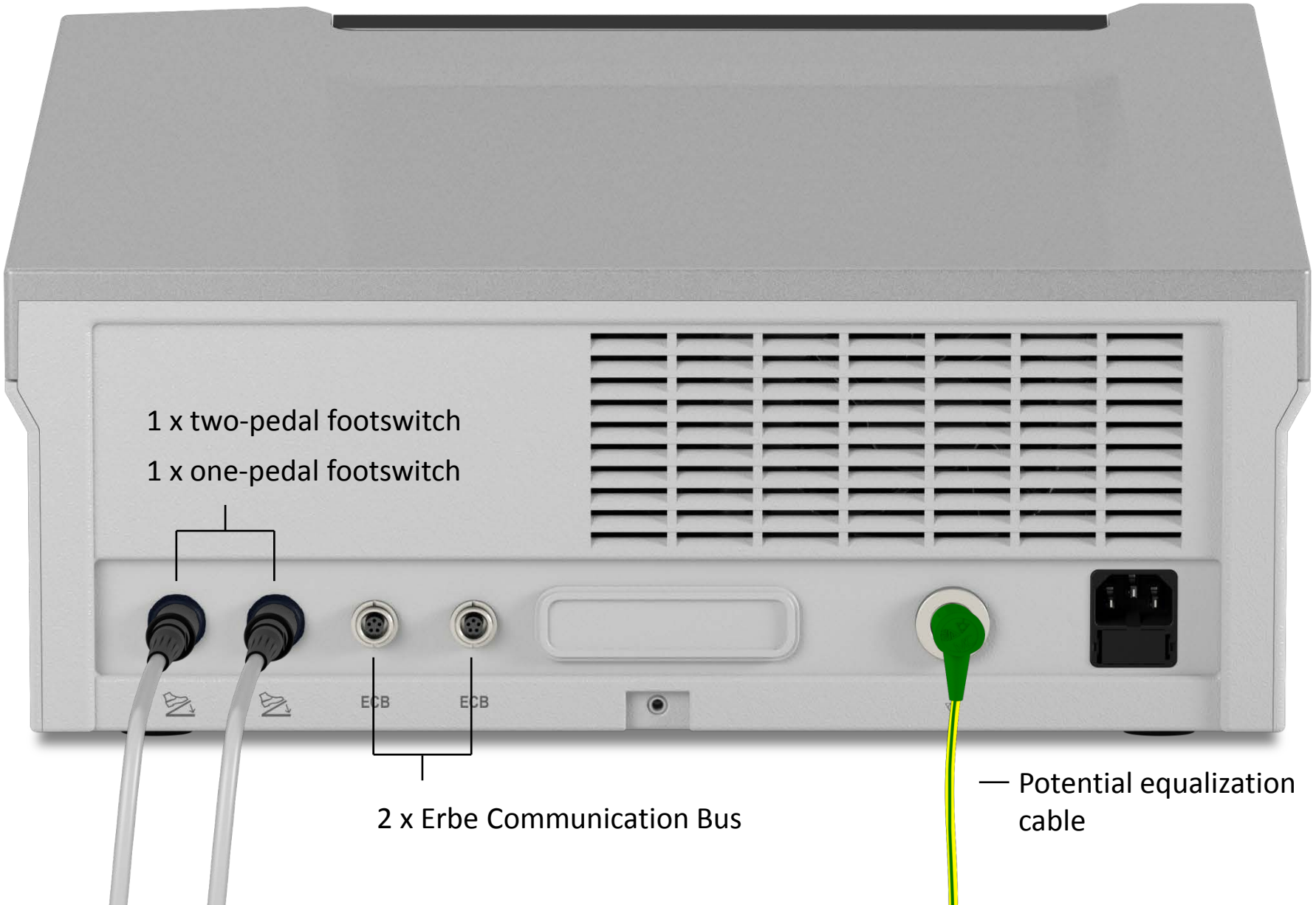
Up to 15 programs per program group, a total of max. 300 programs overall, optionally with or without pre-configured programs

Sub-programs

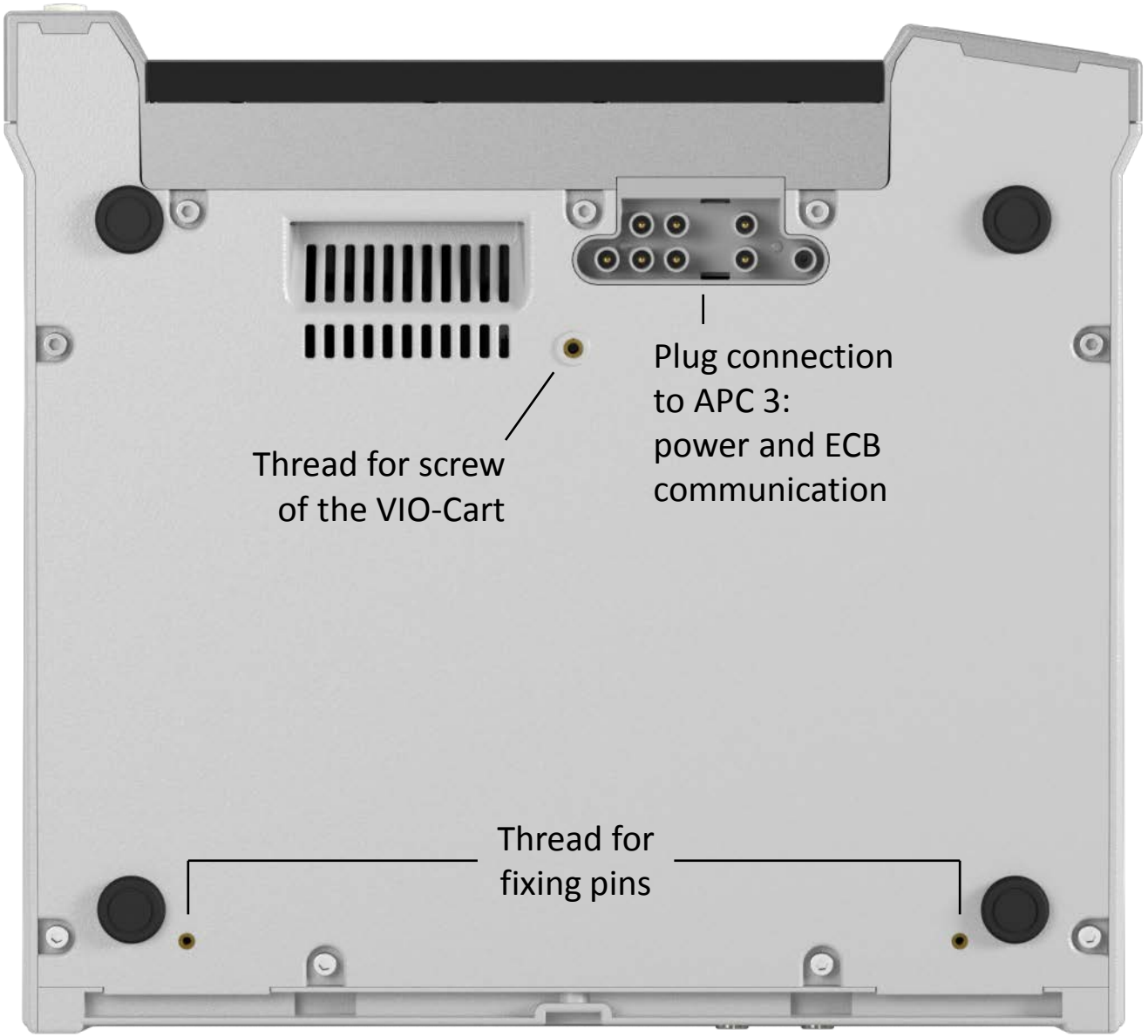
Per program up to 6 sub-programs, selectable from the sterile field per ReMode®, optionally with or without pre-configured programs



VIO® 3 rear


1 x two-pedal footswitch
1 x one-pedal footswitch
ECB
ECB
2 x Erbe Communication Bus
Potential equalization cable

VIO® 3 bottom


Plug connection
to APC 3:
power and ECB
communication
Thread for screw
of the VIO-Cart
Thread for
fixing pins

APC 3

Argon plasma coagulation module for the VIO® 3

APC 3

Argon plasma coagulation module for the VIO® 3

- Operation via VIO® 3
- Plug connection of VIO® 3 with integrated Erbe Communication Bus (ECB)
- 1 APC socket exclusively for FiAPC® instruments from Erbe
- Extended VIO® 3:
  5 HF instruments plus
  1 APC instrument
- Gas supply via gas cylinder or central building supply
- Argon gas with 4.8 level of purity
- Min. gas pressure 5 bar
- Modes:
  - forcedAPC
  - pulsedAPC
  - preciseAPC

APC socket

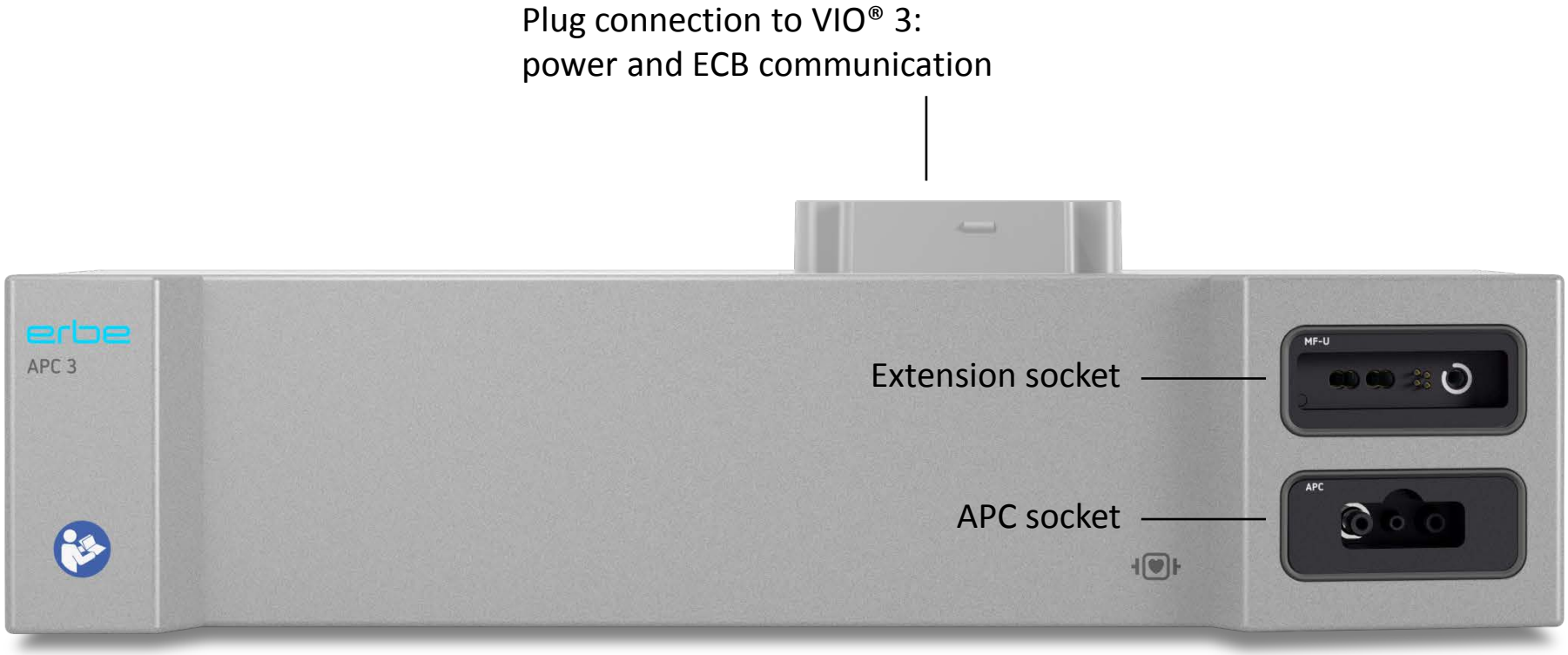
Filter integrated APC connector (FiAPC®):

- Patented
- Filters particles from the gas cylinder
- Prevents return flow

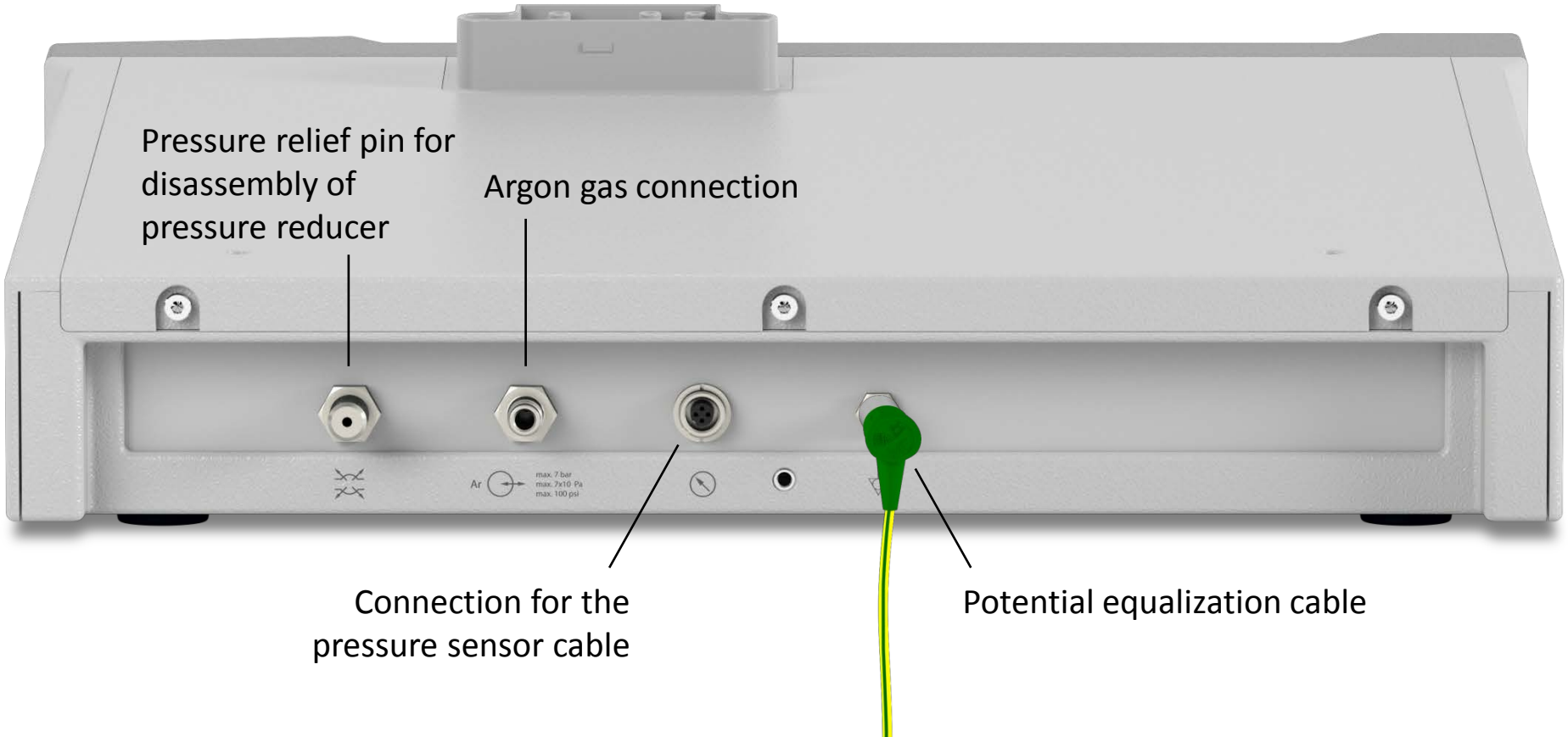
Instrument recognition (plug-and-play):

- Mode
- Effect
- Flow

APC 3 front


Plug connection to VIO® 3:
power and ECB communication
erbe
APC 3
Extension socket
MF-U
APC socket
APC

APC 3 rear


Pressure relief pin for disassembly of pressure reducer
Argon gas connection
Connection for the pressure sensor cable
Potential equalization cable

- ReMode®: for changing between up to 6 sub-programs directly from the sterile field (black switch)
- Flexible, robust cable
- Easy-fit connectors
- Patented

Footswitch

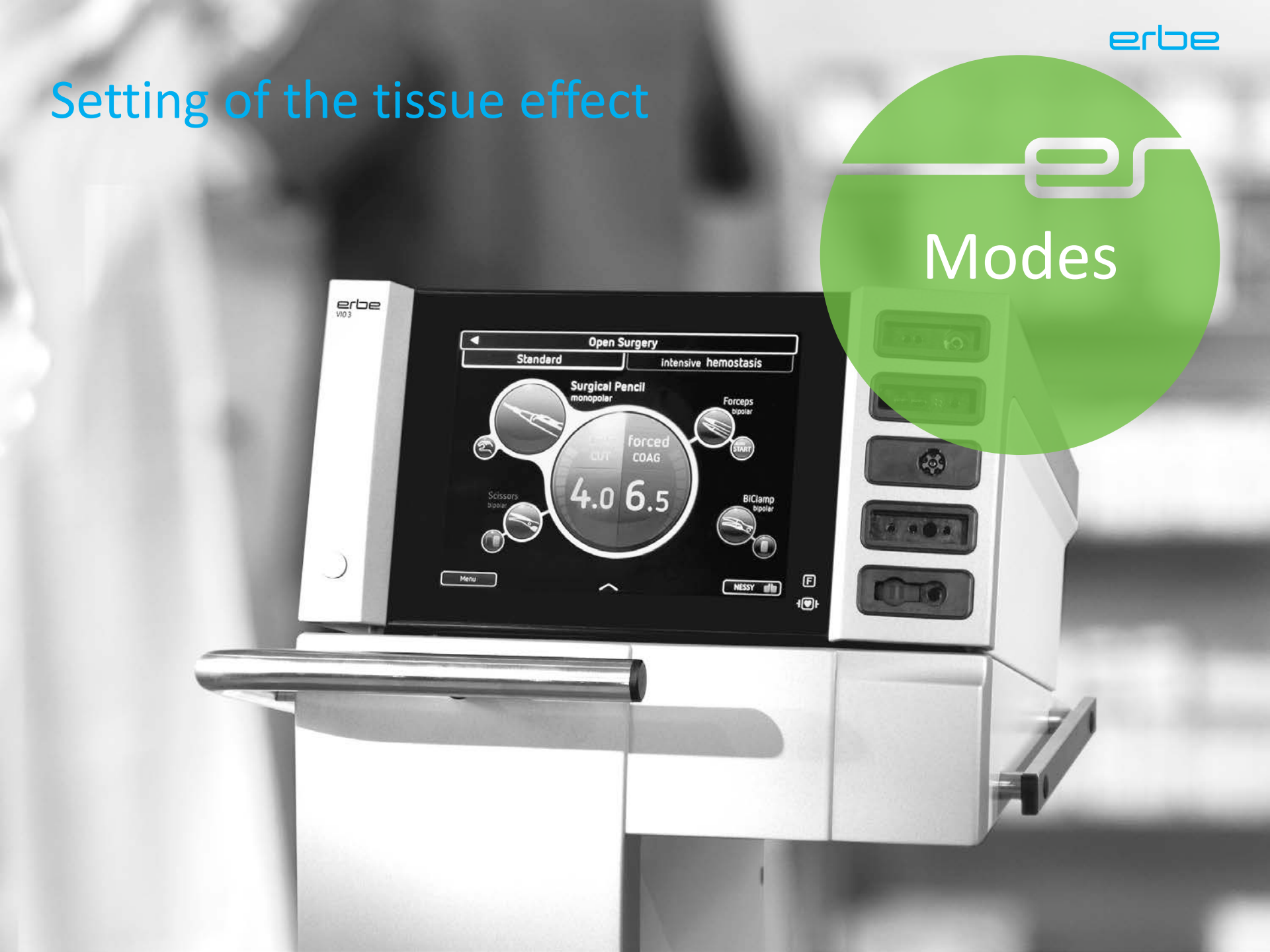
Footswitch connector

stepGUIDE

Guided and instrument-oriented operation

Plug and operate

Setting of the tissue effect



Revised modes

19 optimized modes

The right modes for every application. An optimized and adapted mode for every instrument

Precise effect settings

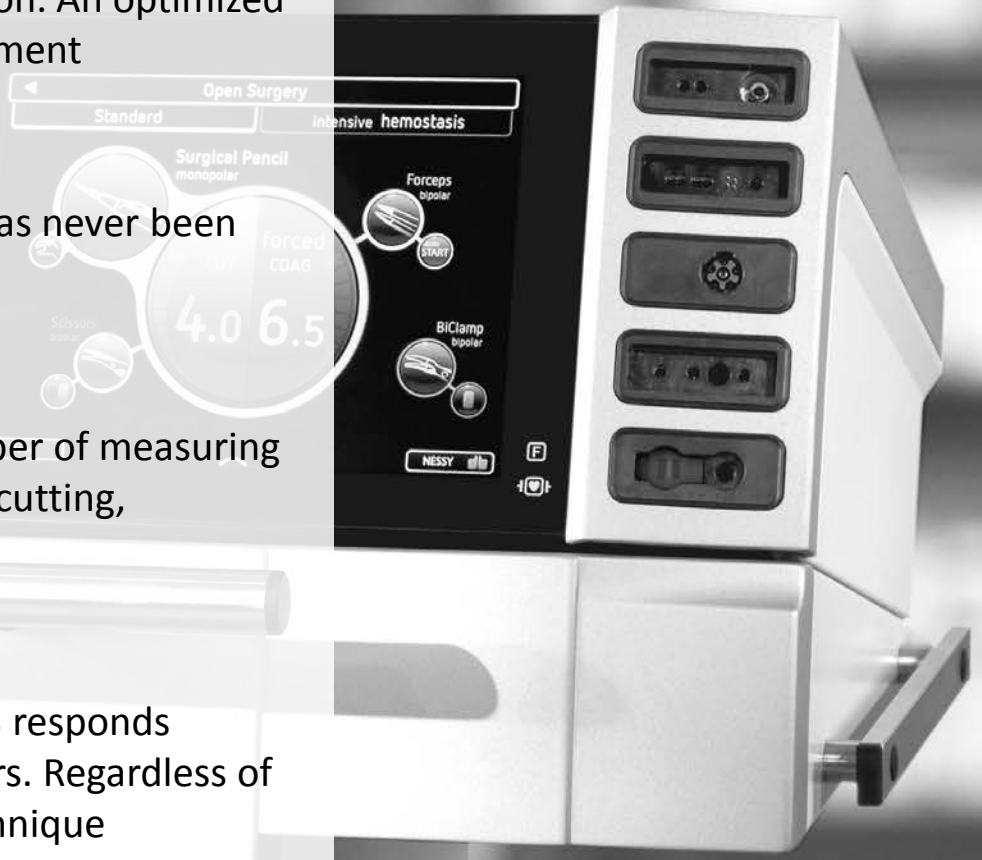
Fine-tuning of the selected mode has never been easier: simply by setting the effects

High reproducibility

Digital signal processors: high number of measuring cycles, homogenous effects during cutting, coagulation and devitalization

Homogenous tissue effects

Multi-processor technology: VIO® 3 responds immediately to changing parameters. Regardless of the electrode shape or incision technique



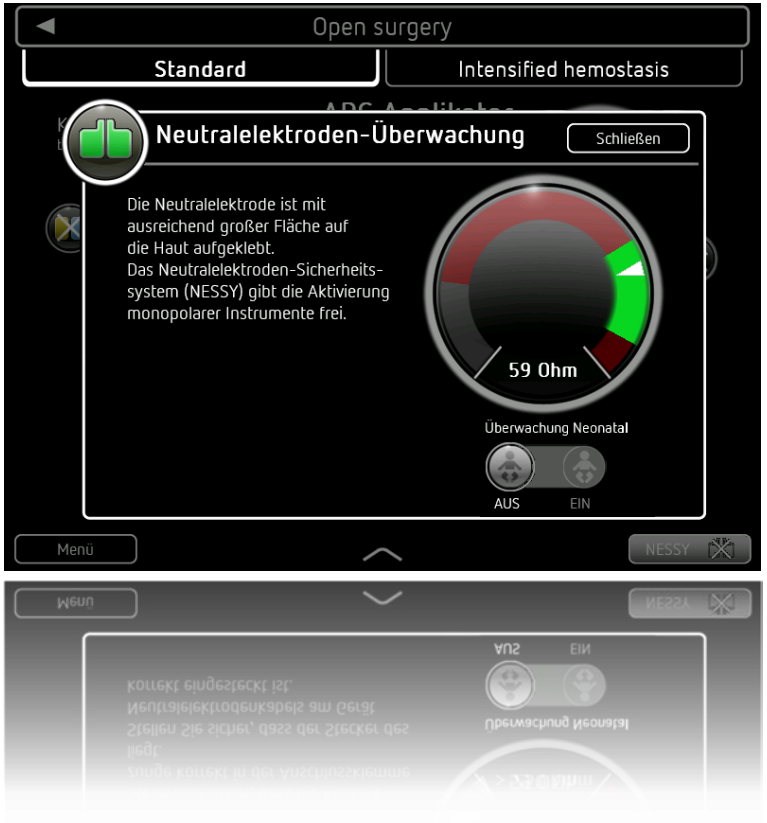
Neutral electrode safety system NESSY®

The Neutral Electrode Safety System, NESSY®, provides effective protection against burns.

The system can monitor split (multi-surface) neutral electrodes:

- ☑ Adequate effective skin contact
- ☑ Correct alignment toward the operating field (symmetry measurement)

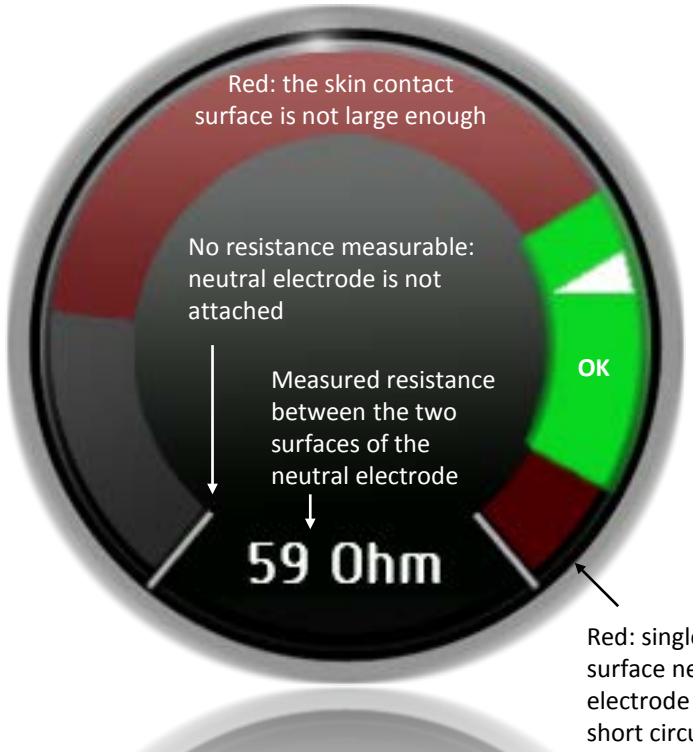
Permanent monitoring of skin contact



Important:

Monitoring is only possible with split neutral electrodes

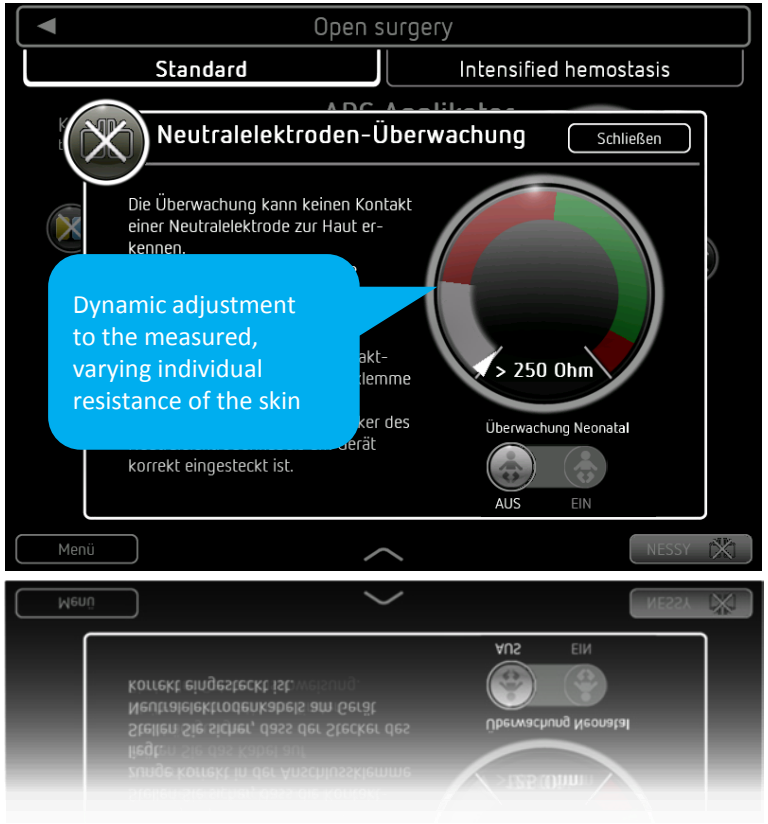
Permanent monitoring of skin contact



Important:

Monitoring is only possible with split neutral electrodes

Permanent monitoring of skin contact



Important:

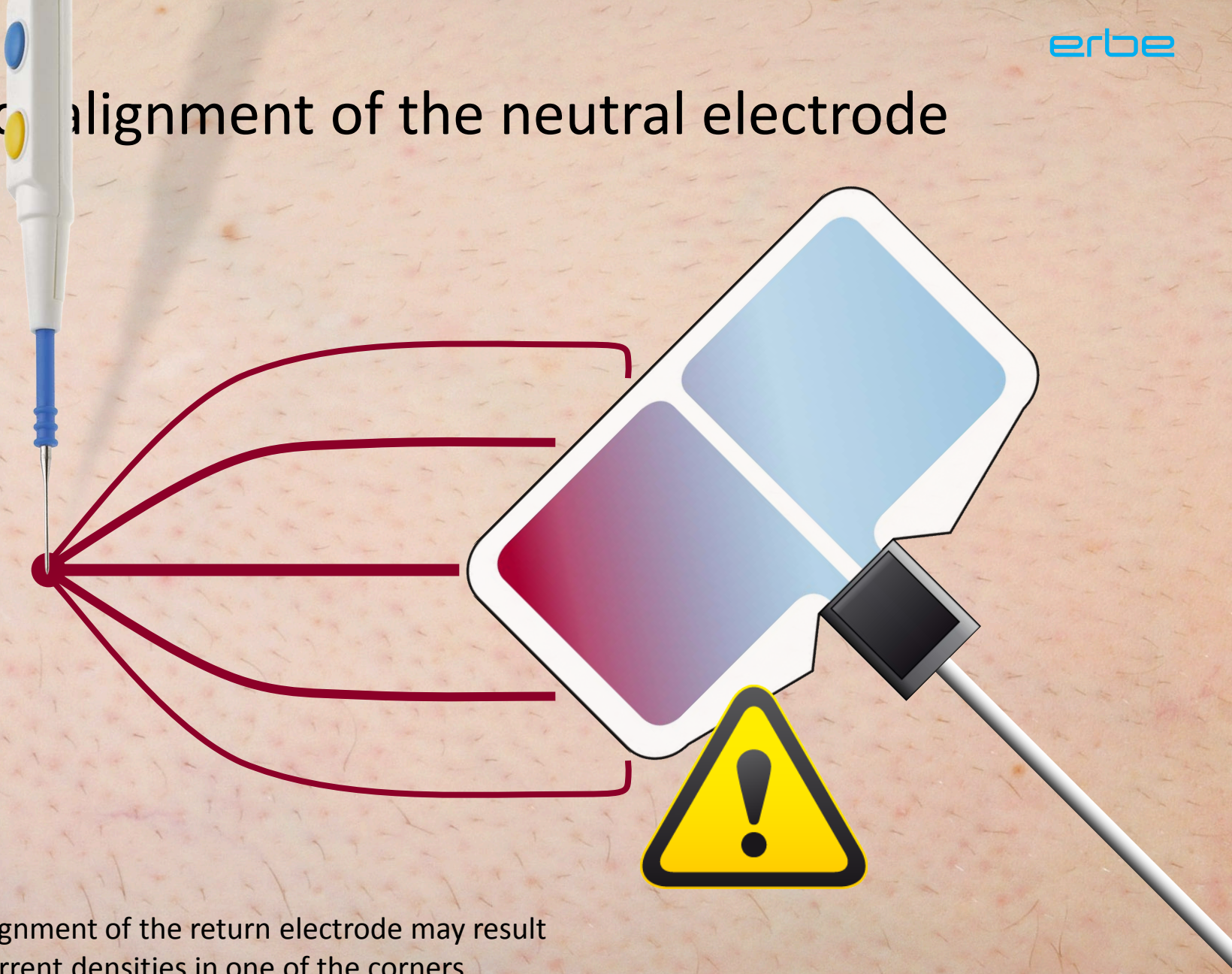
Monitoring is only possible with split neutral electrodes

Single surface neutral electrodes

Important:

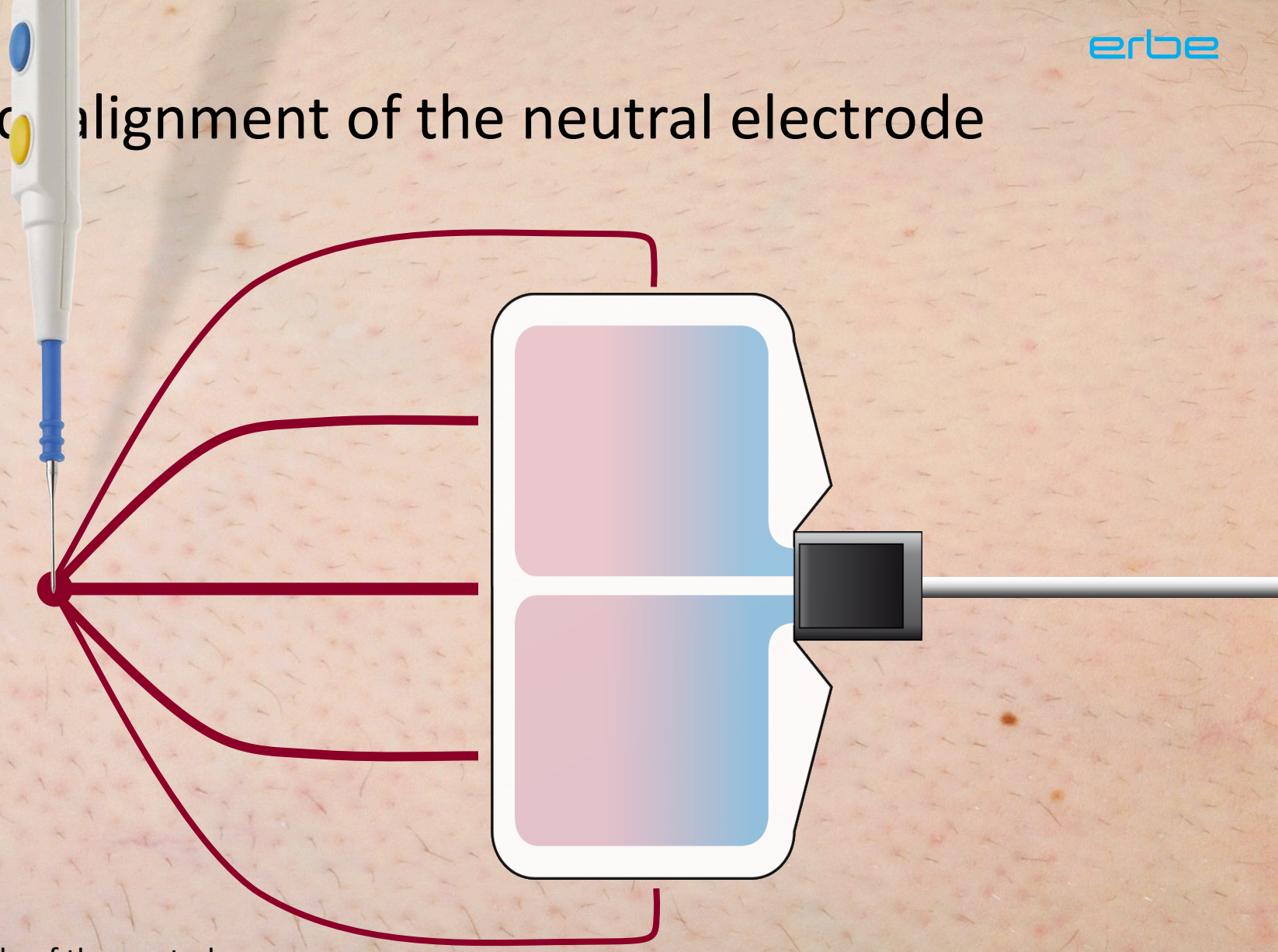
Monitoring with un-split, single surface neutral electrodes is technically not possible

Correct alignment of the neutral electrode



Diagonal alignment of the return electrode may result in higher current densities in one of the corners

Correct alignment of the neutral electrode



The long side of the neutral electrode and the gap must face toward the operating field

Correct alignn ent of the neutral electrode

Important:

Monitoring of the symmetry is only possible with split neutral electrodes and during activation of the HF current

Correct alignment of the neutral electrode

Important:

Monitoring of the symmetry is only possible with split neutral electrodes and during activation of the HF current

Guaranteed safety* with the NESSY® Ω

Advantages of NESSY® Ω neutral electrode:

- Use of the entire neutral electrode surface, including its rear part
- Low current density despite smaller neutral electrode surface
- No leading edge effect
- May be applied in any angle

* When using the NESSY® neutral electrodes together with Erbe devices, instruments and cables and observing the notes on use and instructions for use

Longitudinally split neutral electrodes

Longitudinally split neutral electrodes cannot be used.

Symmetry monitoring cannot deduce correct alignment.

This can lead to incorrect applications.

Neonatal monitoring

Neonatal monitoring for small (split or single surface) neutral electrodes

Warning if the flow of current exceeds 300 mA

Dry skin


NaCl


Open surgery
Standard
Intensified hemostasis
Neutralelektroden-Überwachung
Schließen
Die Neutralelektrode ist mit ausreichend großer Fläche auf die Haut aufgeklebt.
Das Neutralelektroden-Sicherheits-system (NESSY) gibt die Aktivierung monopolarer Instrumente frei.
59 Ohm
Überwachung Neonatal
AUS
EIN
Menü
NESSY

Modes

Monopolar modes

- autoCUT
- highCUT
- dryCUT
- softCOAG
- forcedCOAG
- swiftCOAG
- twinCOAG
- preciseSECT
- sprayCOAG
- forcedAPC

Additional monopolar modes for endoscopy

- endoCUT Q
- endoCUT I
- pulsedAPC
- preciseAPC

Bipolar modes

- autoCUT bipolar
- softCOAG bipolar
- forcedCOAG bipolar

Vessel sealing

- thermoSEAL

Bipolar resection

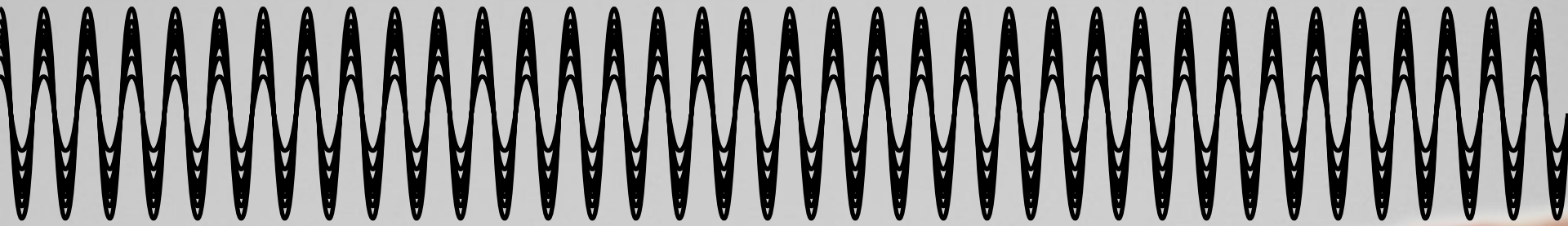
- highCUT bipolar
- softCOAG bipolar

Effect

"Fine-tuning" of the selected mode

Increasing voltage leads to more intensive sparks, greater current density and thus a broader coagulation zone.

Using the effect, the voltage may be adjusted as required.

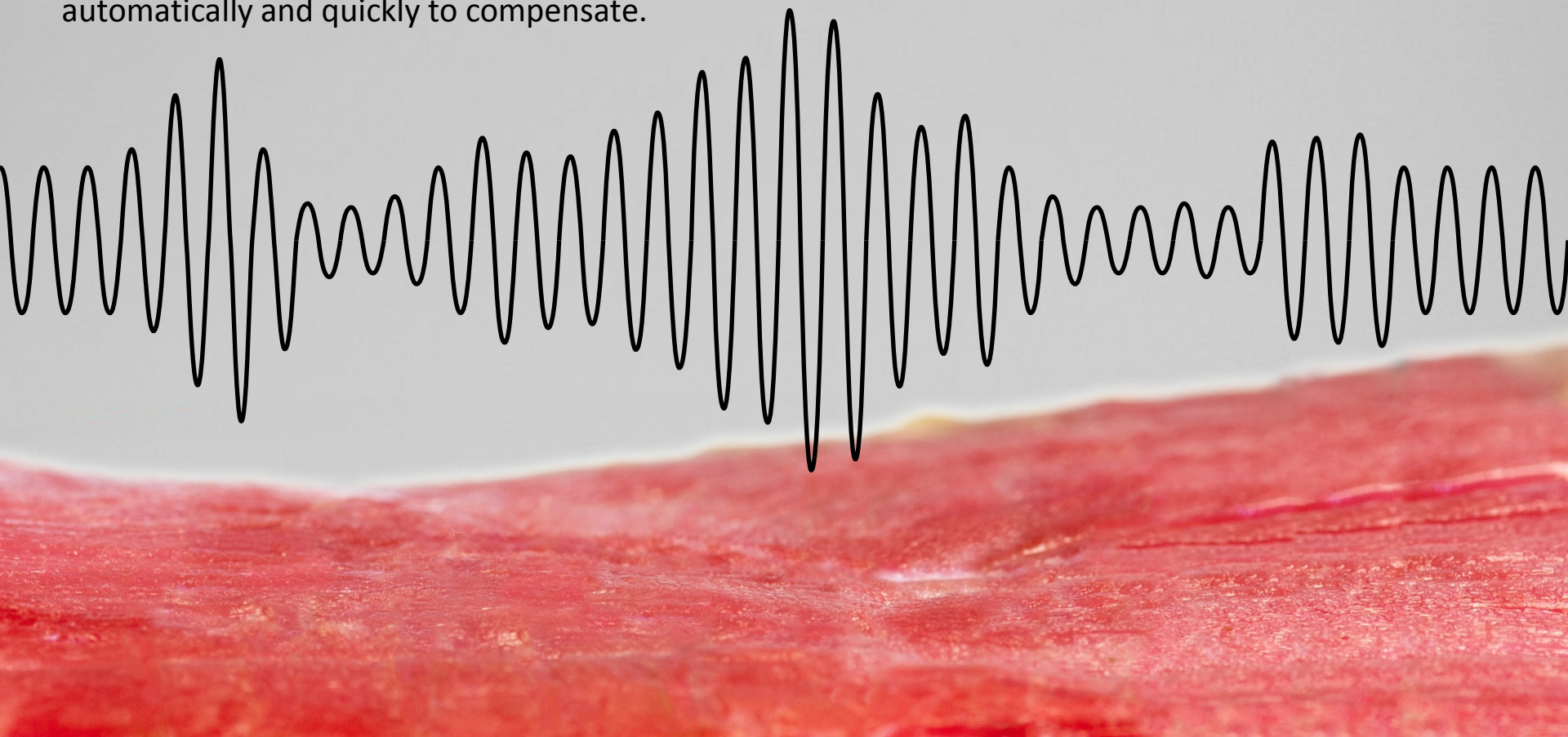


Control technology

The tissue effect cannot be controlled without controls

Changing electrical resistance affects voltage and current and thus the tissue effect.

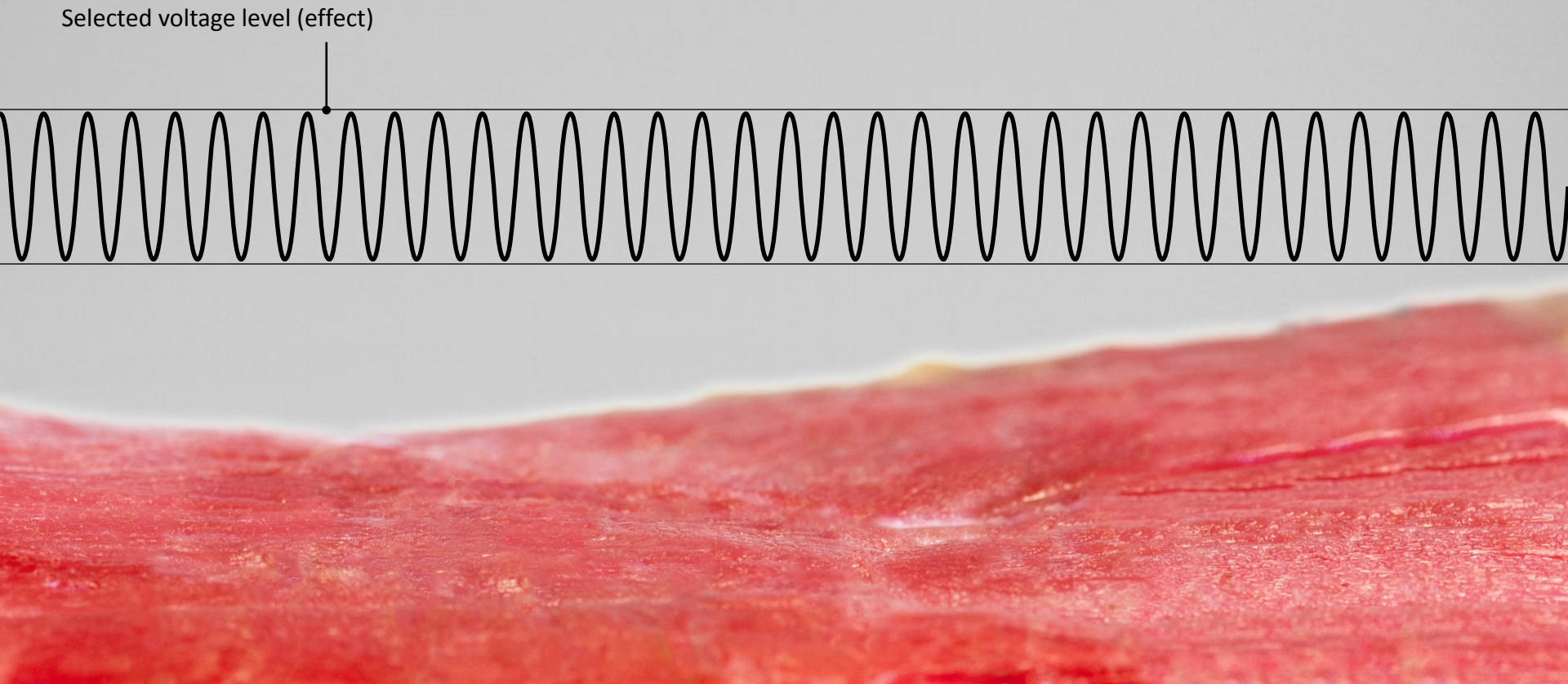
Control technology responds to changing resistance and continuously adjusts other electrical parameters such as power or voltage automatically and quickly to compensate.



Automatic control technology from ERBE

Constant voltage control

To achieve an homogeneous tissue effect, most modes of the Erbe electrosurgery devices "act" on the voltage and keep it constant. The resulting power (P = I x U) is variable.

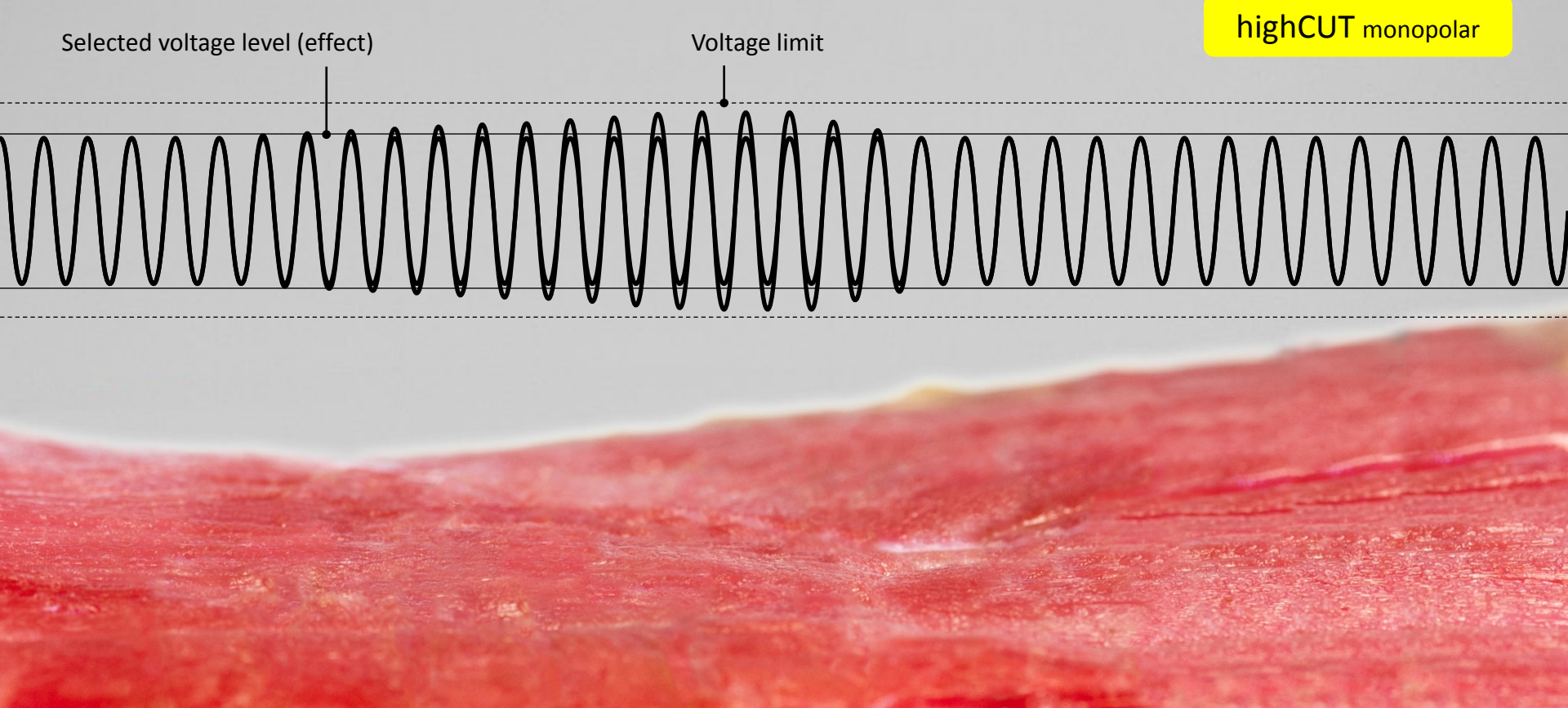


Automatic control technology from ERBE

Constant spark control

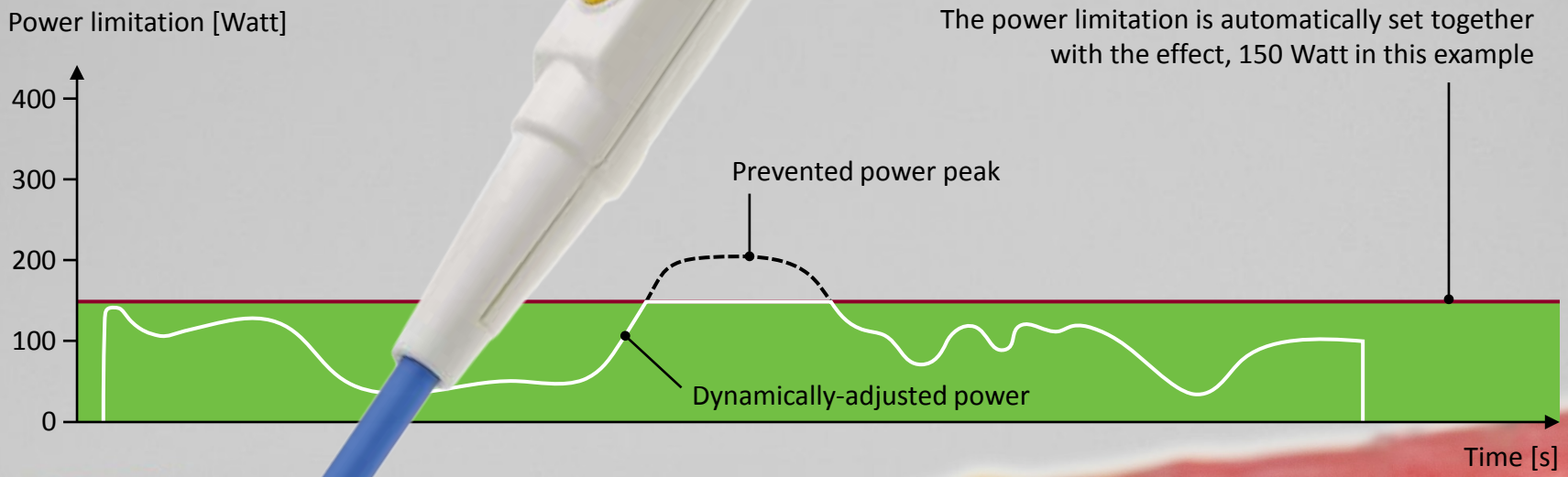
Modes with constant spark control recognize spark intensity and adjust the voltage specifically to enable constant spark formation, even under "difficult" conditions. For example: Monopolar Transurethral Resection.

highCUT monopolar



Automatic control techno rom ERBE

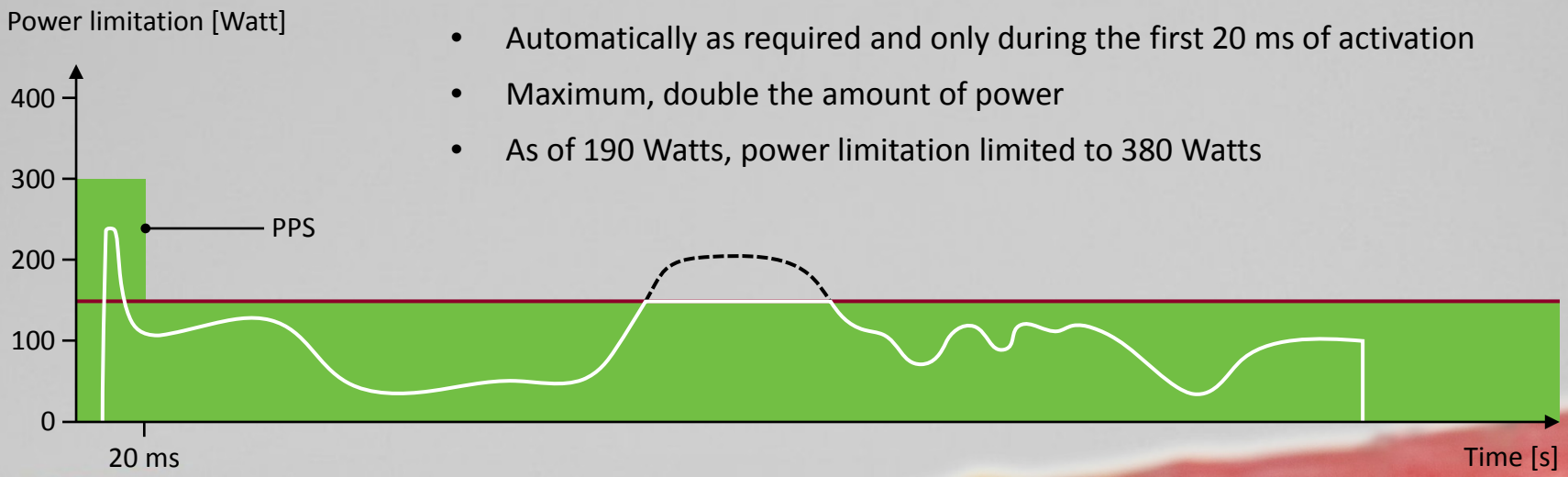
Power limitation



Automatic control technology from ERBE

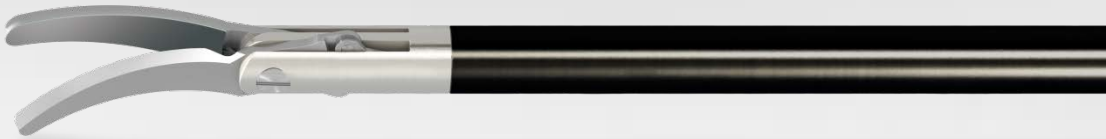
Power Peak System (PPS)

- Automatically dosed power peak for initial incision with autoCUT and highCUT
- Better spark formation in wet tissue
- Automatically as required and only during the first 20 ms of activation
- Maximum, double the amount of power
- As of 190 Watts, power limitation limited to 380 Watts



softCOAG

Tissue effect	Slow, deep coagulation and devitalization without carbonization of the tissue and without spark formation. This prevents erosion of sharp cutting edges
Voltage range	35 – 200 V_{peak}
Control technology	Constant voltage control
Options	QuickStart, AUTO STOP
Specialist disciplines	All
Possible applications	Open, laparoscopic and endoscopic applications • Deep hemostasis in partial liver resection, partial kidney resection • Coagulation for monopolar scissors • Targeted devitalization
Examples for instruments	• Monopolar scissors • Ball electrode • Monopolar forceps • Endoscopic coagulation forceps

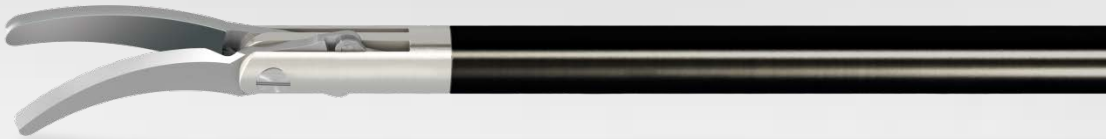


0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

softCOAG – novelties

- PRECISE-Upgrade integrated (particularly low voltage range i.e. for micro-surgical instruments)
- Optional QuickStart: short energy burst at tissue contact for accelerated coagulation and less sticking



0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

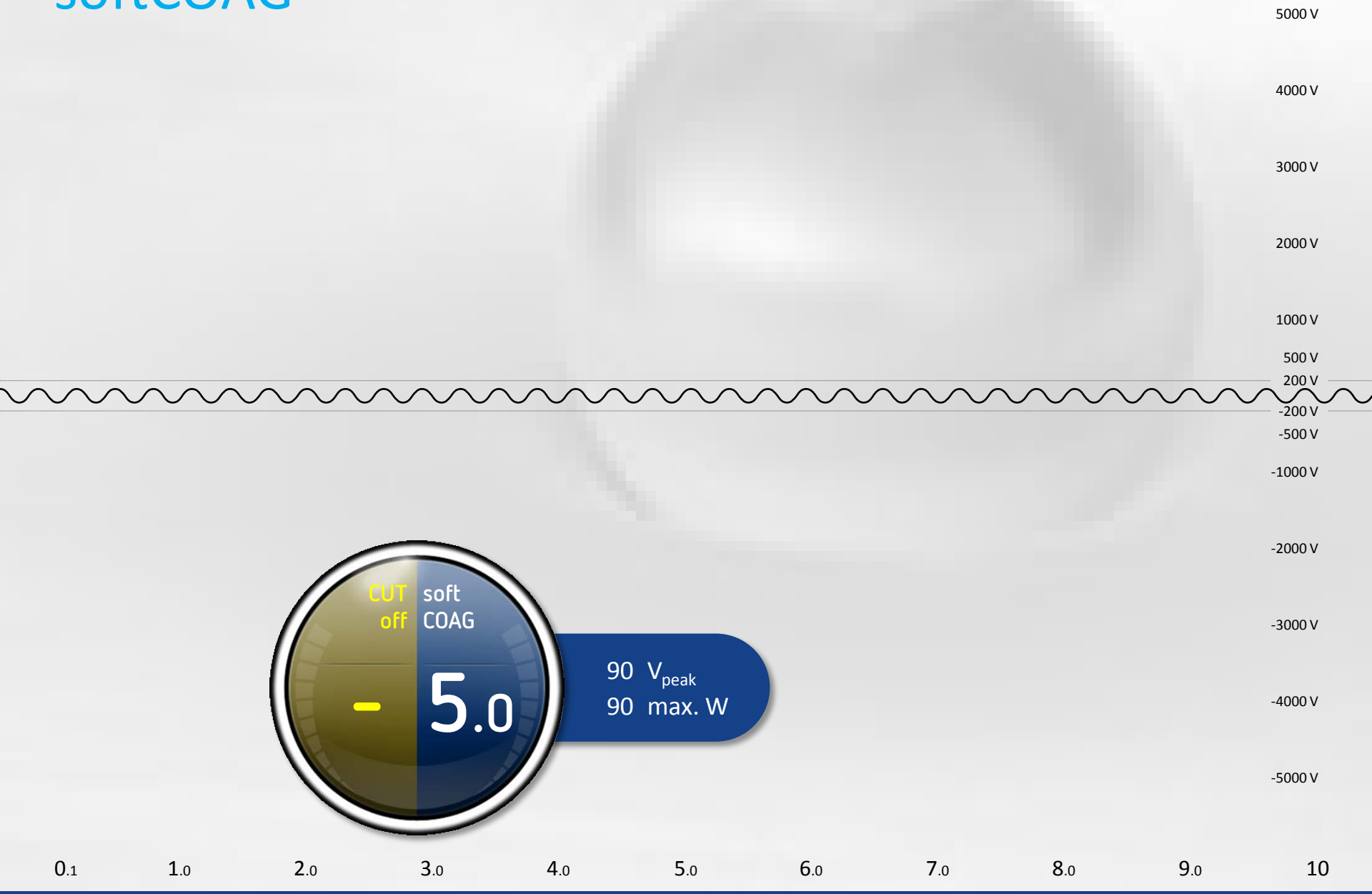
softCOAG

5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V

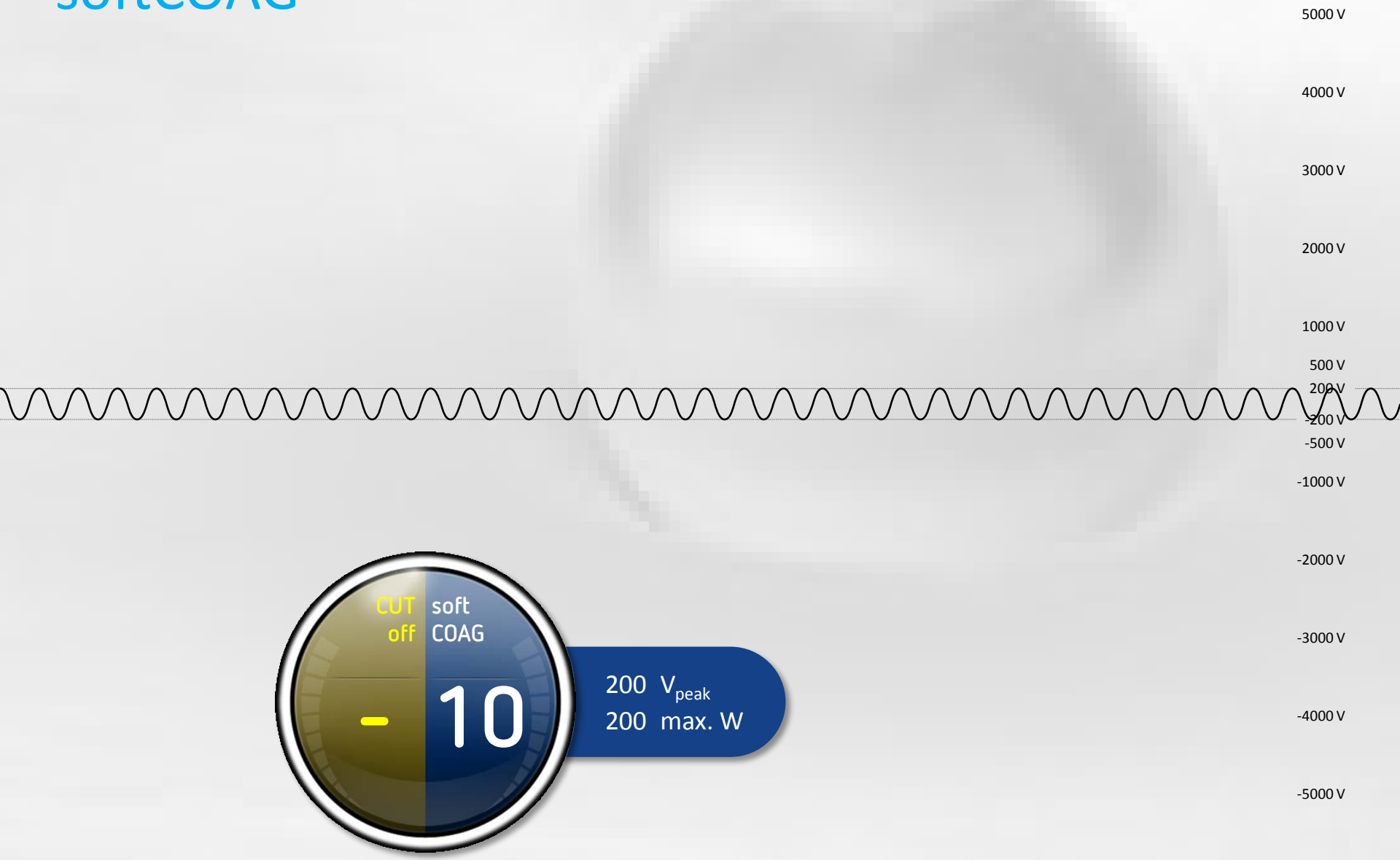
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

softCOAG

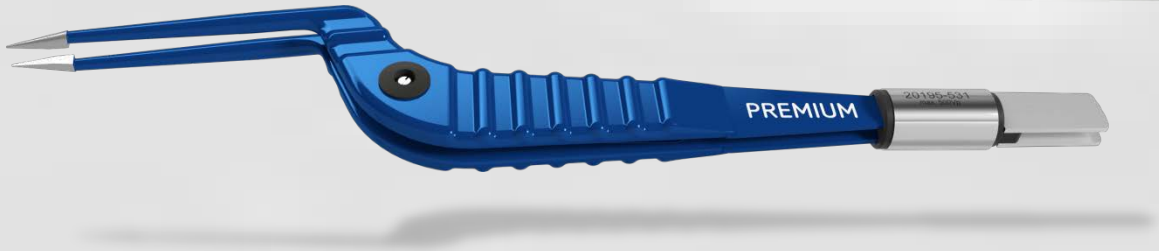

5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
CUT
off
soft
COAG
-
5.0
90 V_{peak}
90 max. W
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
Effect

softCOAG


5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
CUT
off
soft
COAG
10
200 V_{peak}
200 max. W
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
Effect

softCOAG bipolar

Tissue effect	Slow, deep coagulation and devitalization without carbonization of the tissue and without spark formation
Voltage range	35 – 200 V_{peak}
Control technology	Constant voltage control
Options	QuickStart, AUTO STOP
Specialist disciplines	All
Possible applications	Standard coagulation for all bipolar instruments, open and laparoscopic applications
Examples for instruments	• Bipolar coagulation/ grasping forceps • Laparoscopic BiSect • Bipolar scissors (i.e. Metzenbaum) • BiSect • Bipolar forceps



0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

softCOAG bipolar – novelties

- PRECISE-Upgrade integrated (particularly low voltage range i.e. for micro-surgical instruments)
- Optional QuickStart: short energy burst at tissue contact for accelerated coagulation and less sticking

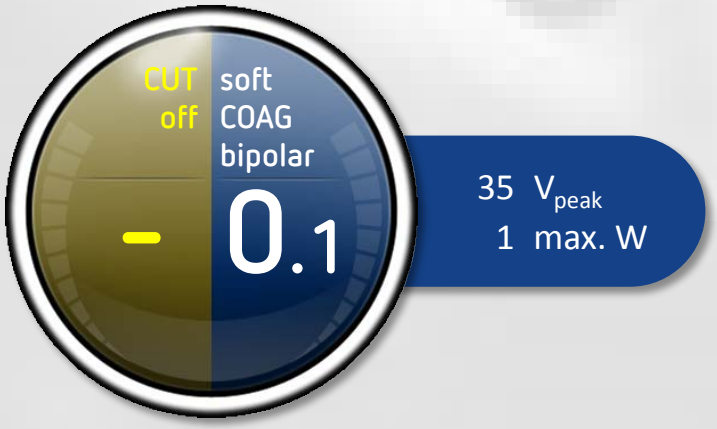
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

softCOAG bipolar

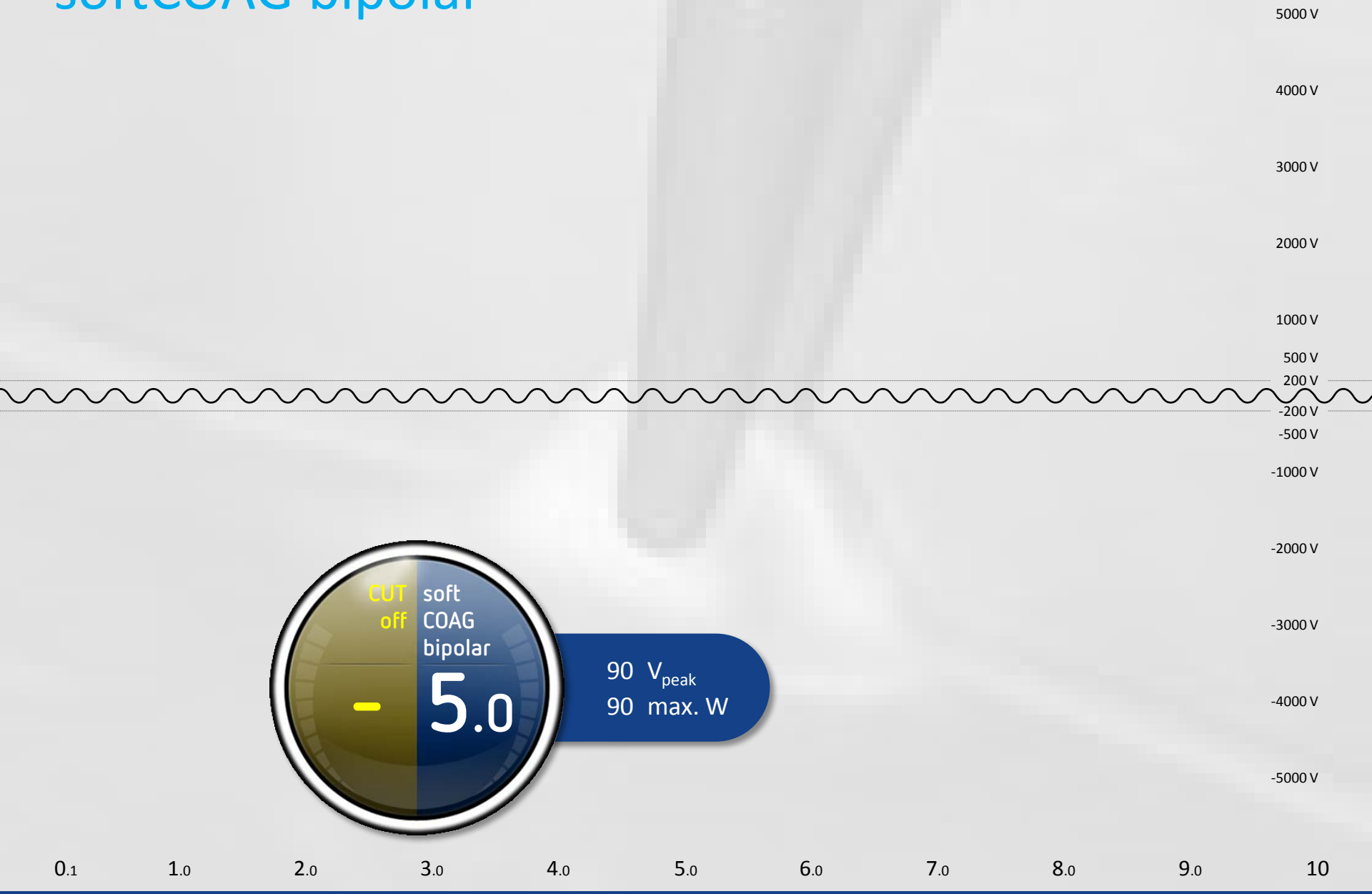
5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V



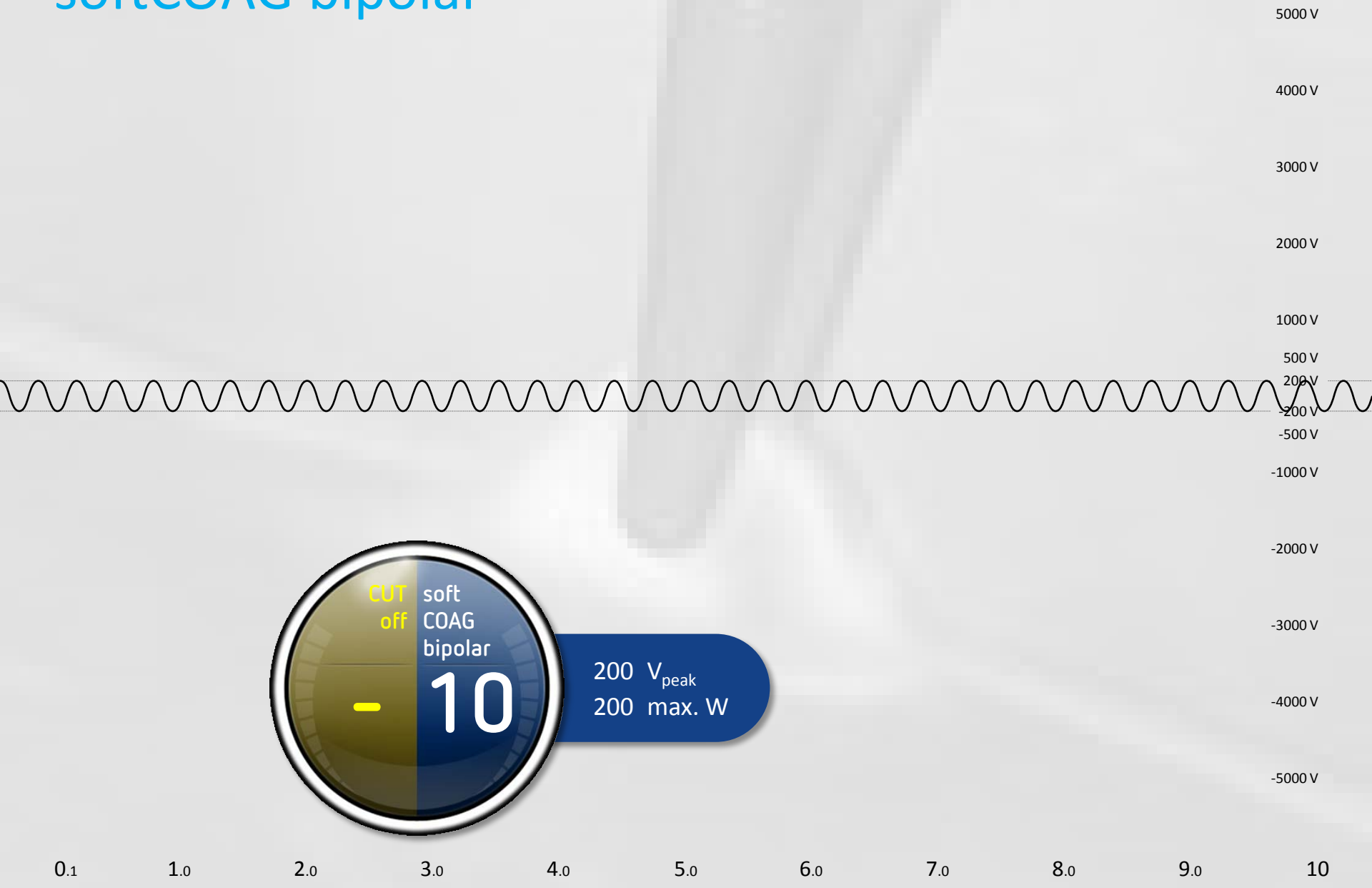
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

softCOAG bipolar



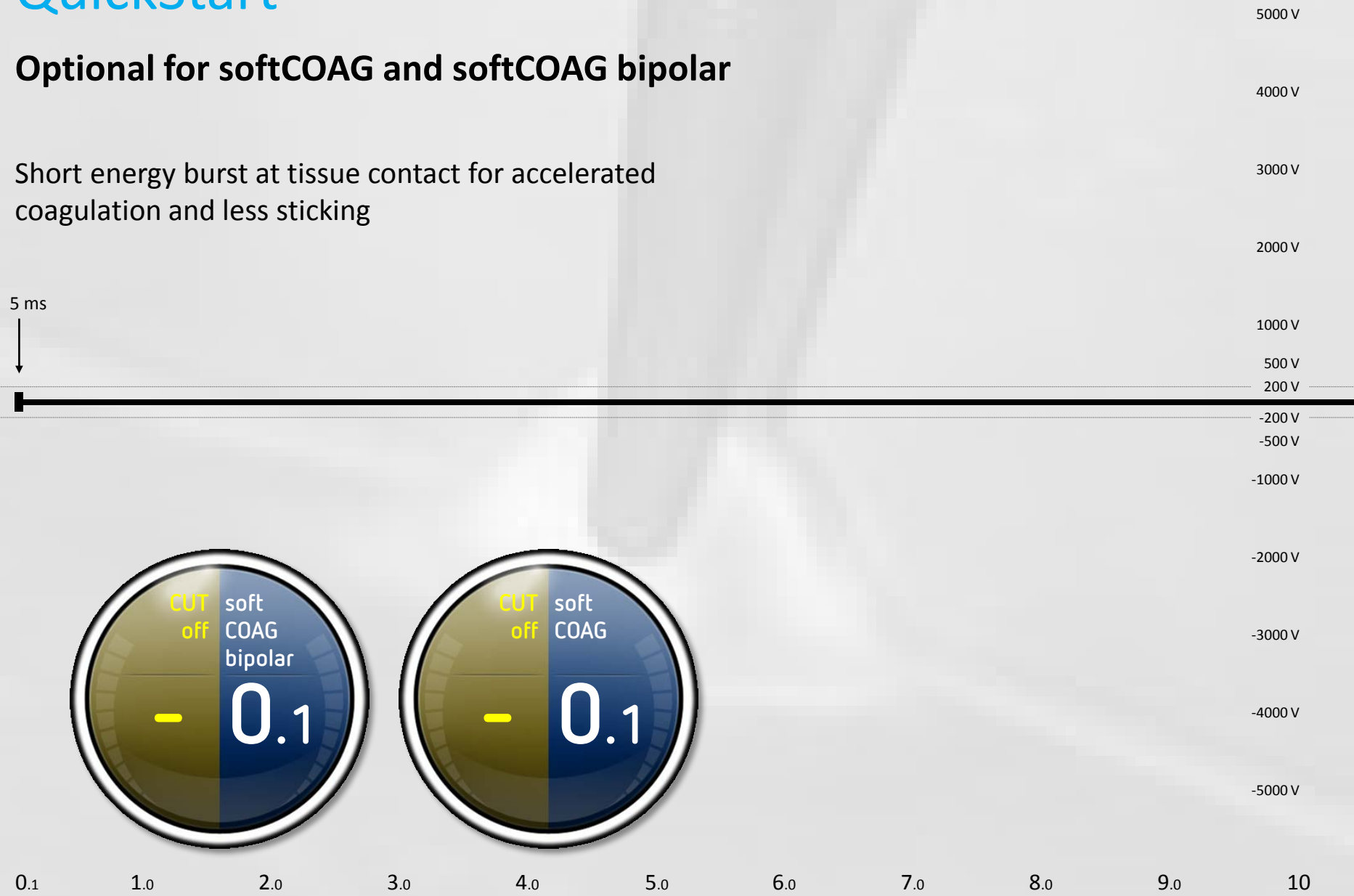
softCOAG bipolar



QuickStart

Optional for softCOAG and softCOAG bipolar

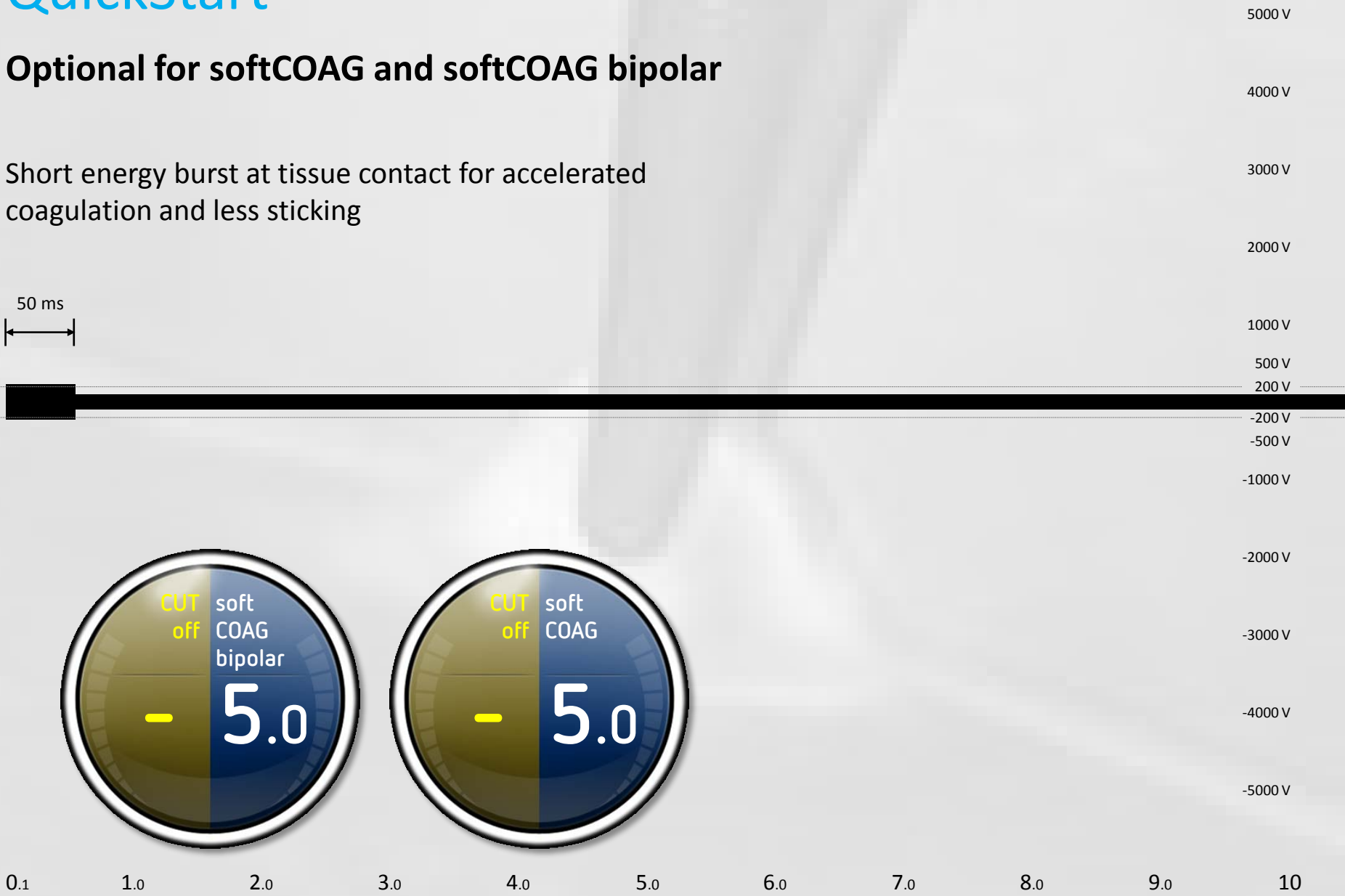
Short energy burst at tissue contact for accelerated coagulation and less sticking



QuickStart

Optional for softCOAG and softCOAG bipolar

Short energy burst at tissue contact for accelerated coagulation and less sticking



QuickStart

Optional for softCOAG and softCOAG bipolar

Short energy burst at tissue contact for accelerated coagulation and less sticking

softCOAG bipolar for bipolar resectoscopes

Tissue effect	Slow, deep coagulation without carbonization of tissue
Voltage range	70 – 200 V_{peak}
Control technology	Constant voltage control
Specialist disciplines	Urology, gynecology
Possible applications	• Bipolar transurethral resection TUR-P and TUR-B (Urology) • Bipolar transcervical resection TCR (Gynecology)
Examples for instruments	Exclusively: Bipolar resectoscope, bipolar hysteroscope under electrically conductive saline rinsing solution (NaCl)

1 2 3 4 5 6 7 8 9 10

Effect

softCOAG bipolar for bipolar resectoscopes

Replaces BIPOLAR COAG+ and BIPOLAR COAG++

1 2 3 4 5 6 7 8 9 10

Effect

softCOAG bipolar for bipolar resectoscopes

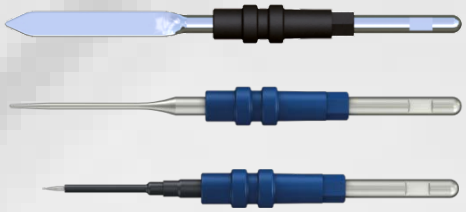
erbe

softCOAG bipolar for bipolar resectoscopes

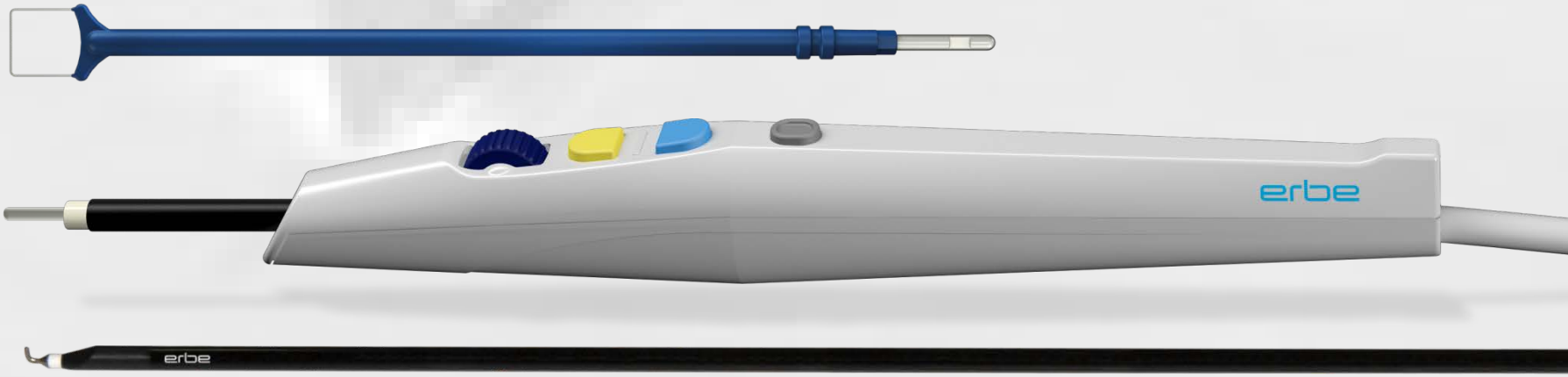
erbe

softCOAG bipolar for bipolar resectoscopes

autoCUT



Tissue effect	Smooth incisions, minimum to moderate hemostasis
Voltage range	250 – 750 V_{peak}
Control technology	Constant voltage control with PPS
Specialist disciplines	All
Possible applications	Standard incision for open, laparoscopic and endoscopic applications
Examples for instruments	Monopolar cutting instruments, for example: • Needle electrode, knife electrode, spatula electrode, laparoscopic hook electrode • APCapplicator • Tungsten loop electrode, Loop Electrical Excision Procedure (LEEP) • Wire loop electrode • Monopolar resectoscope

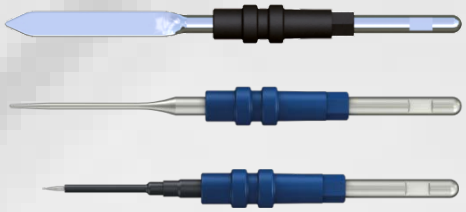


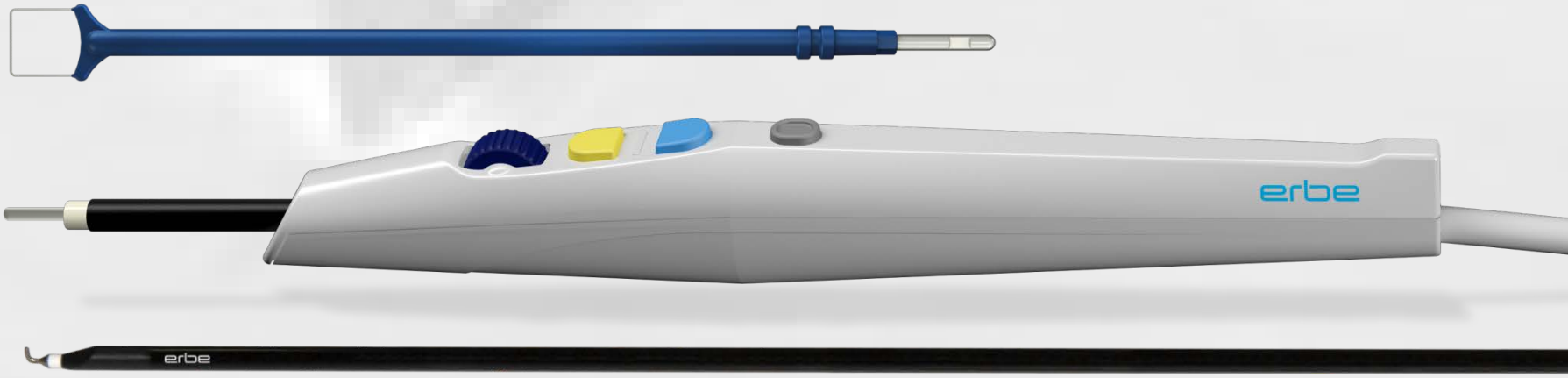
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

autoCUT – novelties

PRECISE-Upgrade integrated
(particularly low voltage range i.e. for
micro-surgical instruments)





0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

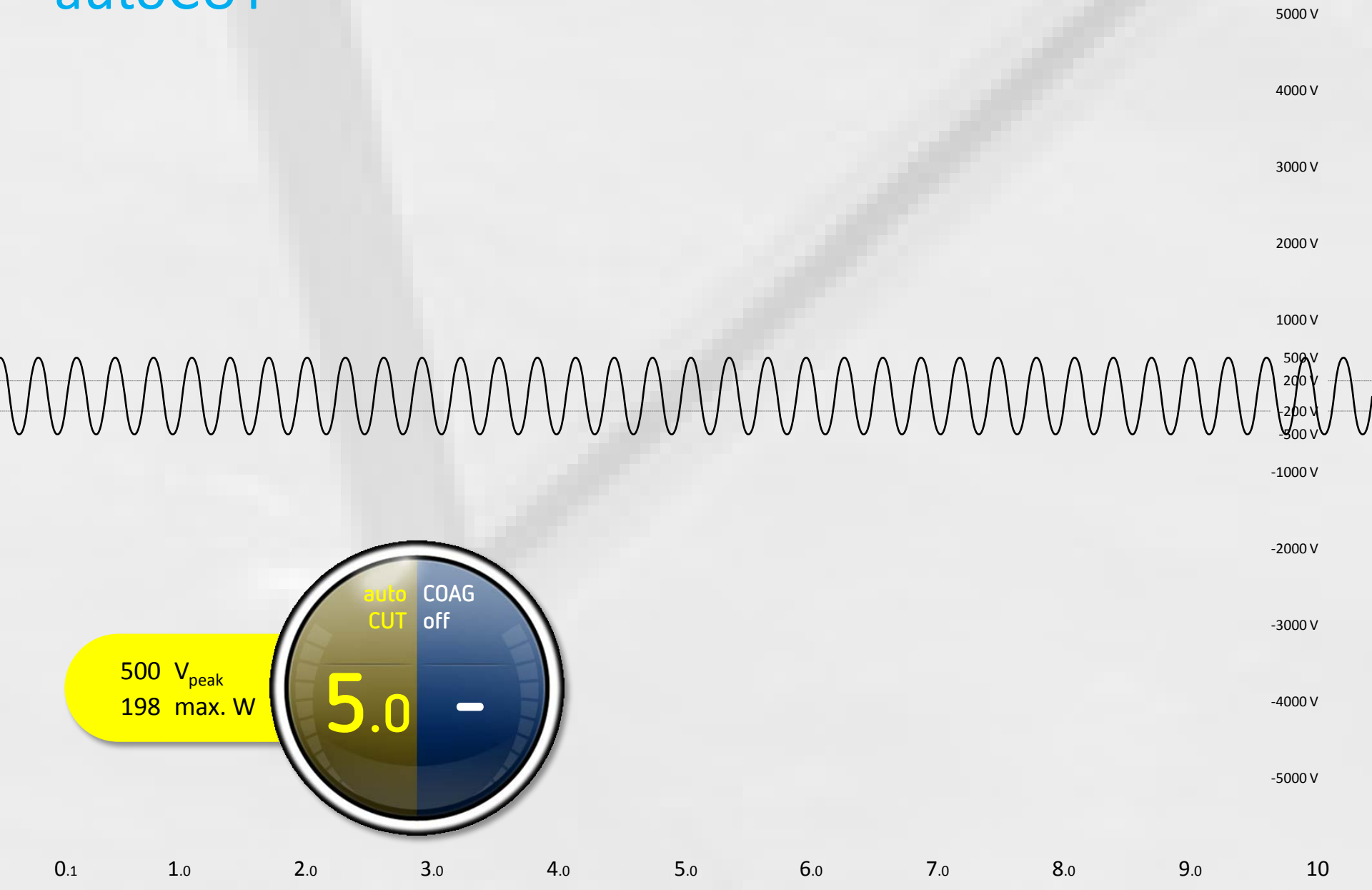
Effect

erbe

autoCUT

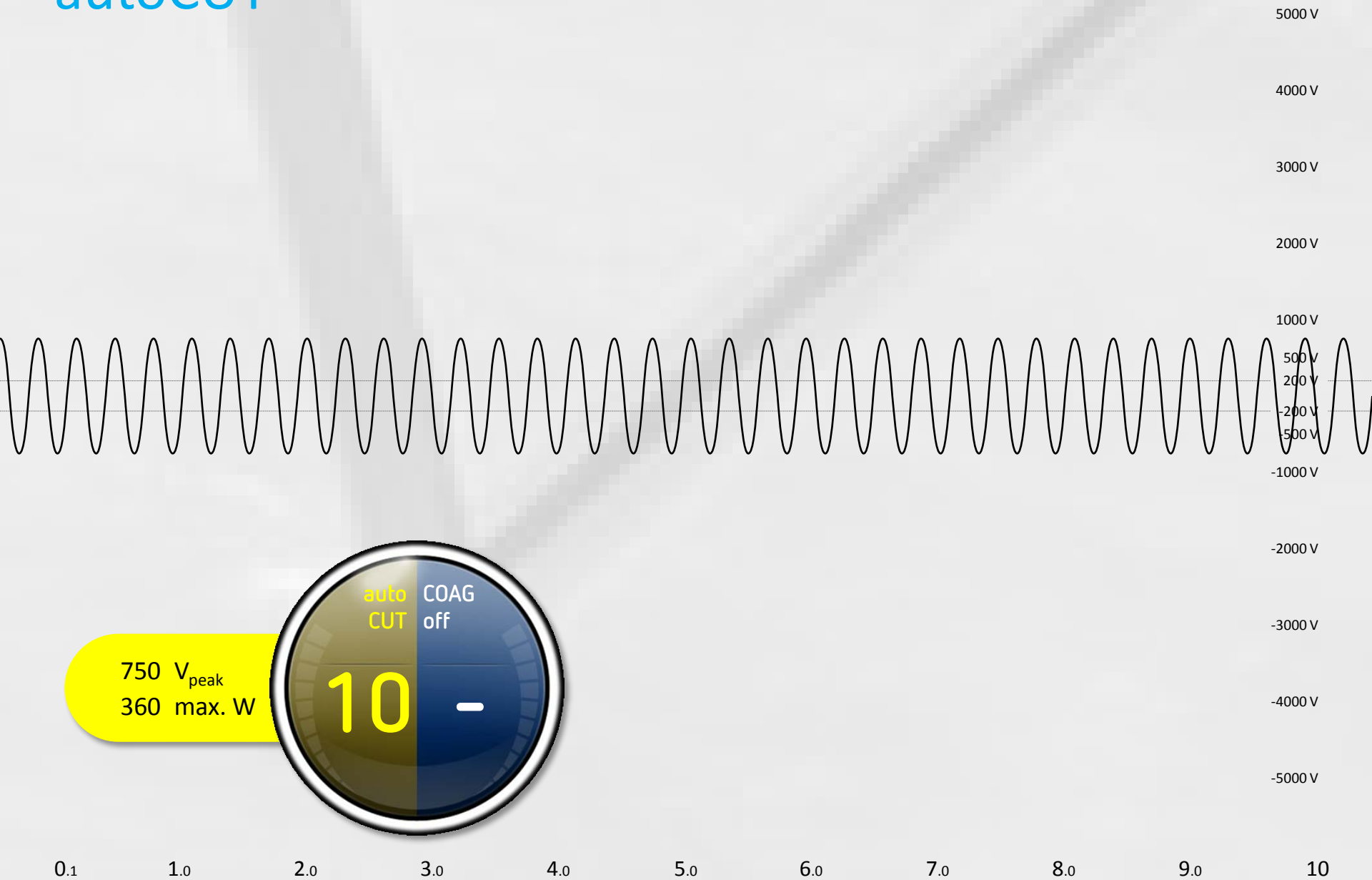
erbe

autoCUT



erbe

autoCUT



autoCUT bipolar

Tissue effect	Smooth incisions, minimum to moderate hemostasis
Voltage range	225 – 675 V_{peak}
Control technology	Constant voltage control
Specialist disciplines	General surgery, gynecology, urology
Possible applications	In particular, laparoscopic applications
Examples for instruments	Bipolar cutting instruments, for example: • Laparoscopic BiSect Micro and Macro. Support max. 475 Vp, therefore the effect voltages must be observed) • Bipolar needle electrode Note: not suitable for bipolar resectoscopes

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

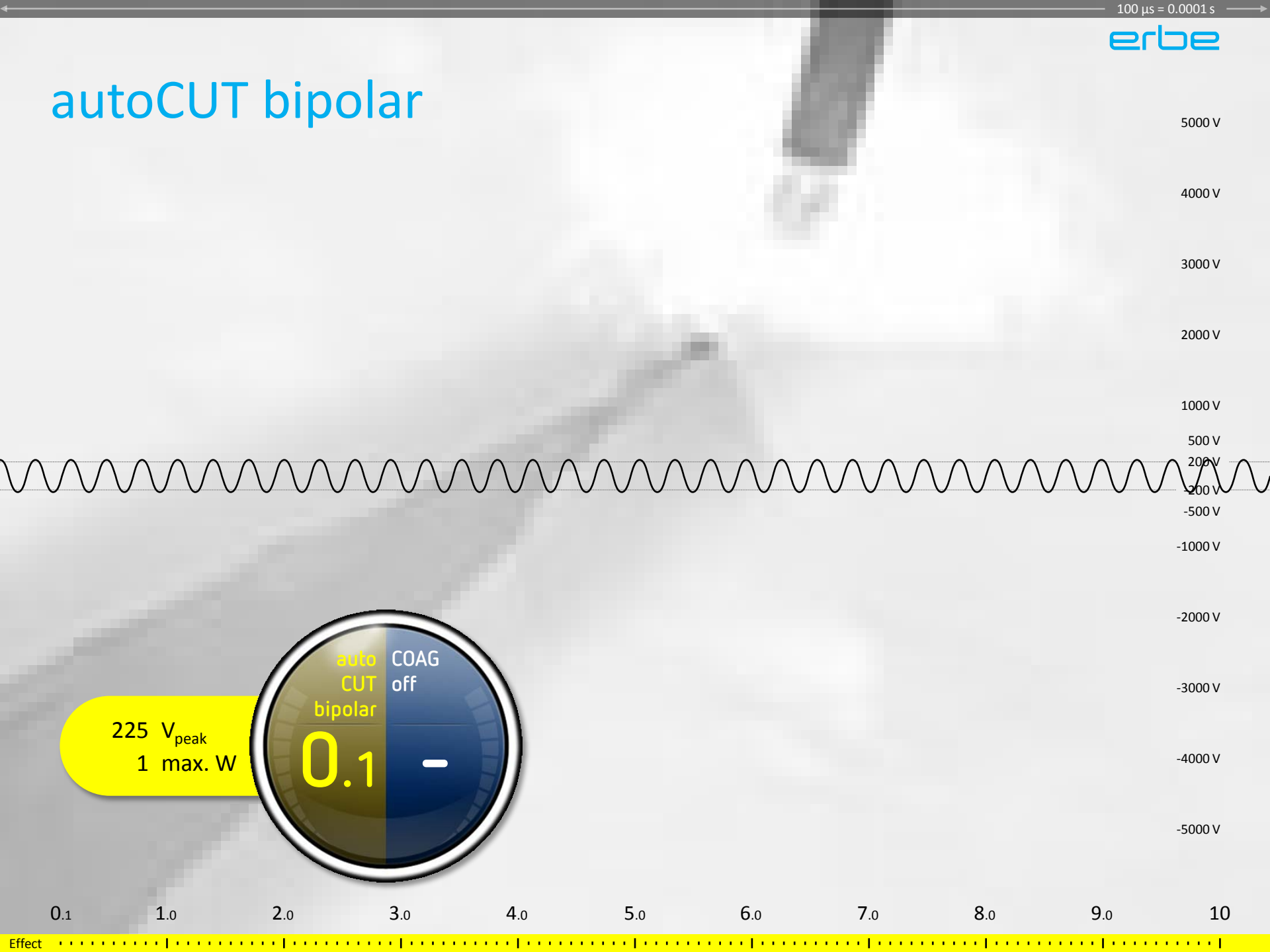
Effect

autoCUT bipolar – novelties

PRECISE-Upgrade integrated
(particularly low voltage range)

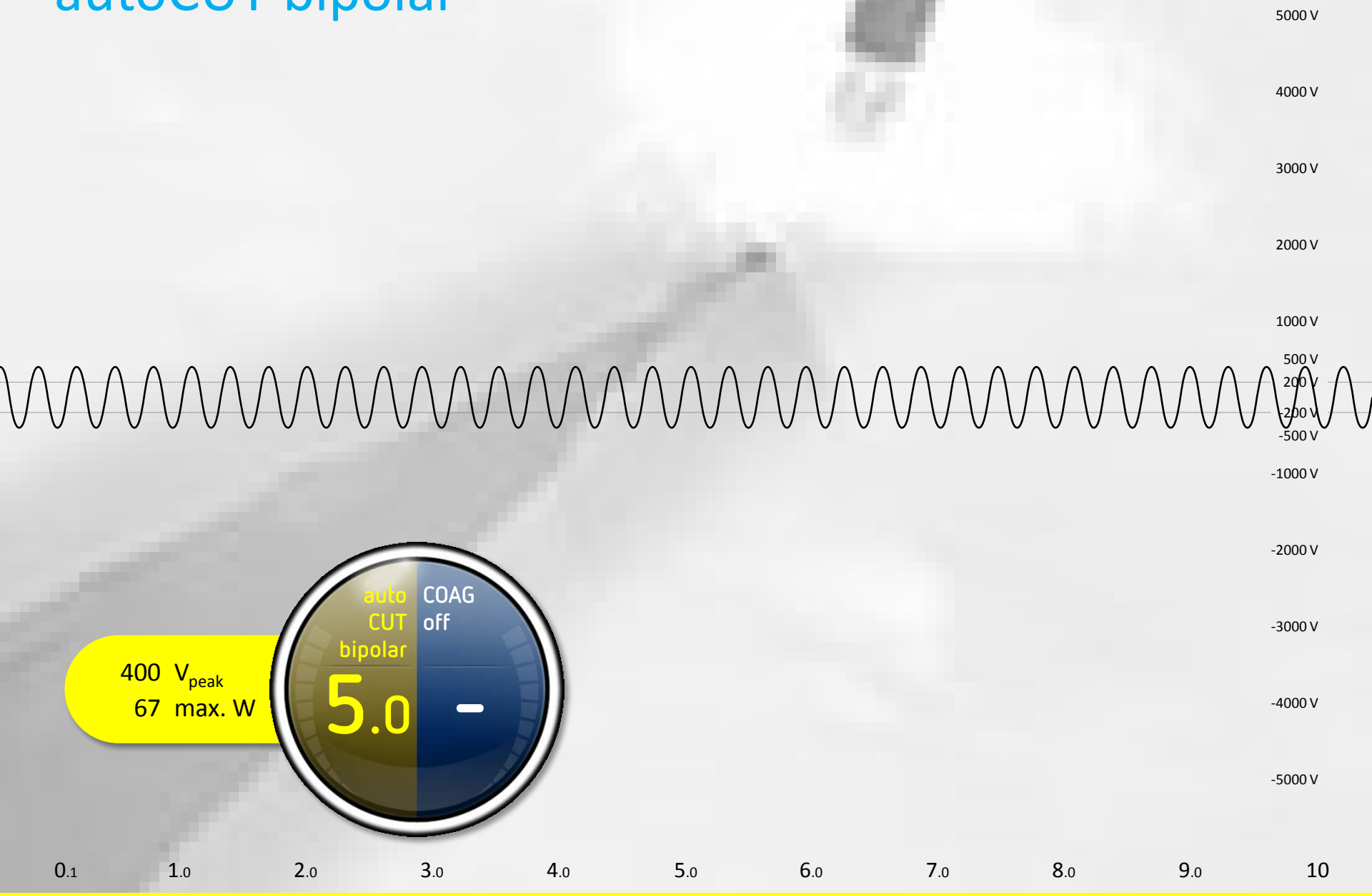
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect


100 µs = 0.0001 s
erbe
autoCUT bipolar
5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
225 V_{peak}
1 max. W
auto CUT bipolar
0.1
COAG off
–
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
Effect

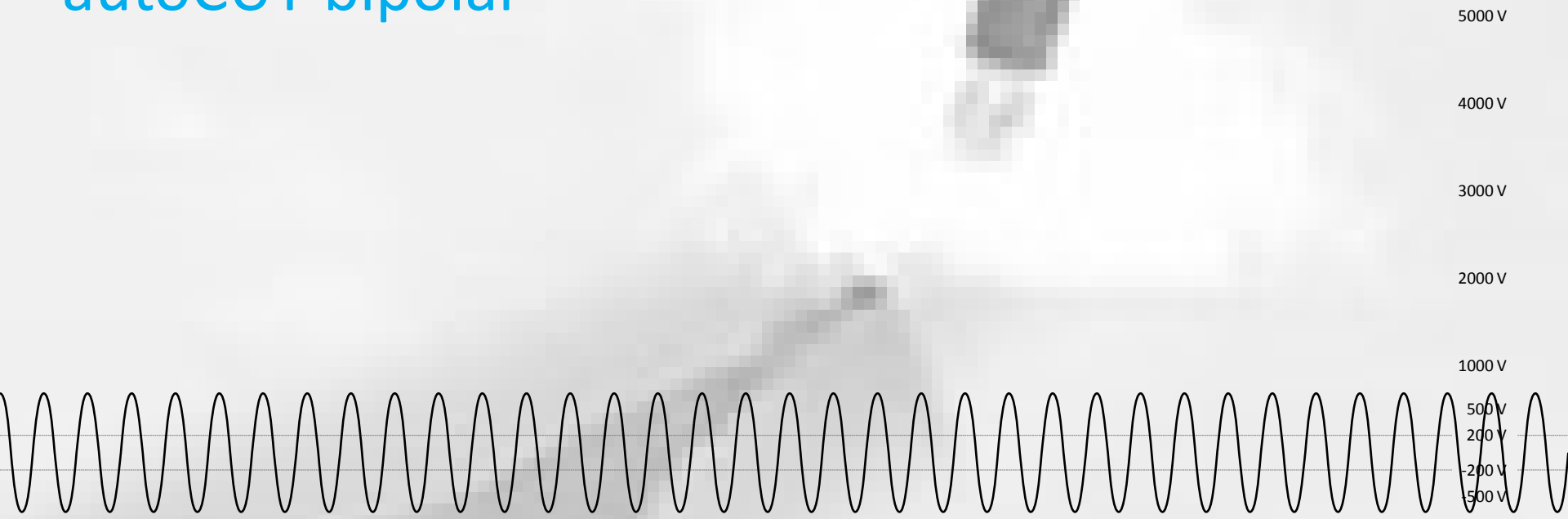
erbe

autoCUT bipolar



erbe

autoCUT bipolar



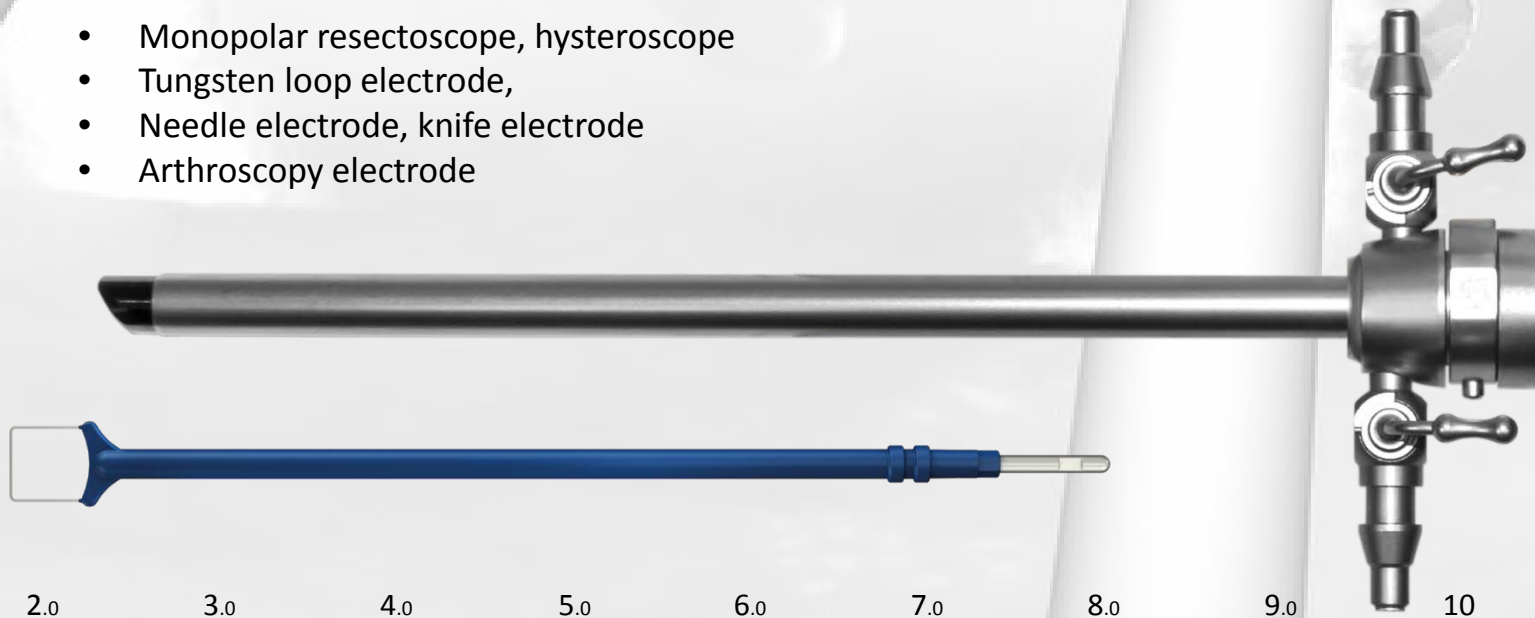
675 V_{peak}
100 max. W

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

highCUT

Tissue effect	Easy, smooth incisions, minimum to moderate hemostasis
Voltage range	650 – 1100 V_{peak}
Control technology	Constant spark control with PPS
Specialist disciplines	Urology, gynecology
Possible applications	• Monopolar TUR-P, TUR-B, TCR under non-conductive rinsing fluid • For tissues with low conductivity • Breast surgery • Conization, Loop Electrical Excision Procedure (LEEP)
Examples for instruments	• Monopolar resectoscope, hysteroscope • Tungsten loop electrode, • Needle electrode, knife electrode • Arthroscopy electrode

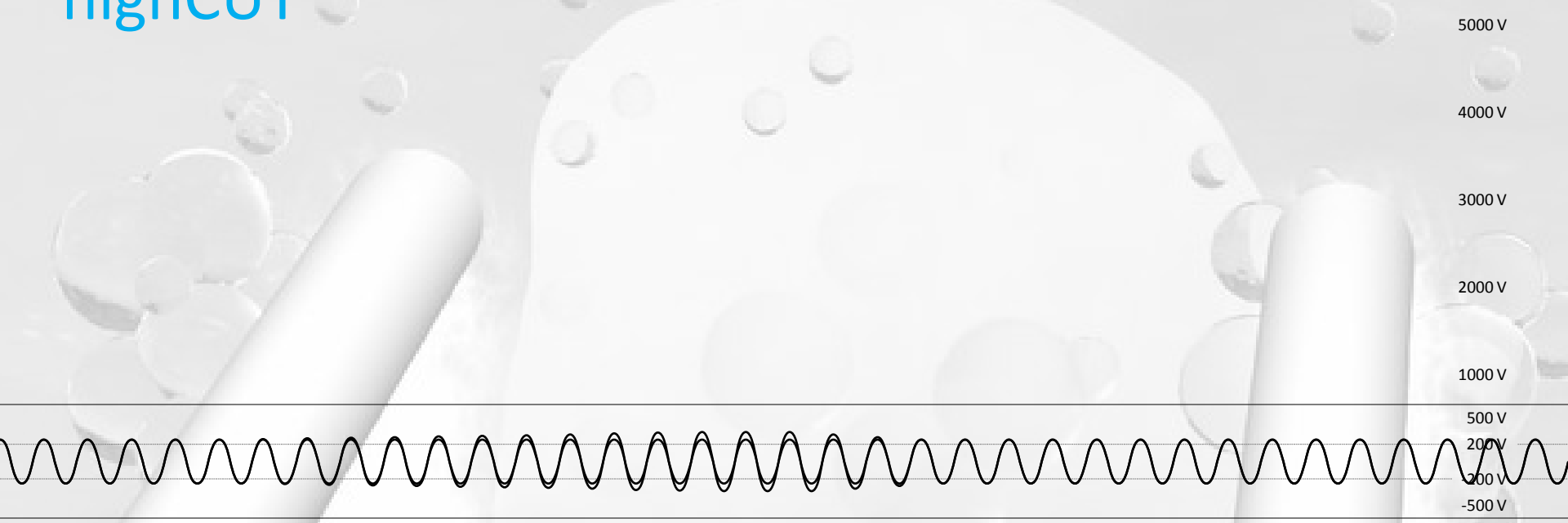


0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

highCUT



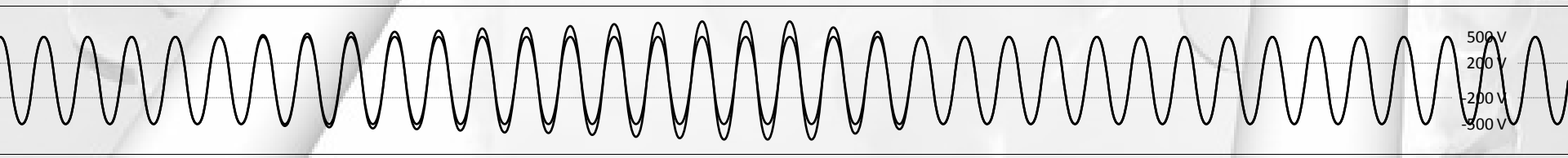
650 V_{peak}
1 max. W

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

highCUT



5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V

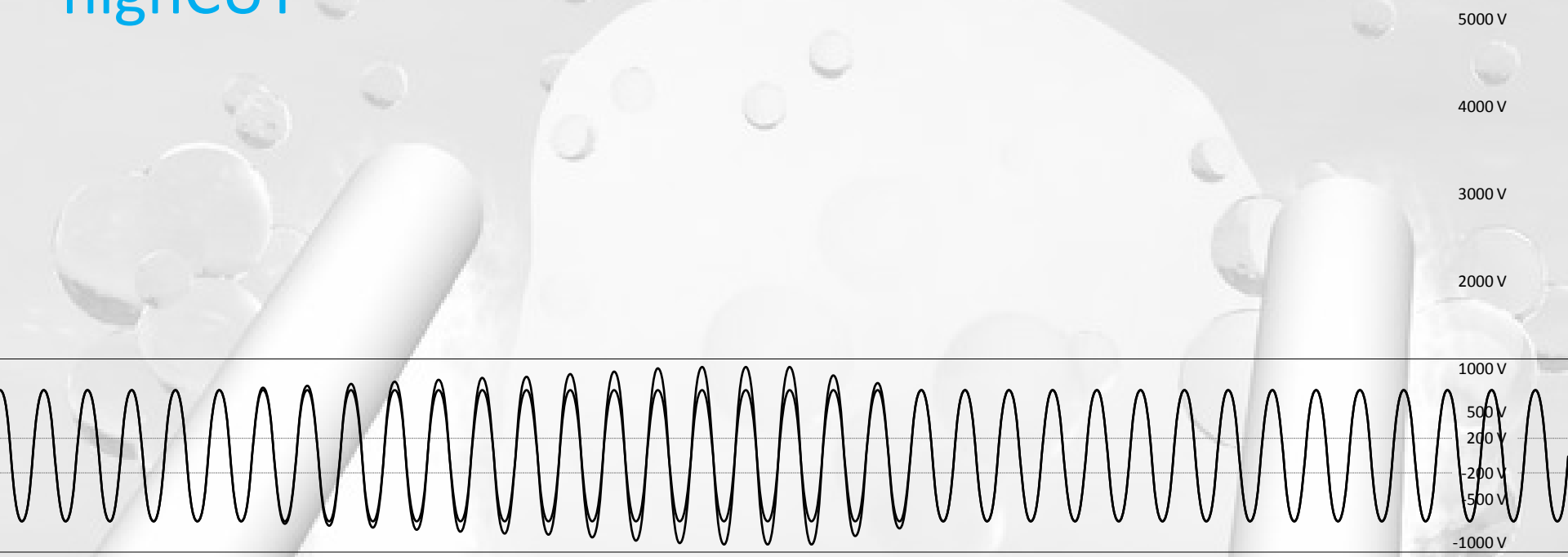
850 V_{peak}
242 max. W

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

highCUT



1100 V_{peak}
360 max. W

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

highCUT bipolar

Tissue effect	Easy, smooth incisions, minimum to moderate hemostasis
Voltage range	450 – 550 V_{peak}
Control technology	Constant voltage control and initial incision with special PPS
Specialist disciplines	Urology, gynecology
Possible applications	• Bipolar transurethral resection TUR-P and TUR-B (Urology) • Bipolar transcervical resection TCR (Gynecology)
Examples for instruments	Exclusively: • Bipolar resectoscope, bipolar hysteroscope under electrically conductive saline rinsing solution (NaCl)

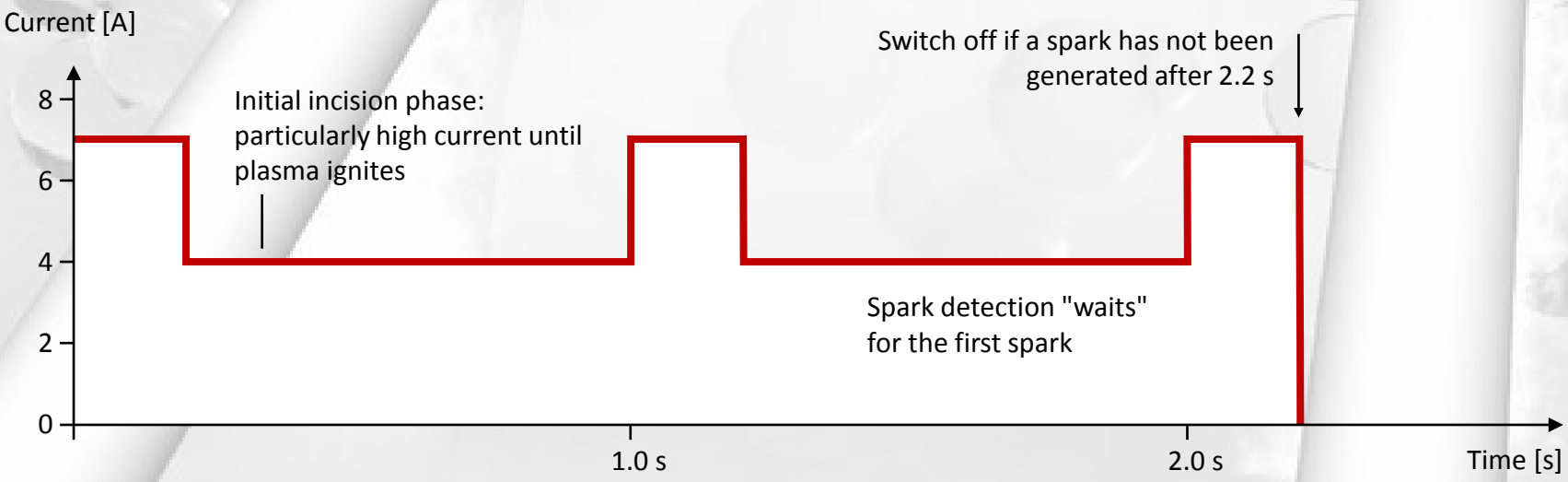
1 2 3 4 5 6 7 8 9 10

Effect

highCUT bipolar – initial incision

To ignite the plasma (spark), a vapor layer must be formed around the loop.
The greater the current, the quicker the formation of a vapor layer.

Tip: the plasma ignites even better at slight tissue contact.



1 2 3 4 5 6 7 8 9 10

Effect

highCUT bipolar– novelties

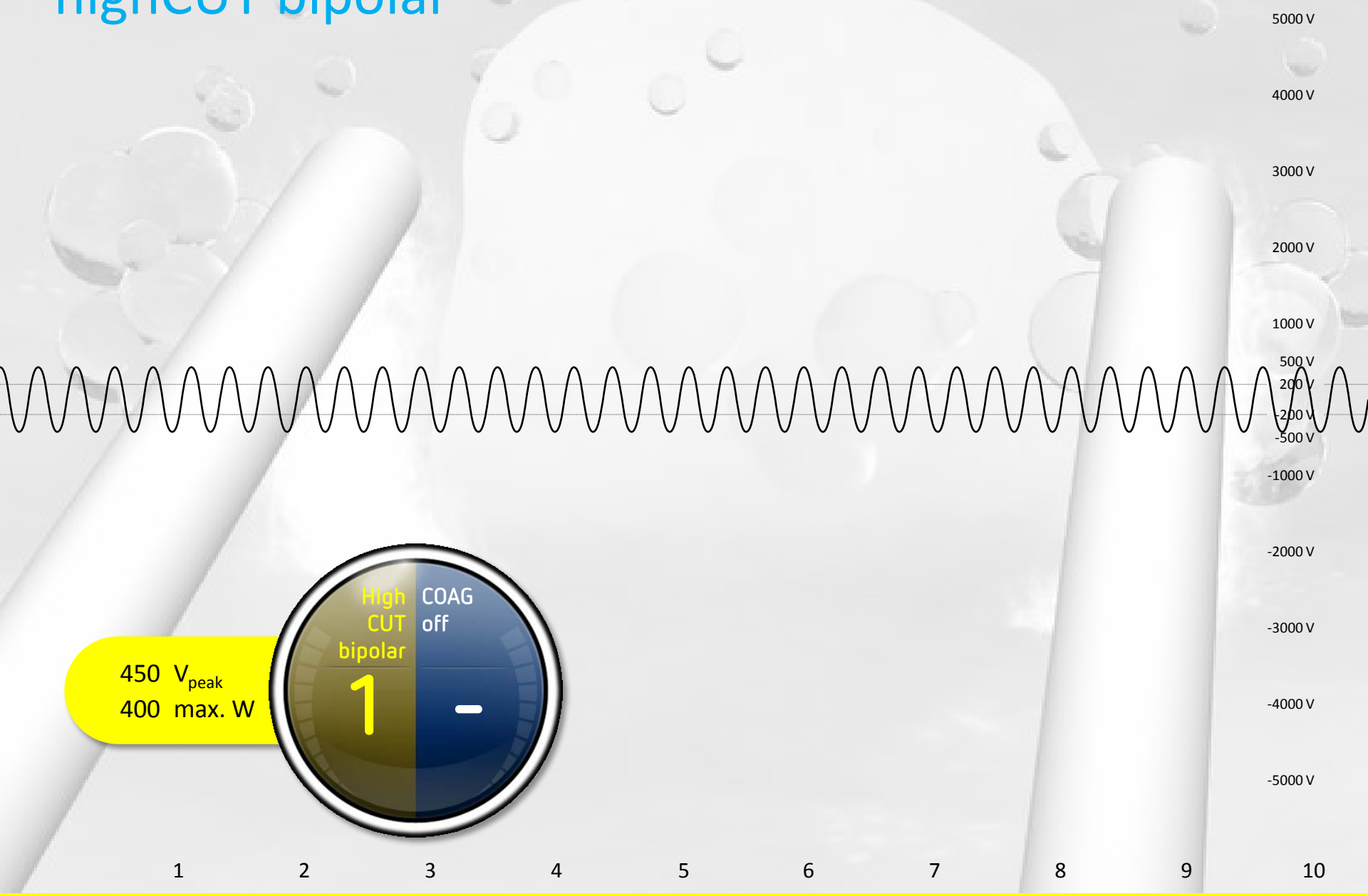
- Does not require adapter bipolar resection
- Optimized initial incision phase with up to 8 A (PPS) short-term
- Particularly stable plasma formation

1 2 3 4 5 6 7 8 9 10

Effect

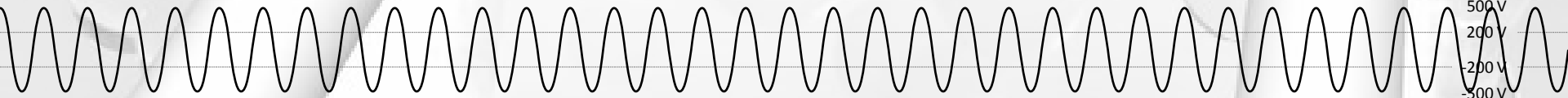
erbe

highCUT bipolar



erbe

highCUT bipolar



5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V

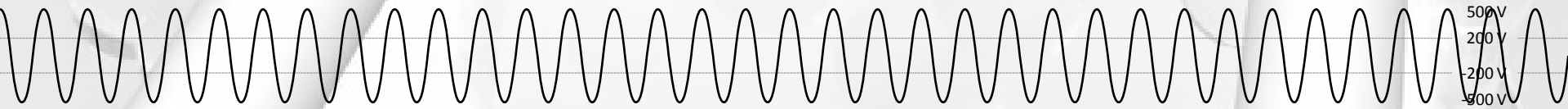
500 V_{peak}
400 max. W

1 2 3 4 5 6 7 8 9 10

Effect

erbe

highCUT bipolar



5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V

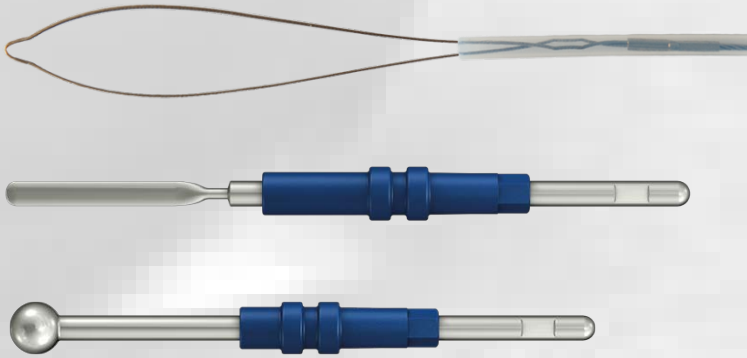
550 V_{peak}
400 max. W

1 2 3 4 5 6 7 8 9 10

Effect

forcedCOAG

Tissue effect	Effective, fast "standard" coagulation with moderate to intense hemostasis
Voltage range	500 – 1800 V_{peak} modulated (crest factor = 5.8)
Control technology	Constant voltage control
Options	AUTO STOP (for less sticking, stops as soon as spark is detected)
Specialist disciplines	All
Possible applications	Open, laparoscopic and endoscopic applications
Examples for instruments	Monopolar coagulation instruments, for example: • Hook electrode • Knife, spatula, ball electrode • HybridKnife® • Polypectomy loop, papillotome • Arthroscopy electrode • Monopolar resectoscope

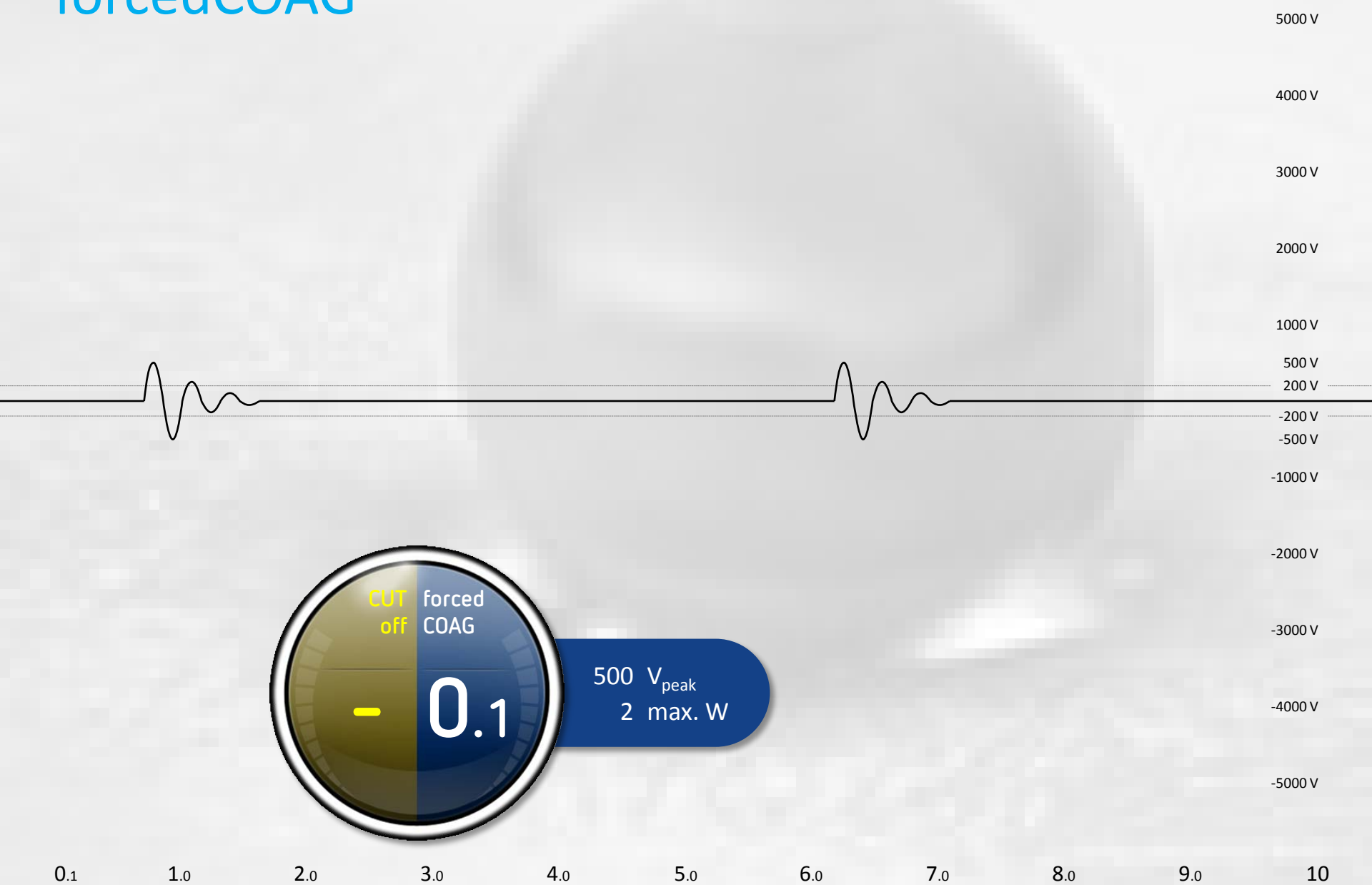


0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

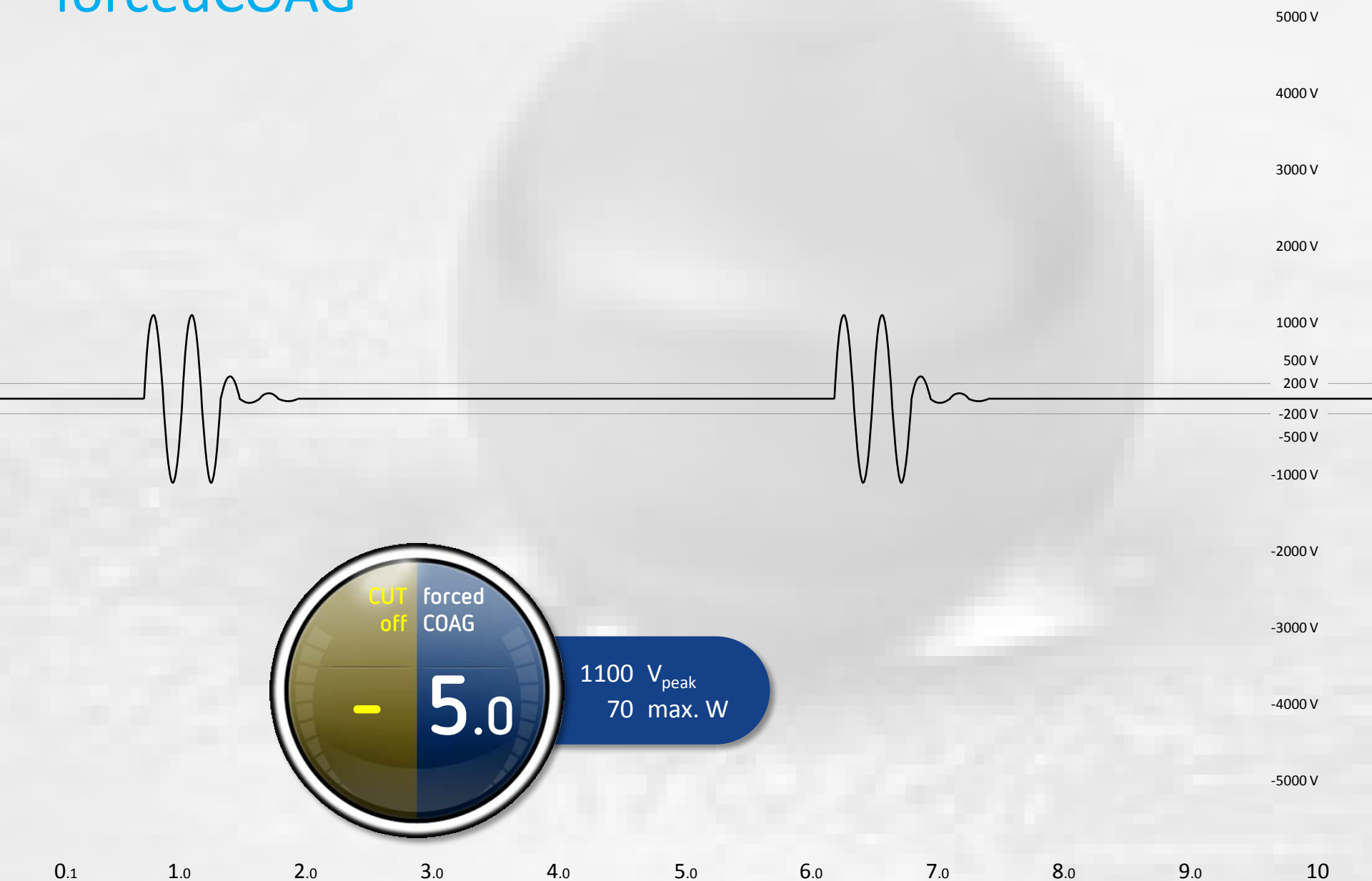
erbe

forcedCOAG



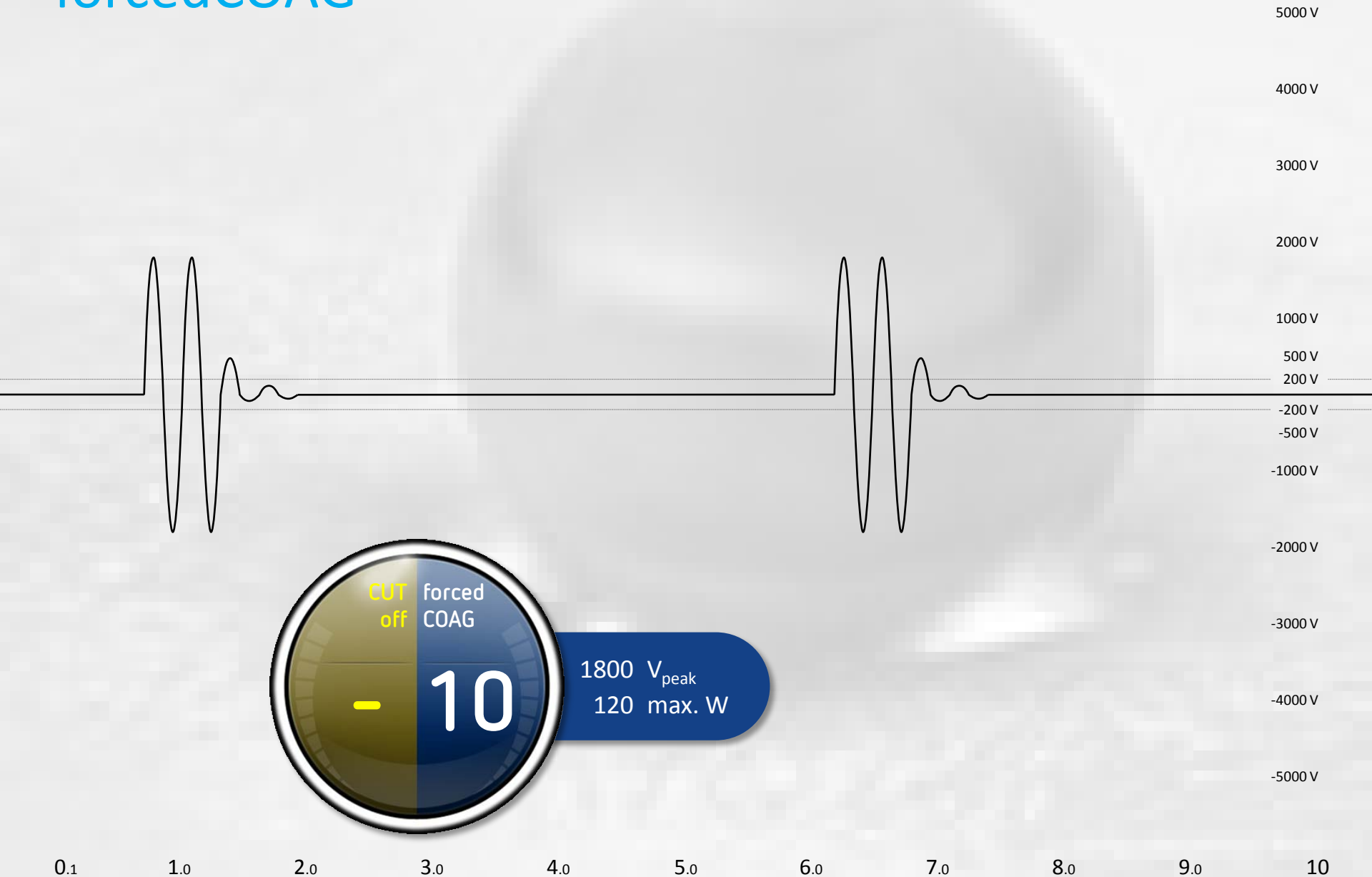
erbe

forcedCOAG



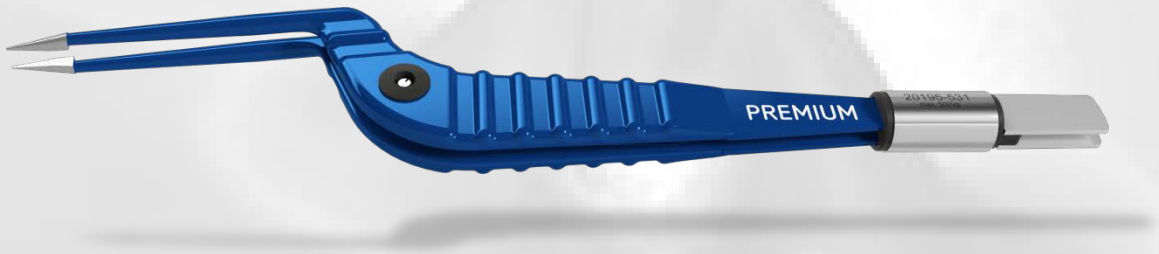
erbe

forcedCOAG



forcedCOAG bipolar

Tissue effect	Fast bipolar coagulation with moderate to intense hemostasis
Voltage range	125 – 550 V_{peak} modulated (crest factor = 3.8)
Control technology	Constant voltage control
Options	AUTO STOP (for less sticking, stops as soon as spark is detected)
Specialist disciplines	All
Possible applications	Open, laparoscopic applications
Examples for instruments	Bipolar coagulation instruments with sufficiently high voltage strength • Bipolar PREMIUM forceps (support max. 500 Vp, therefore the effect voltages must be observed)



0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

forcedCOAG / forcedCOAG bipolar – novelties

New AUTO STOP

- Stops as soon as sparks are detected
- Results in less sticking

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

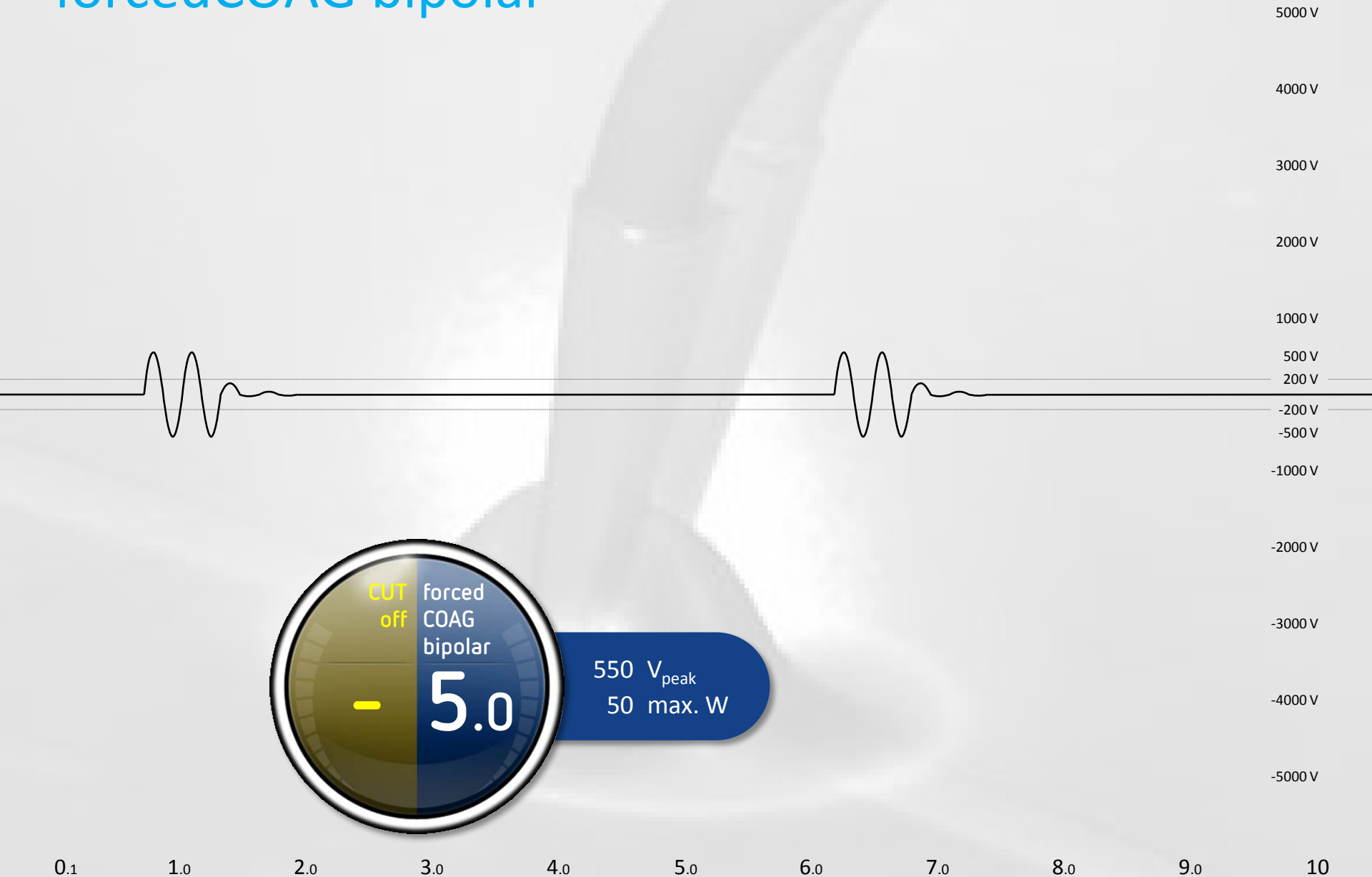
Effect

erbe

forcedCOAG bipolar

erbe

forcedCOAG bipolar

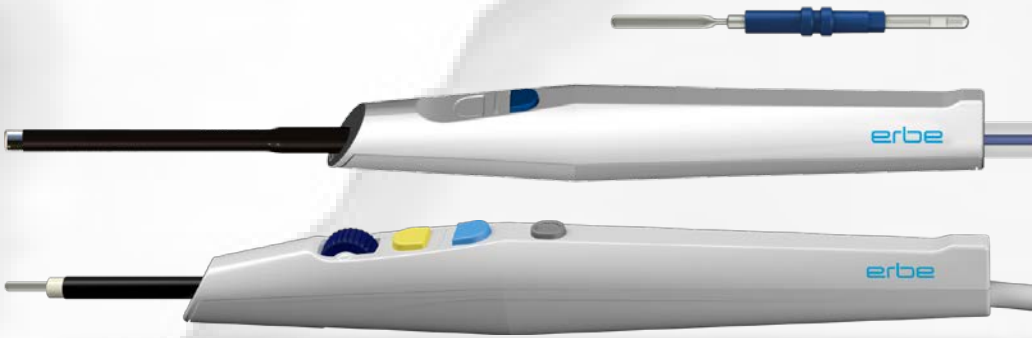


erbe

forcedCOAG bipolar

preciseSECT

Tissue effect	Optimized exposure and separation of tissue structures, medium coagulation, low-smoke
Voltage range	750 – 1800 V_{peak} modulated (crest factor = 4)
Control technology	Constant voltage control, dynamic adjustment of the modulation frequency
Specialist disciplines	General surgery, gynecology, urology, cardiothoracic surgery
Possible applications	Open and laparoscopic applications, for example: • Opening of thorax • Exposure of vessels • Hepatectomy • Breast surgery
Examples for instruments	Monopolar instruments for the exposure of tissue structures • Knife electrode, spatula electrode • Laparoscopic hook electrode • Monopolar applicator



0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

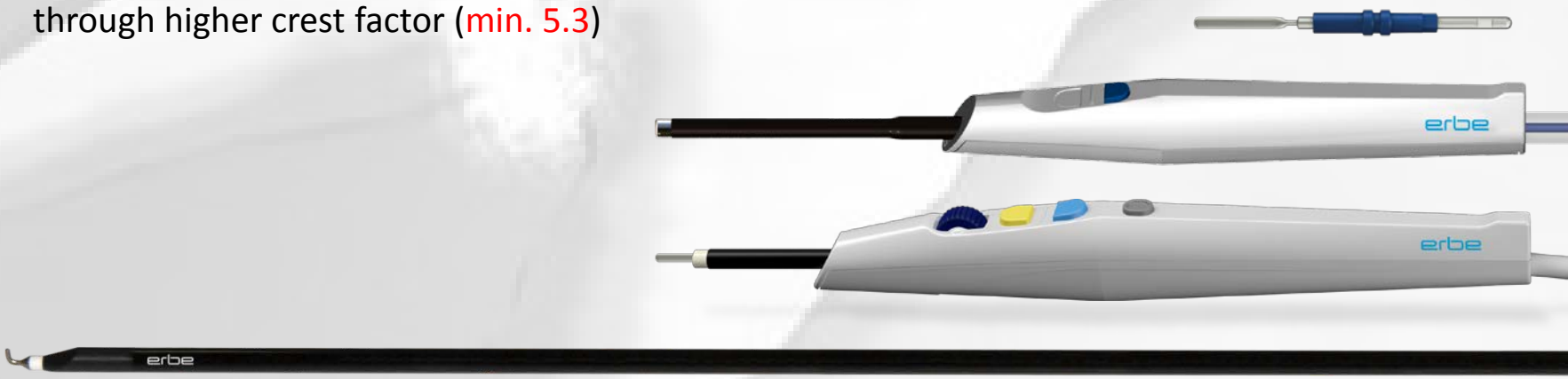
Effect

preciseSECT

Excellent characteristics for exposing and separating tissue structures

- Replaces constant power controlled CLASSIC COAG
- Constant voltage controlled
- Smooth and precise separation of different tissue types through continuous dynamic adjustment of the modulation frequency:
  - Greater incision effect at high-resistance tissue through lower crest factor (min. 2.6)
  - Less incision effect at low-resistance tissue through higher crest factor (min. 5.3)

Invented by Erbe

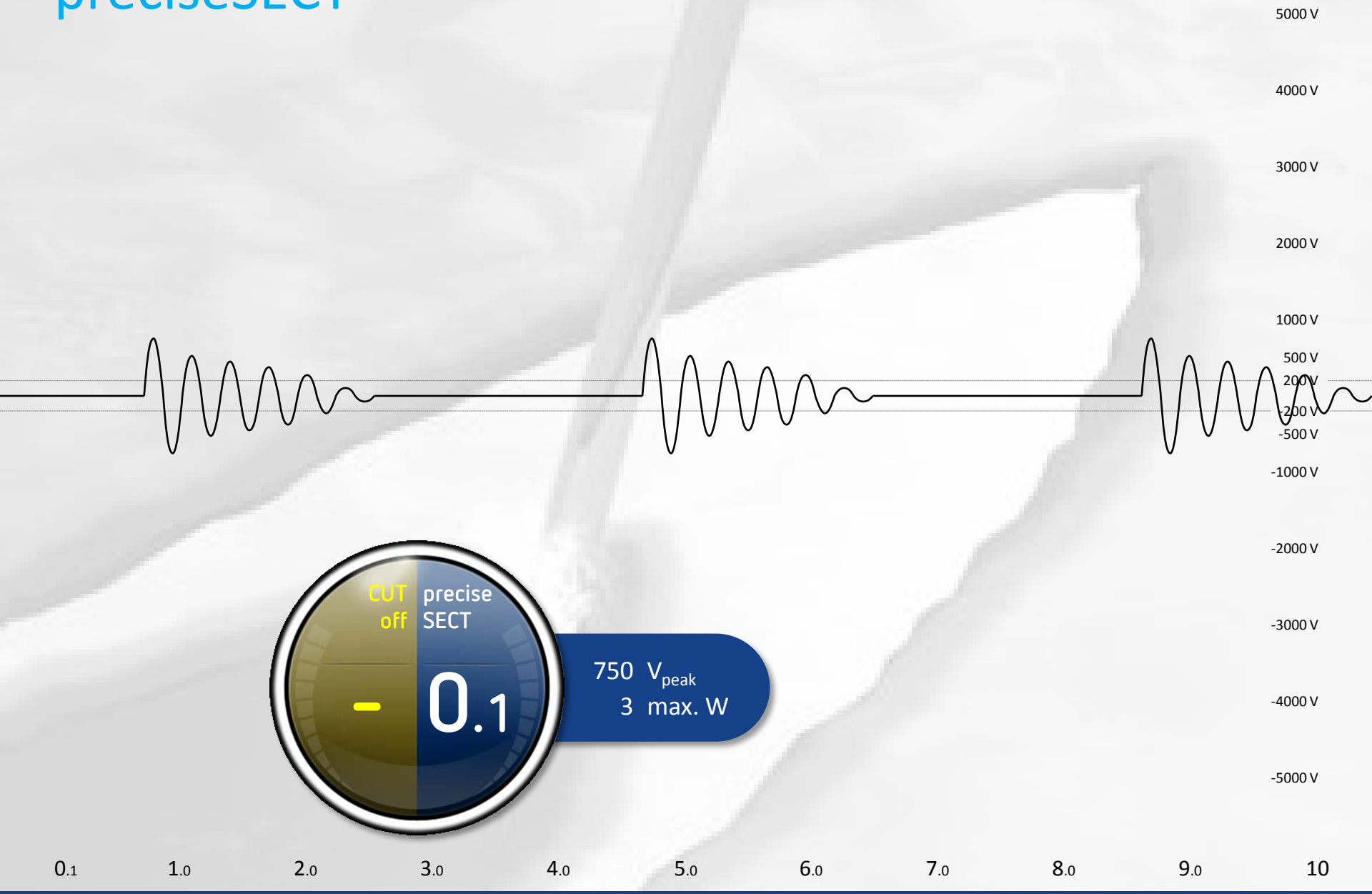


0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

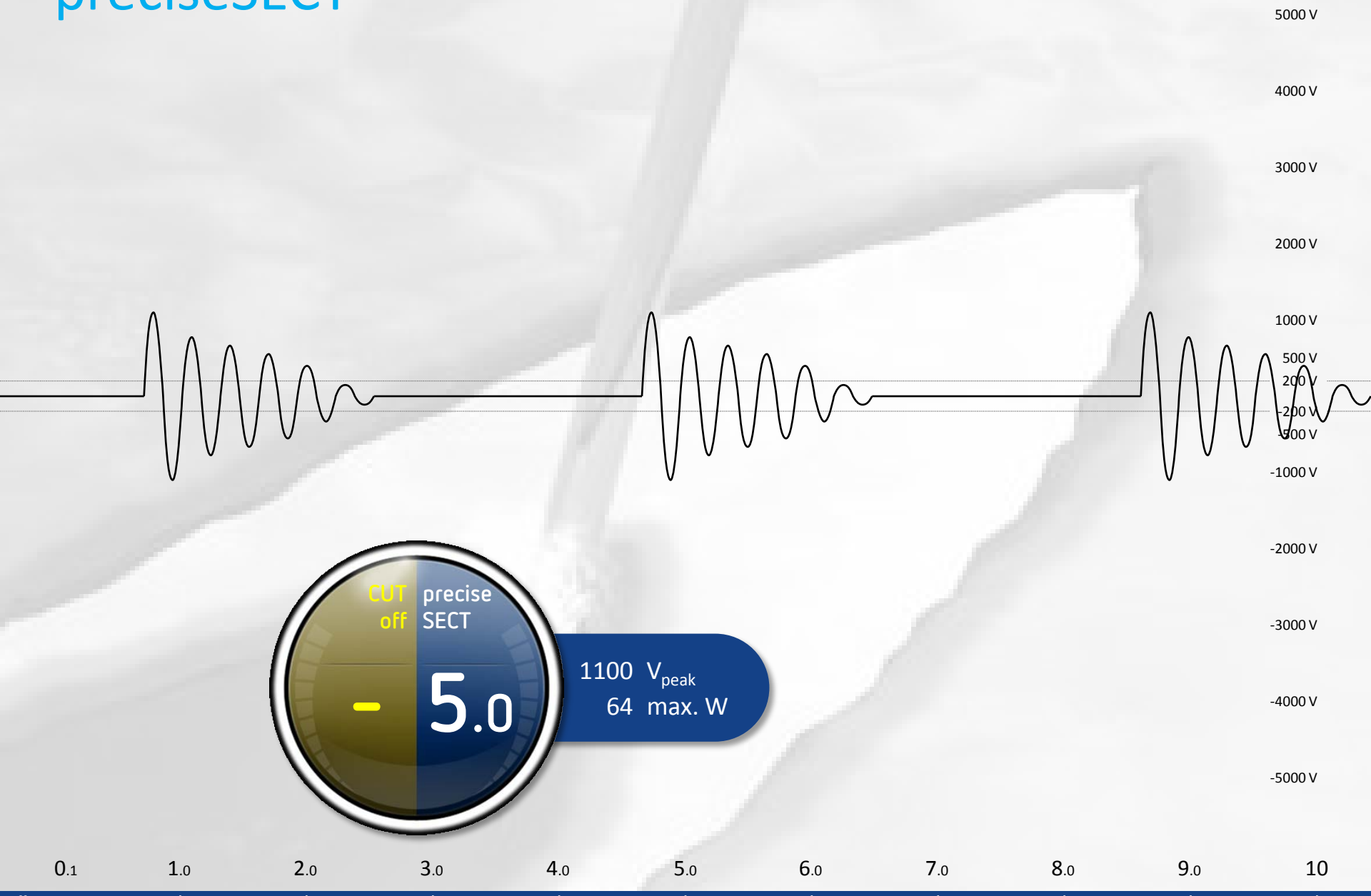
erbe

preciseSECT



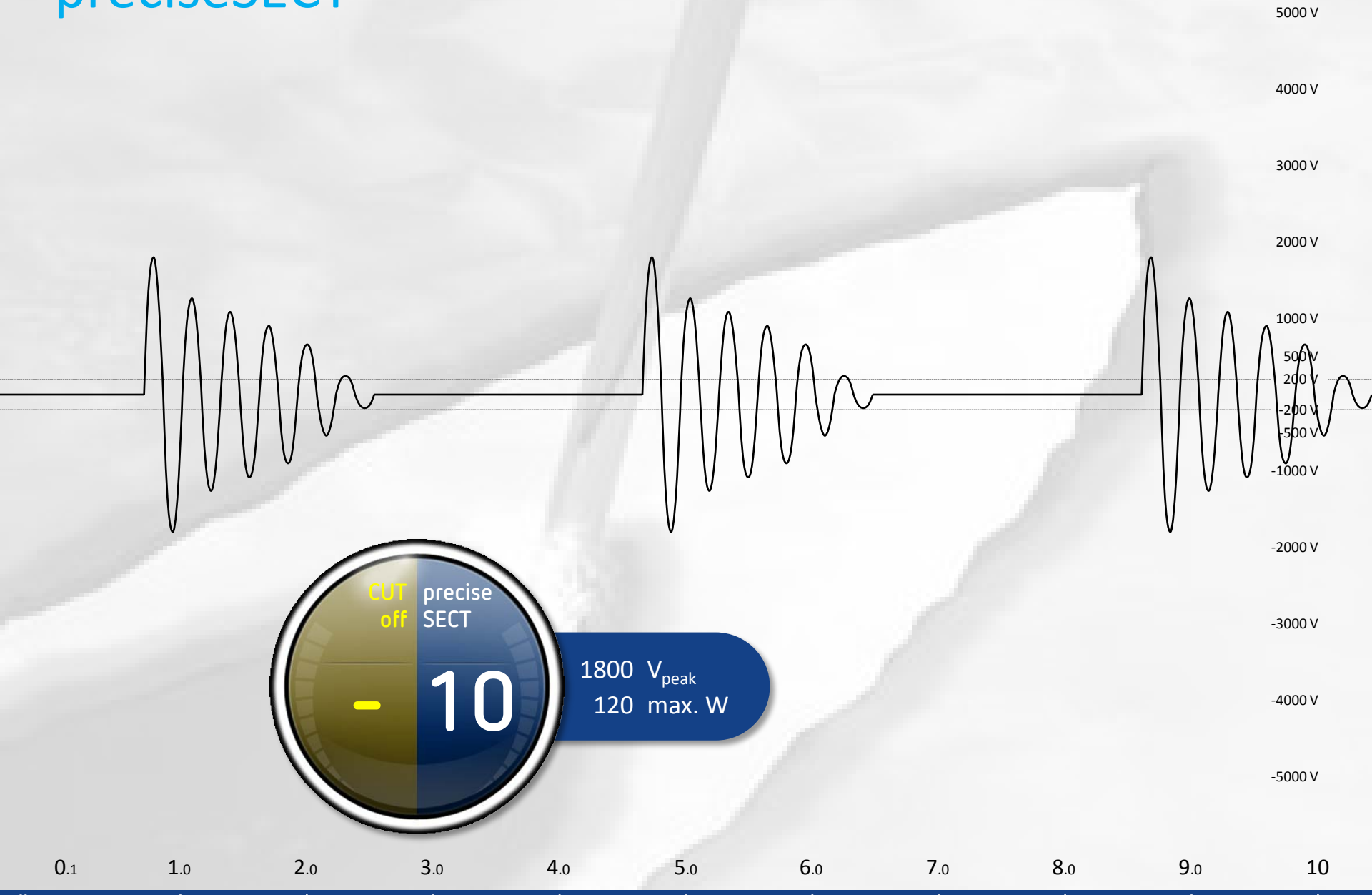
erbe

preciseSECT



erbe

preciseSECT

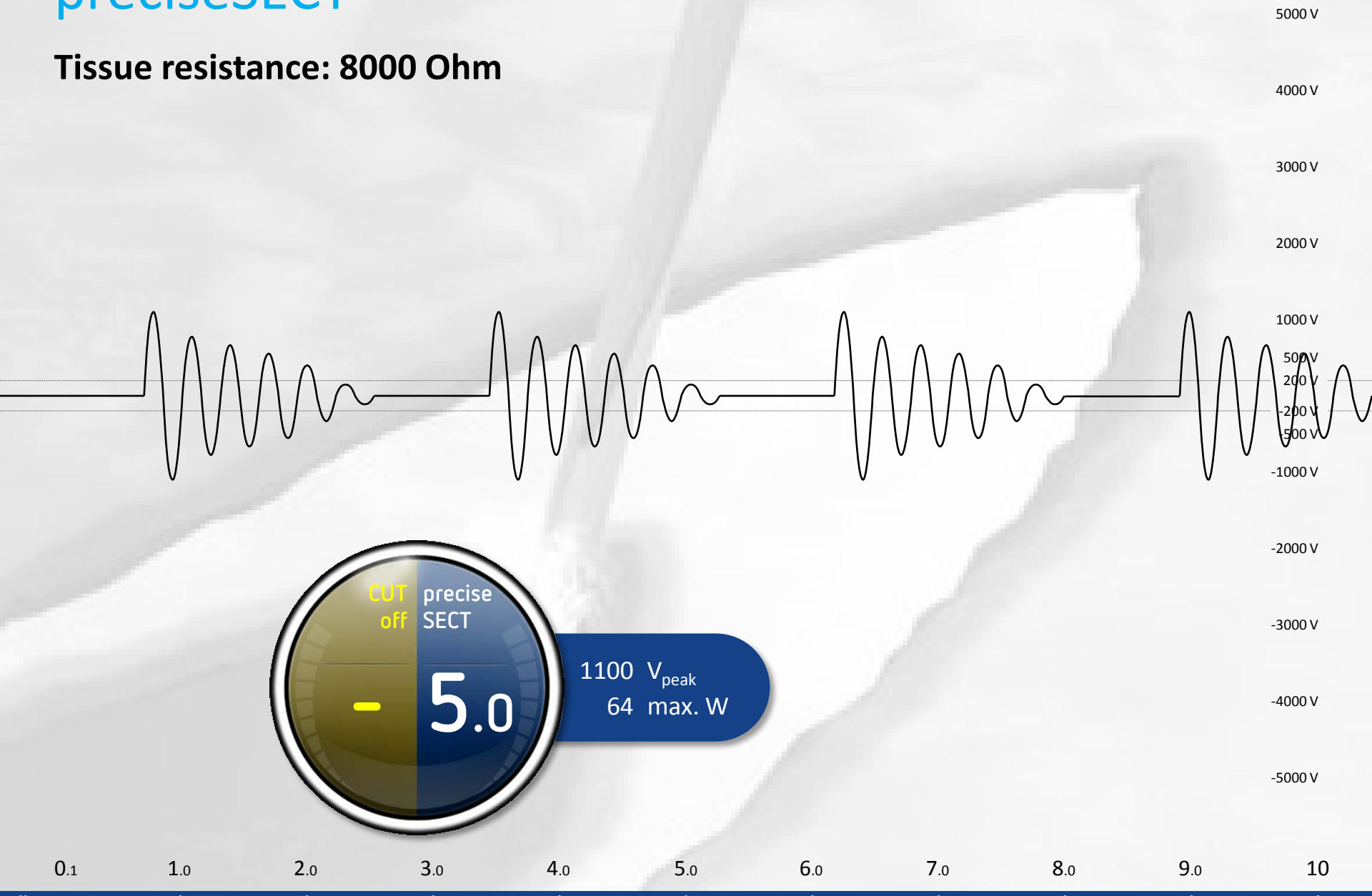


1800 V_{peak}
120 max. W

erbe

preciseSECT

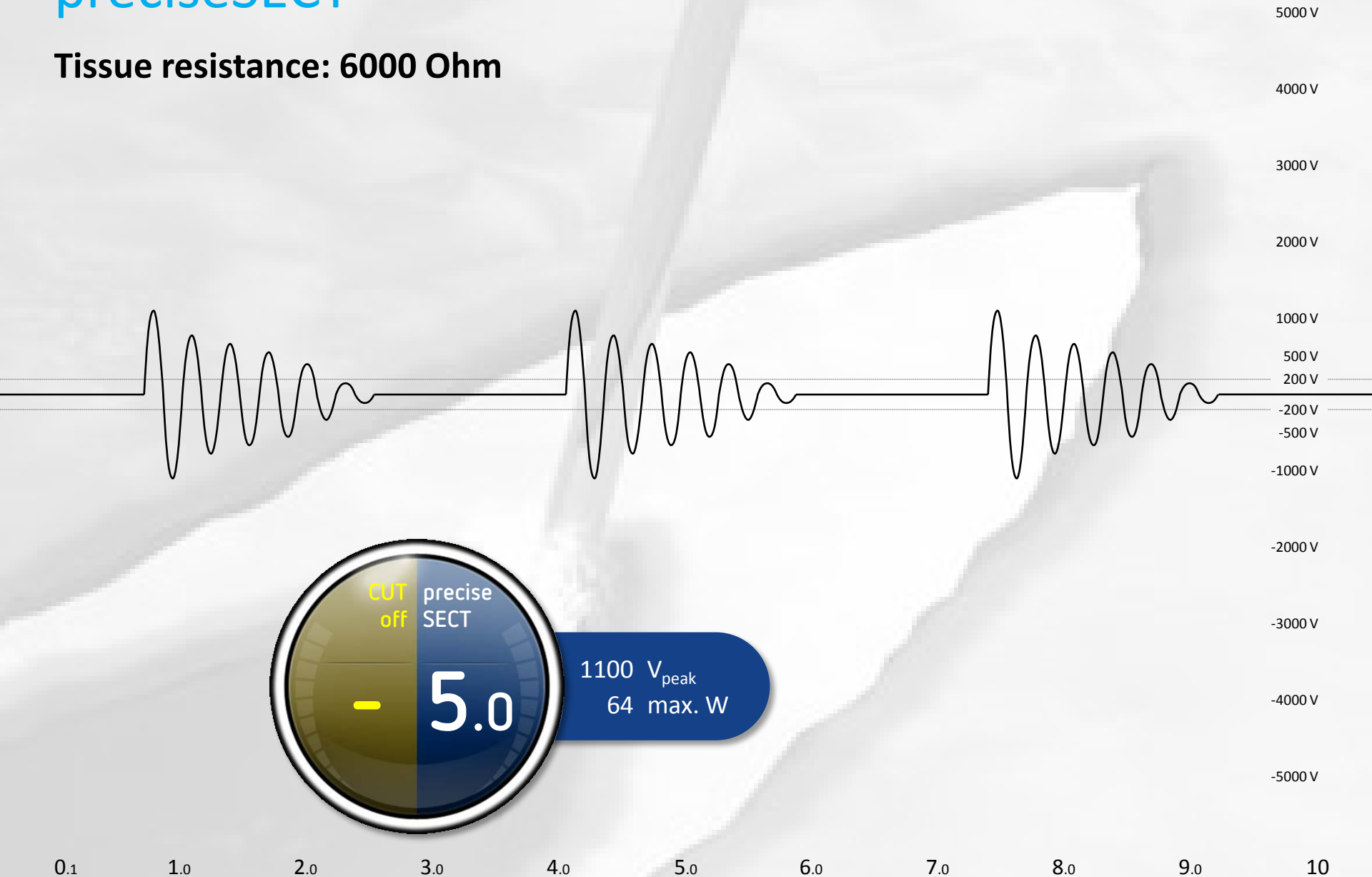
Tissue resistance: 8000 Ohm



erbe

preciseSECT

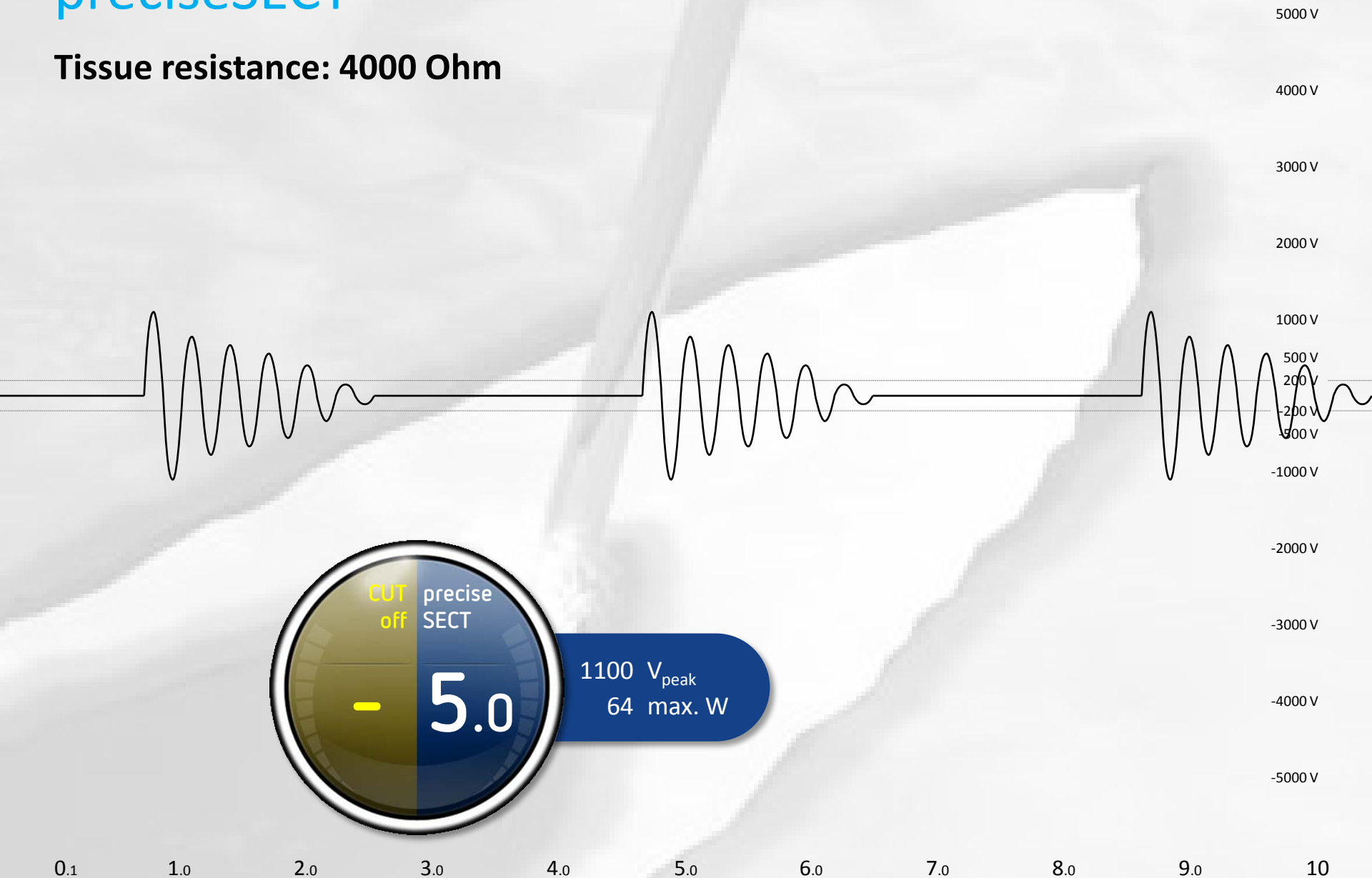
Tissue resistance: 6000 Ohm



erbe

preciseSECT

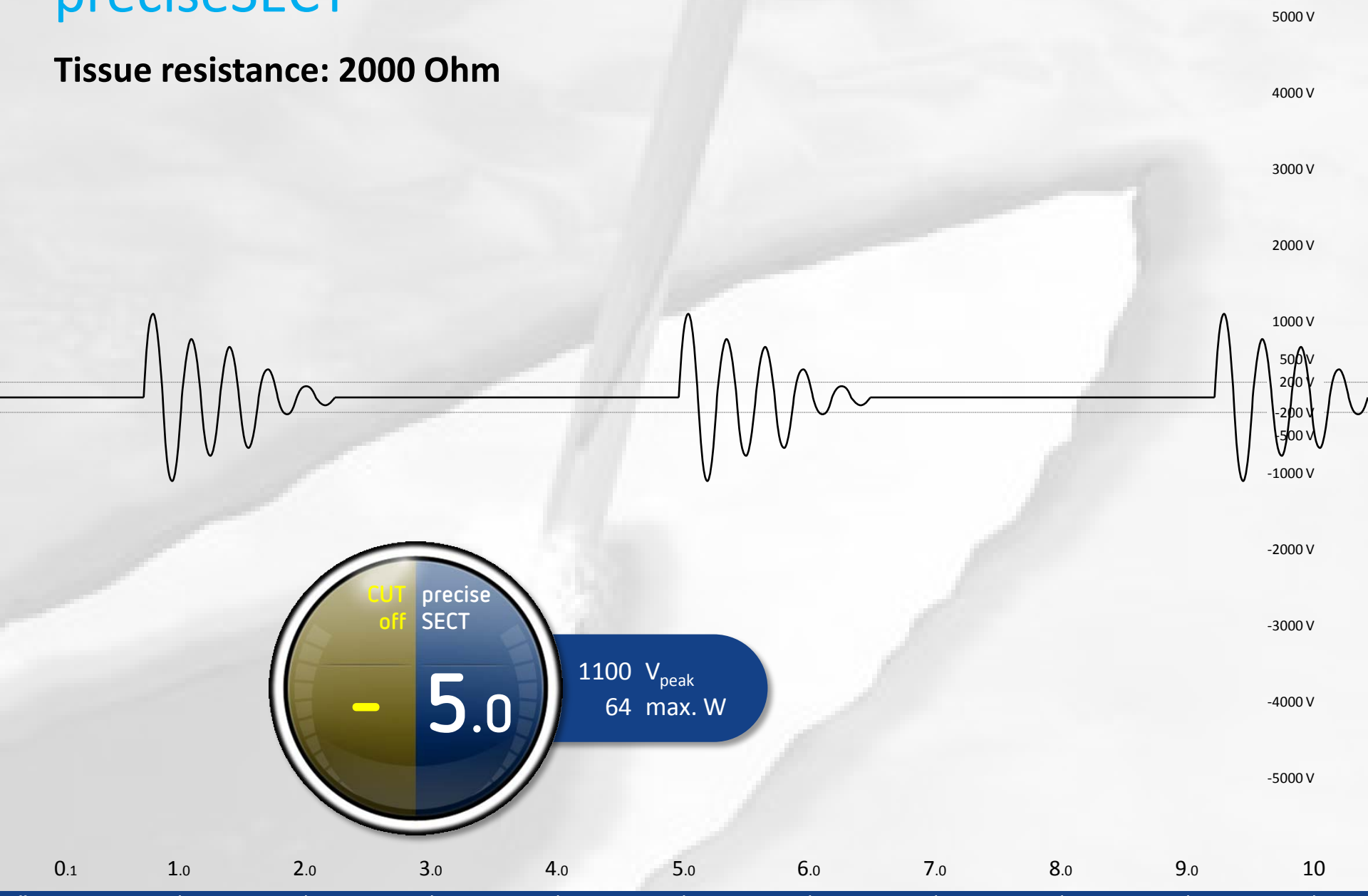
Tissue resistance: 4000 Ohm



erbe

preciseSECT

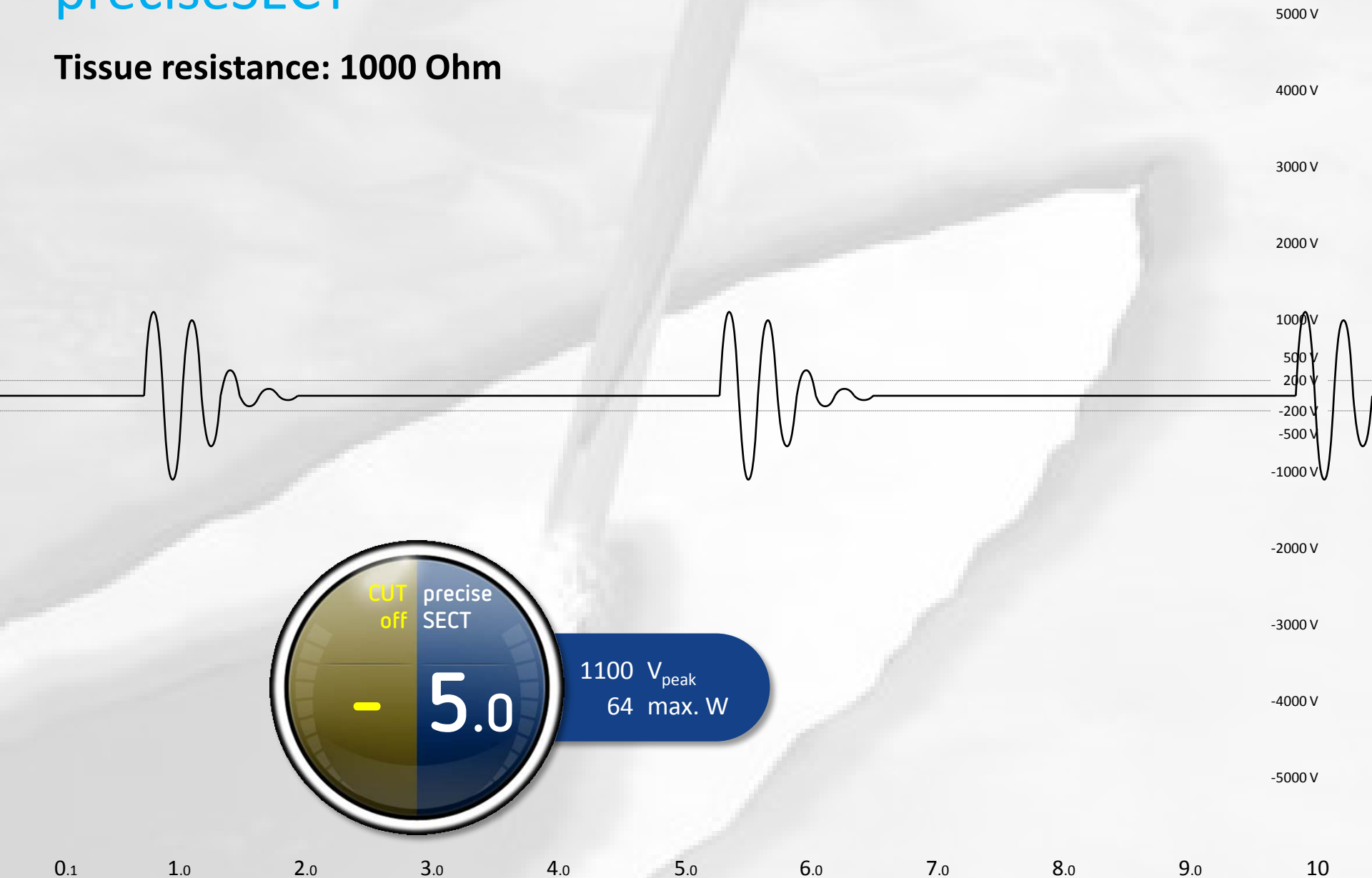
Tissue resistance: 2000 Ohm



erbe

preciseSECT

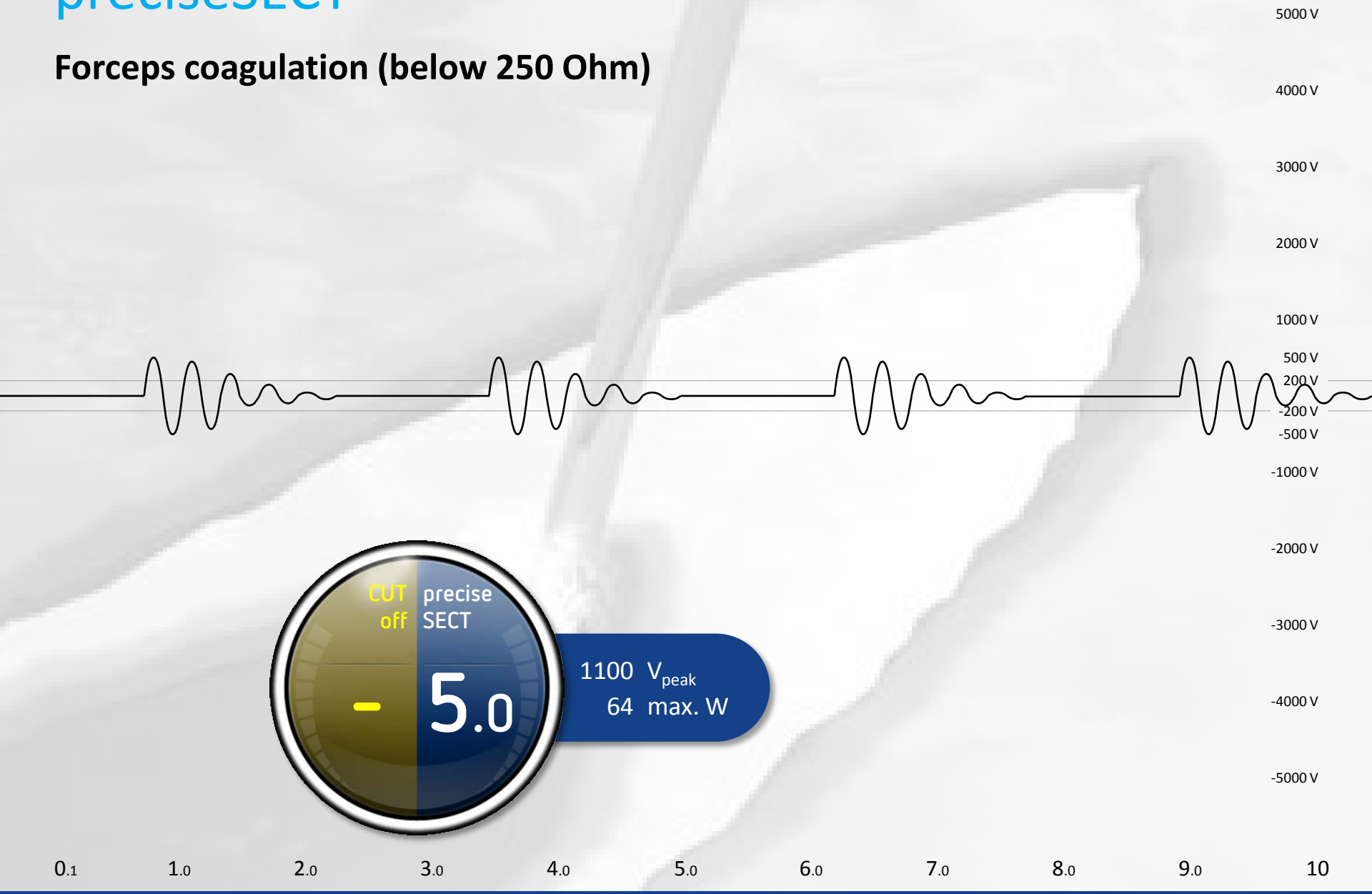
Tissue resistance: 1000 Ohm



erbe

preciseSECT

Forceps coagulation (below 250 Ohm)



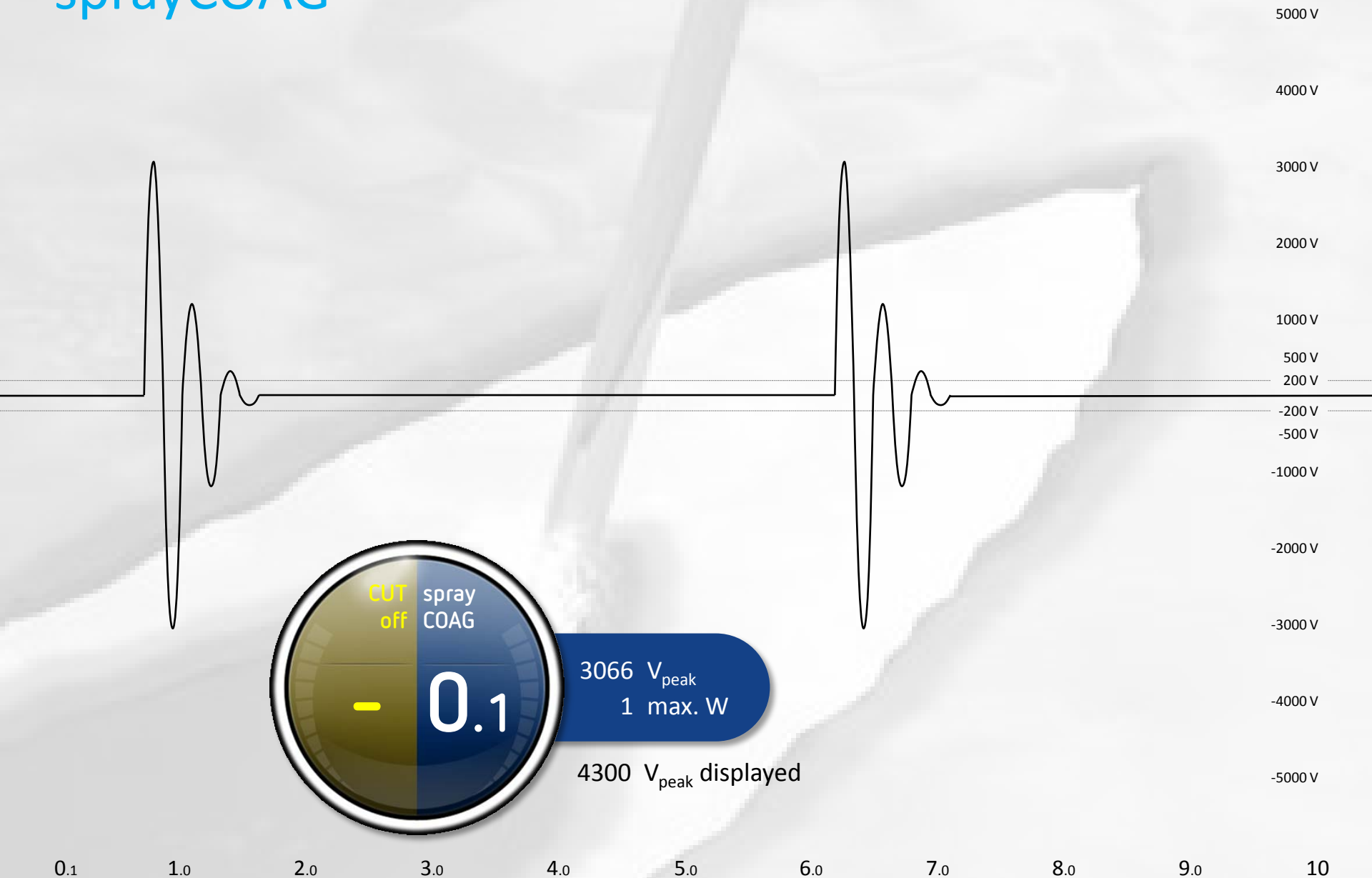
sprayCOAG

Tissue effect	Non-contact, efficient surface coagulation with low penetration
Target voltage range	3066 – 4300 V_{peak} modulated (crest factor = 7.7)
Control technology	Constant voltage control
Specialist disciplines	General surgery, gynecology, urology
Possible applications	Open applications, for example: • Fast, large surface coagulation in partial liver resection, partial kidney resection • Thoracic surgery • Conization: coagulation of the resection bed • Endometriosis: devitalization
Examples for instruments	Monopolar instruments with high dielectric strength (min. 4300 V_{peak}) • Ball, knife, spatula electrode

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

sprayCOAG



3066 V_{peak}
1 max. W

4300 V_{peak} displayed

sprayCOAG


5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
CUT off
spray COAG
5.0
4095 V_{peak}
60 max. W
4300 V_{peak} displayed

erbe

sprayCOAG

forcedAPC

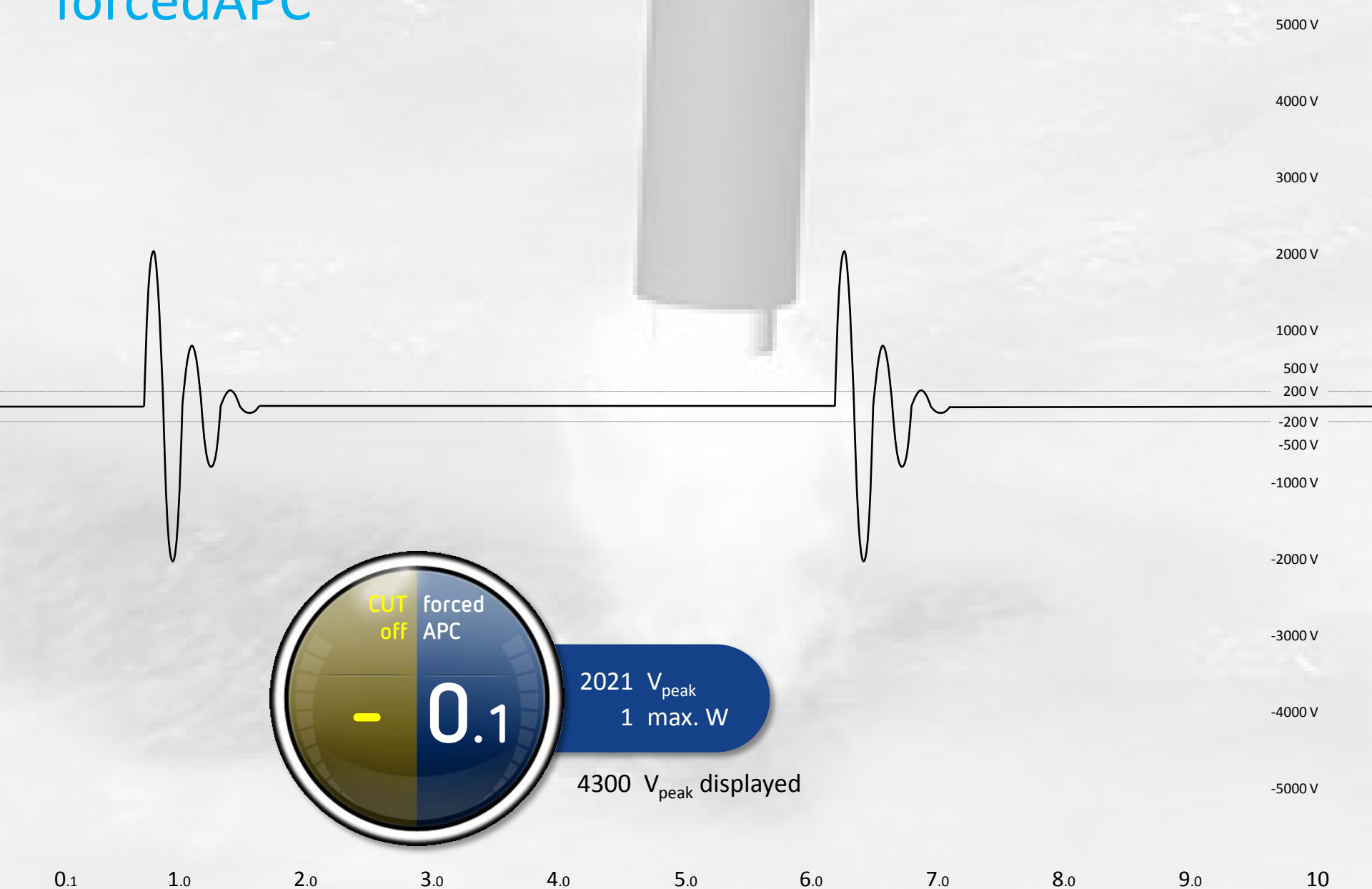
Tissue effect	Fast "standard" argon plasma coagulation. Homogeneous plasma beam, less interfering activation noise
Target voltage range	2021 – 4300 V_{peak} modulated (crest factor = 7.7)
Control technology	Constant voltage control
Specialist disciplines	General surgery, gynecology, urology, gastroenterology, pulmonology
Possible applications	Open, laparoscopic and endoscopic applications For example: • Hemostasis • Fast, large surface coagulation in partial liver resection, partial kidney resection • Thoracic surgery • Conization: coagulation of the resection bed • Endometriosis: devitalization • Endoscopic: hemostasis, ablation, tissue reduction, re-canalization, angiodysplasia
Examples for instruments	• APCapplicator • FiAPC® probes

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

forcedAPC



2021 V_{peak}
1 max. W

4300 V_{peak} displayed

erbe

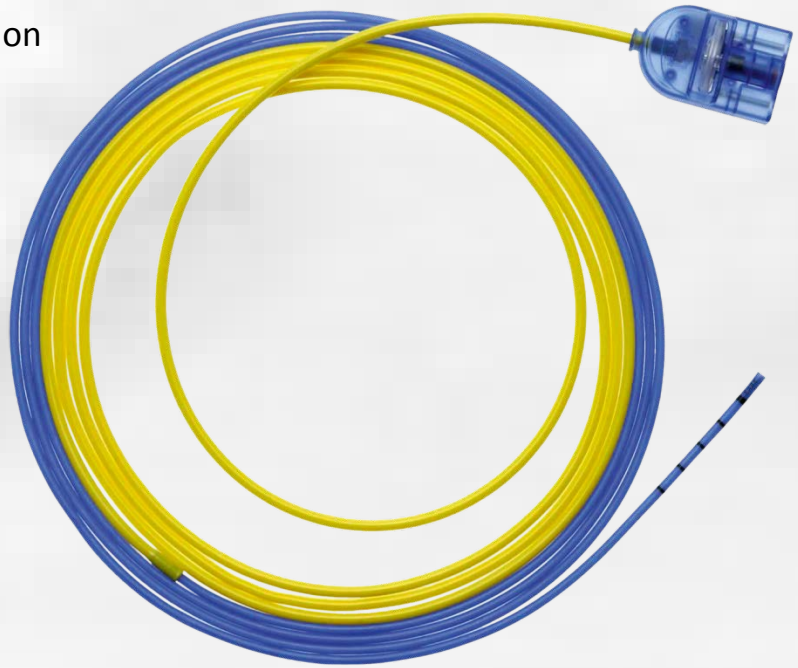
forcedAPC

erbe

forcedAPC

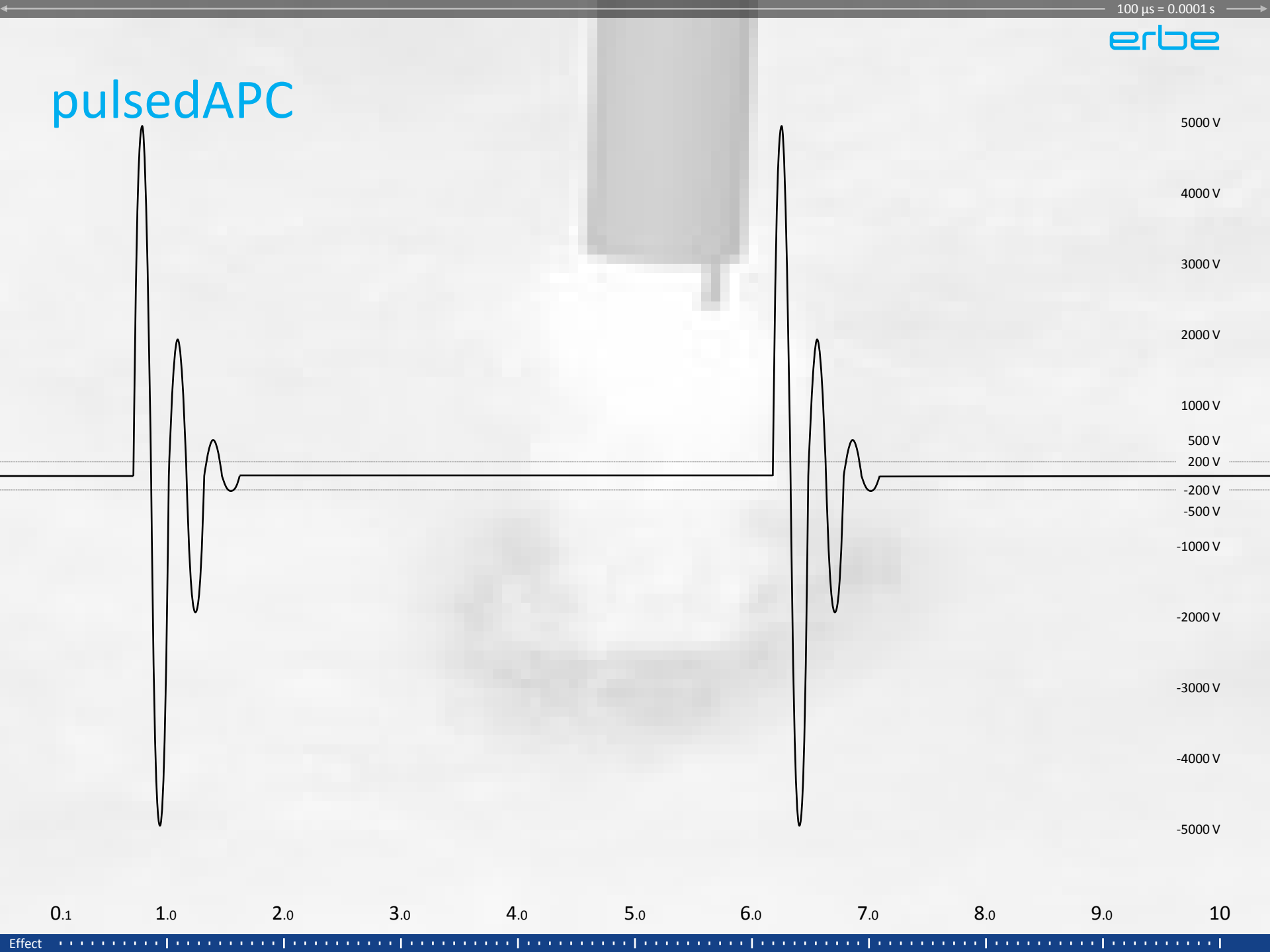
pulsedAPC

Tissue effect	Argon plasma coagulation with reduced application of energy as a result of pulses
Voltage range	4950 V_{peak} modulated (crest factor = 7.7)
Control technology	Constant voltage control
Specialist disciplines	Gastroenterology, pulmonology
Possible applications	Endoscopic applications. For example: • Hemostasis • Angiodysplasia • Ablation, tissue reduction, re-canalization
Examples for instruments	• FiAPC® probes • HybridAPC
Pulse frequencies	• Slow 800 ms / Fast 60 ms



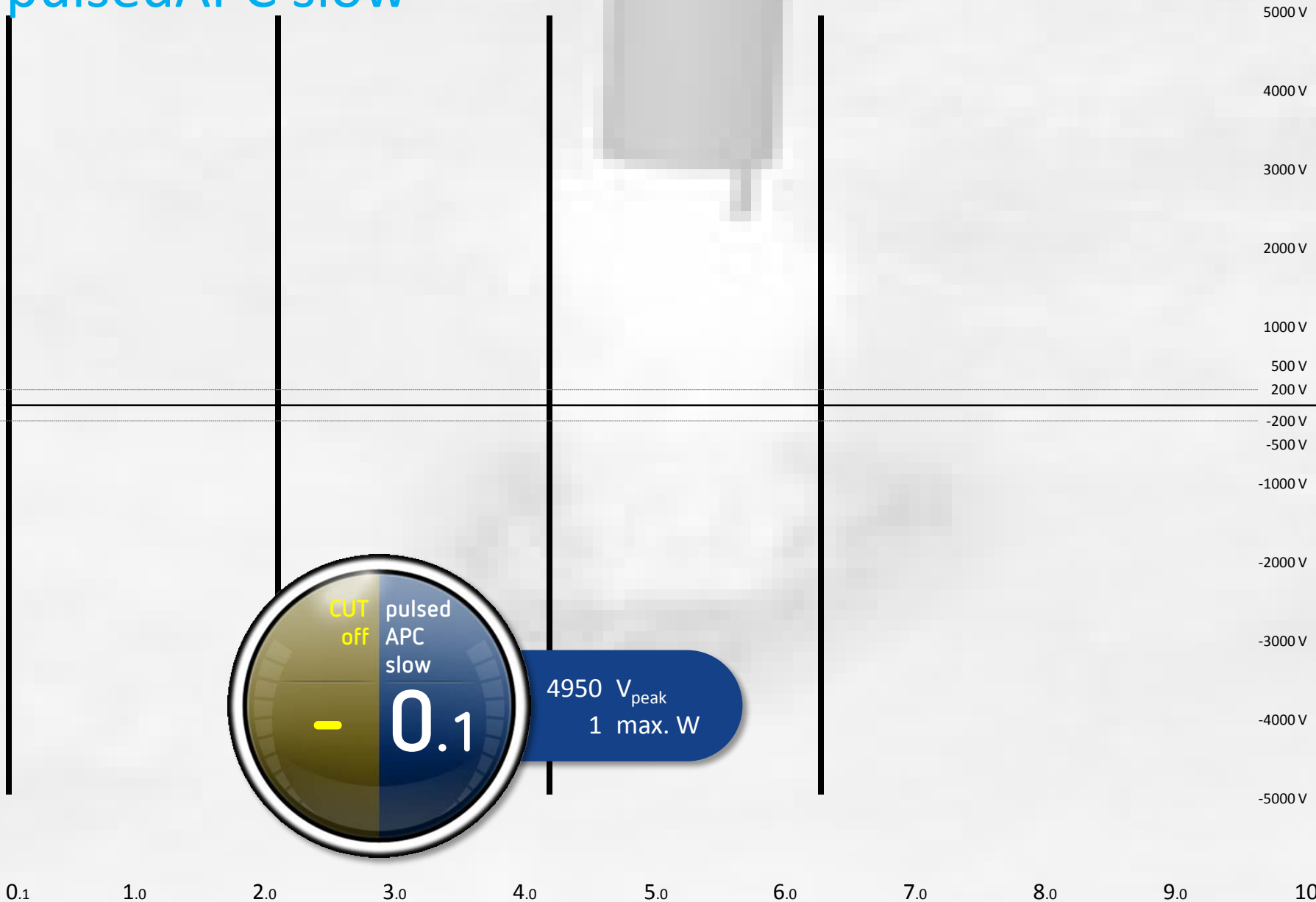
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect


100 µs = 0.0001 s
erbe
pulsedAPC
5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
Effect

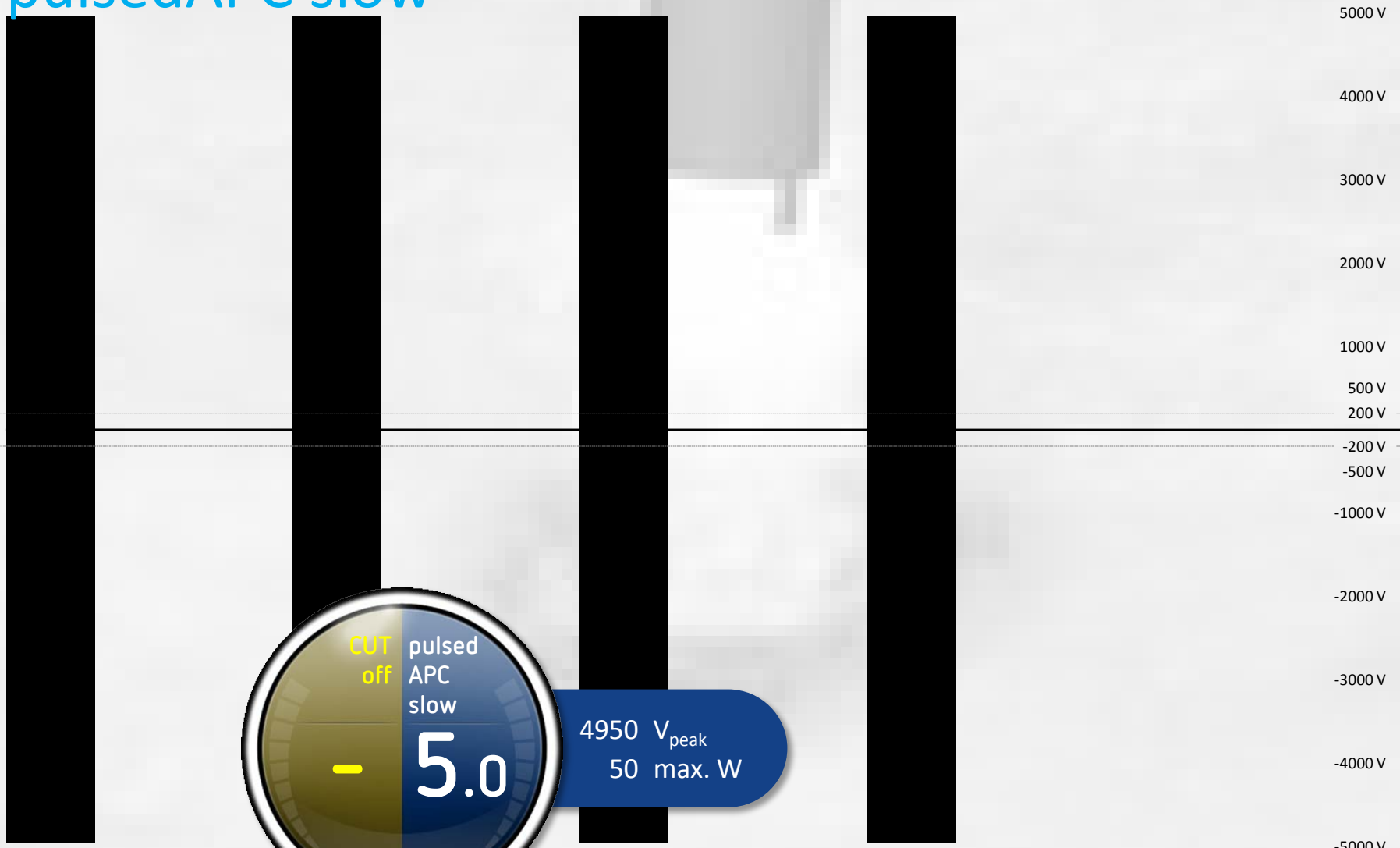
erbe

pulsedAPC slow



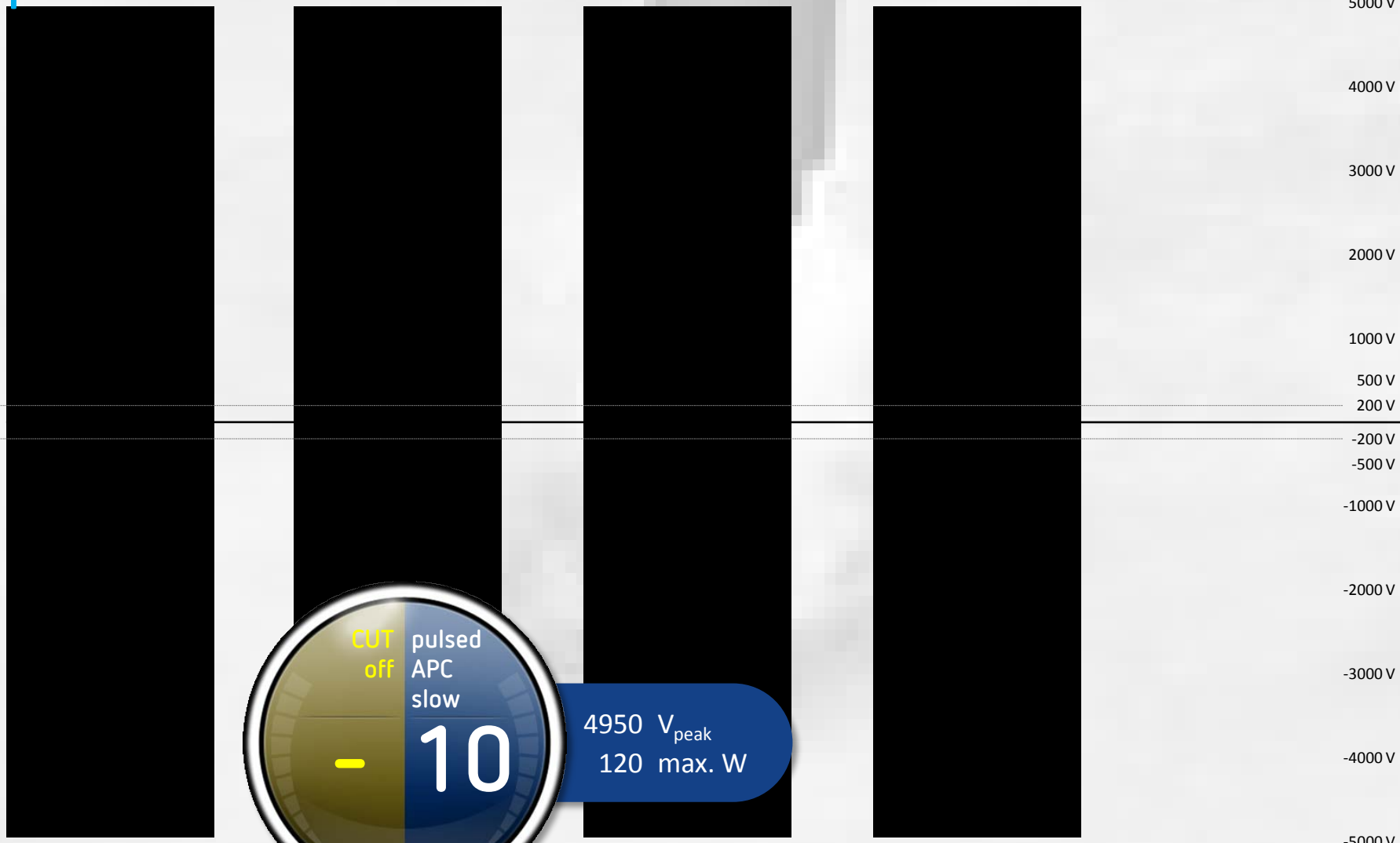
erbe

pulsedAPC slow



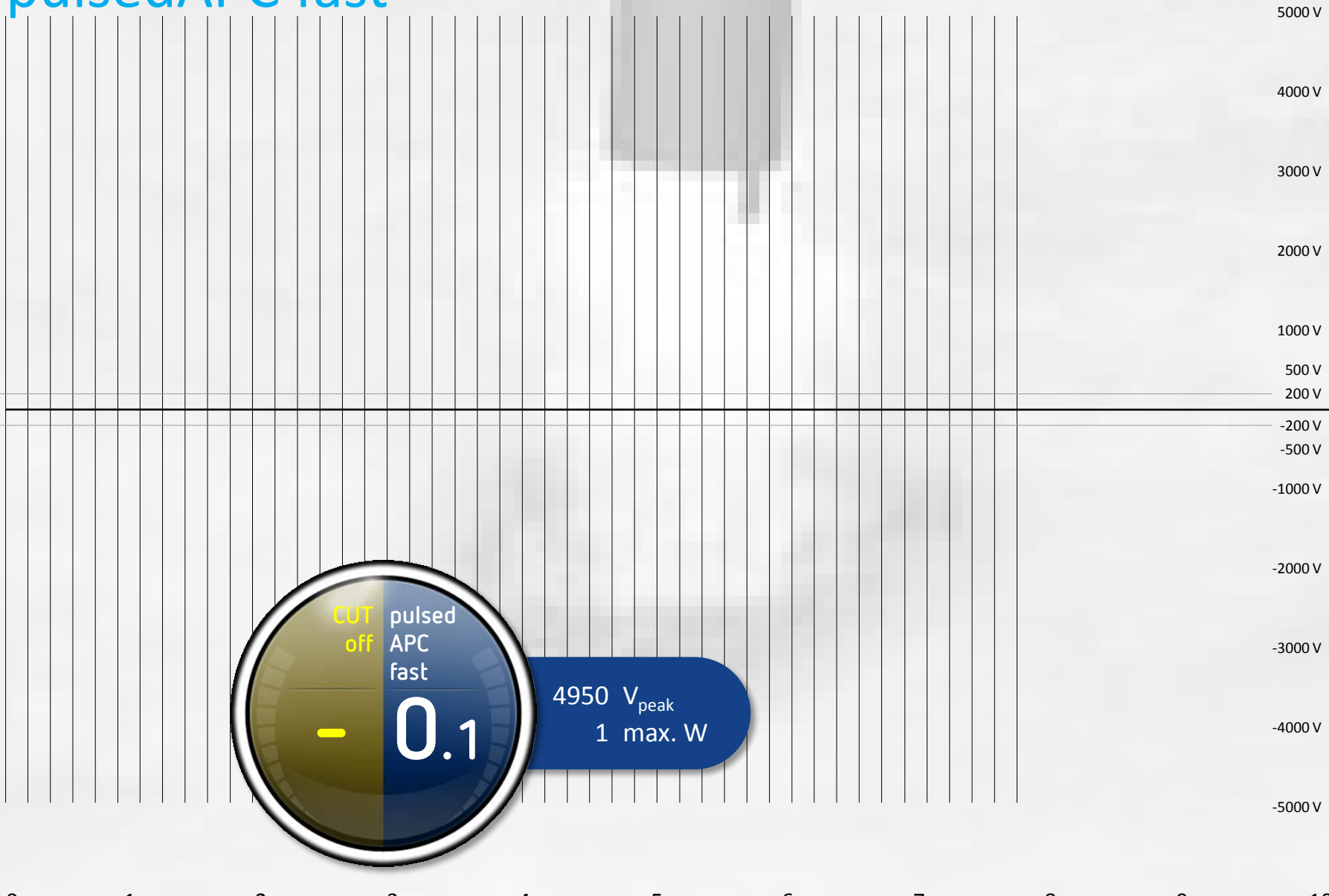
erbe

pulsedAPC slow



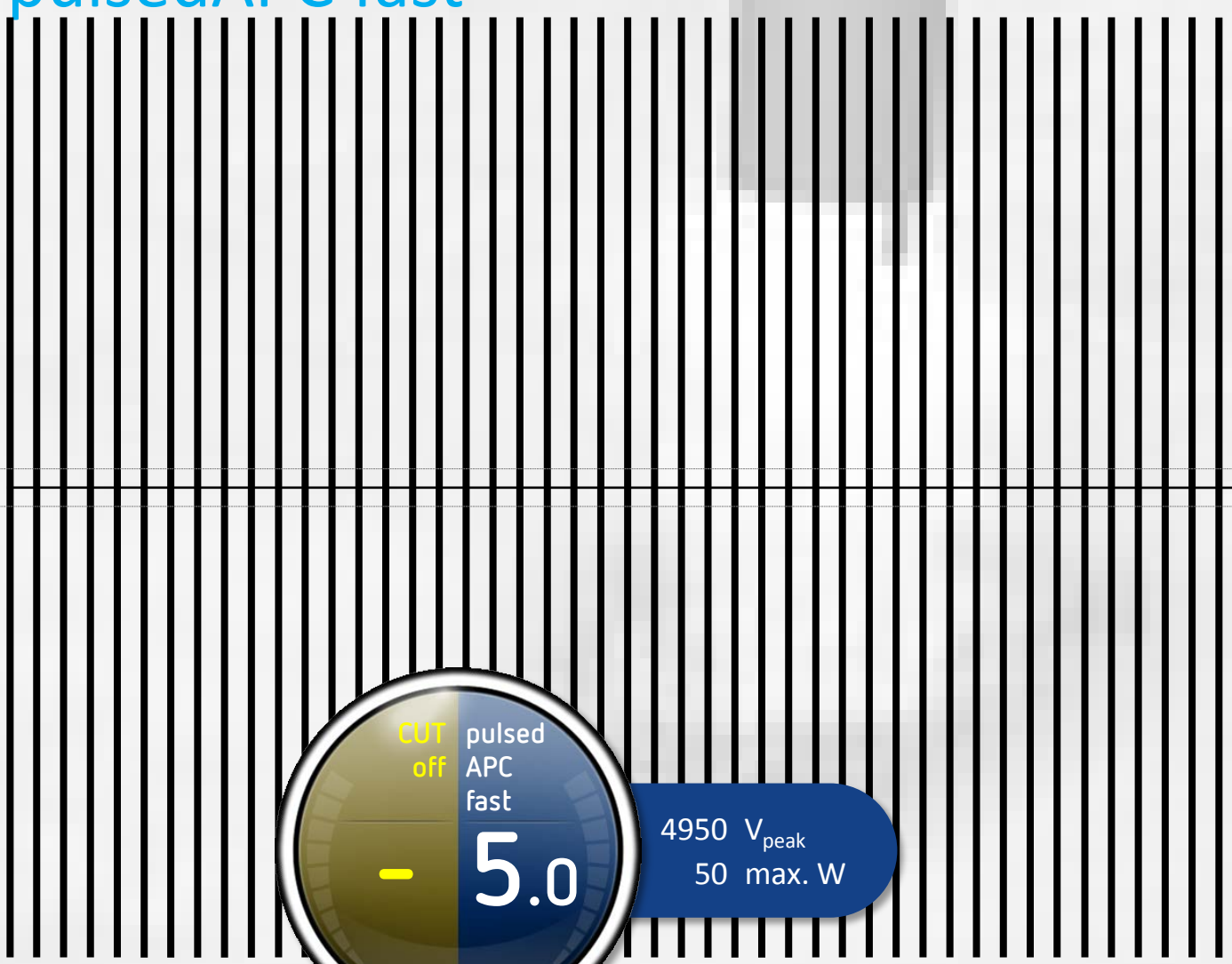
erbe

pulsedAPC fast



erbe

pulsedAPC fast



5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V

CUT off
pulsed APC fast
\-
5.0

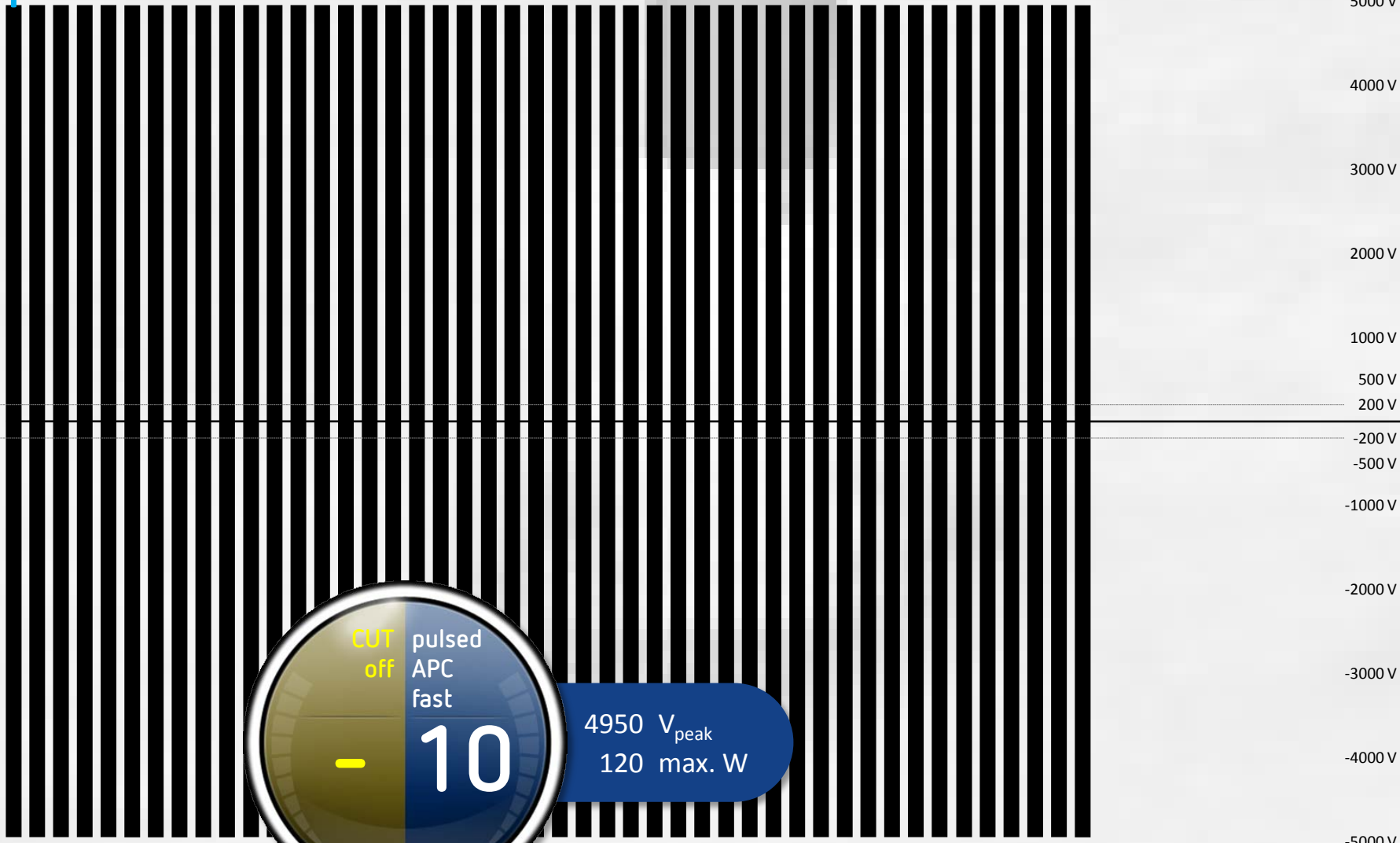
4950 V_{peak}
50 max. W

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

pulsedAPC fast

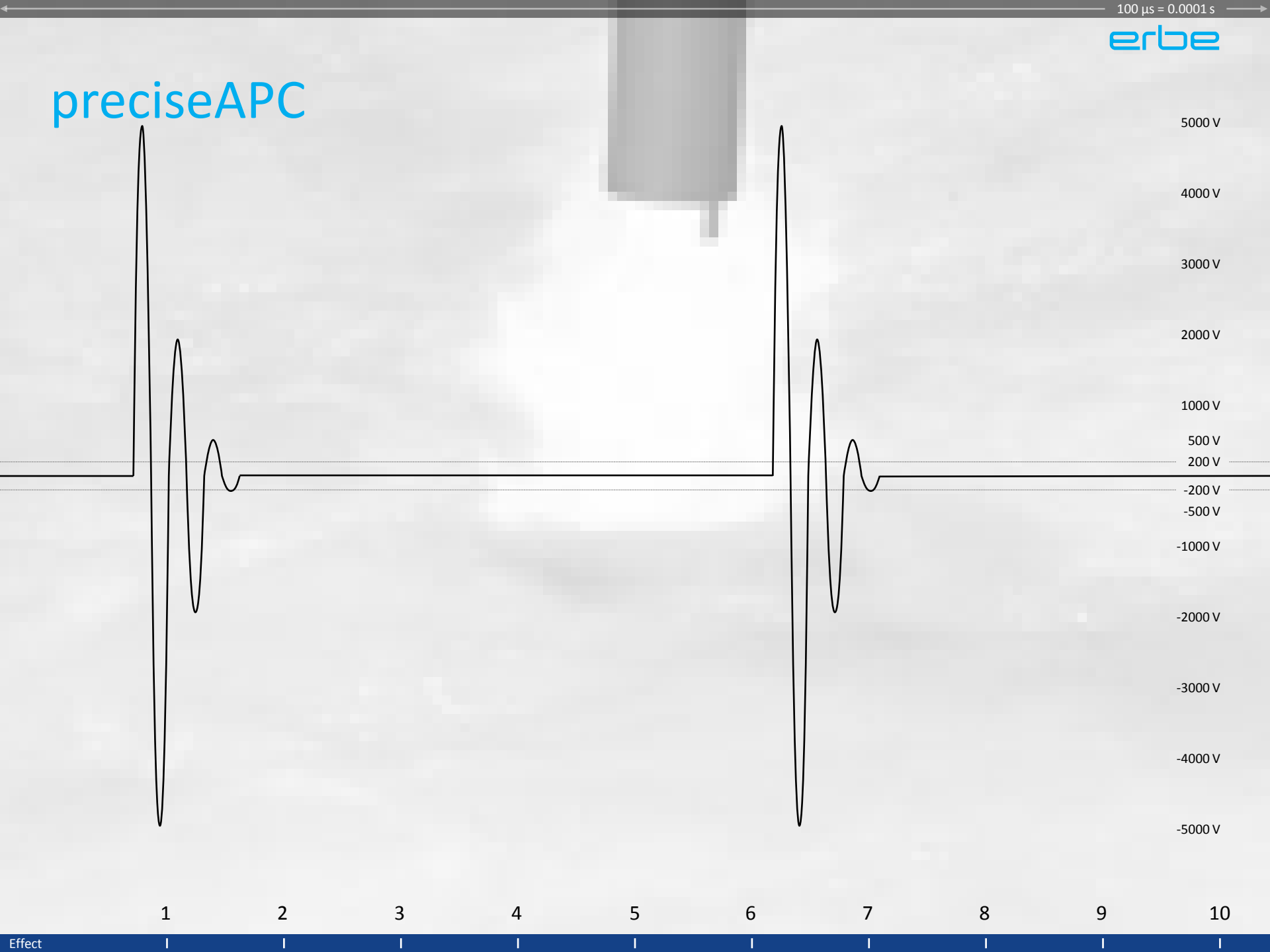


preciseAPC

Tissue effect	Fine argon plasma coagulation, largely independent of the distance of the applicator to the tissue. Suitable for particularly thin-walled structures
Voltage range	4950 V_{peak} modulated (crest factor = 7.8)
Control technology	Constant voltage control
Specialist disciplines	Gastroenterology, pulmonology
Possible applications	Endoscopic applications in the colon. For example: • Hemostasis • Angiodysplasia
Examples for instruments	FiAPC® probes

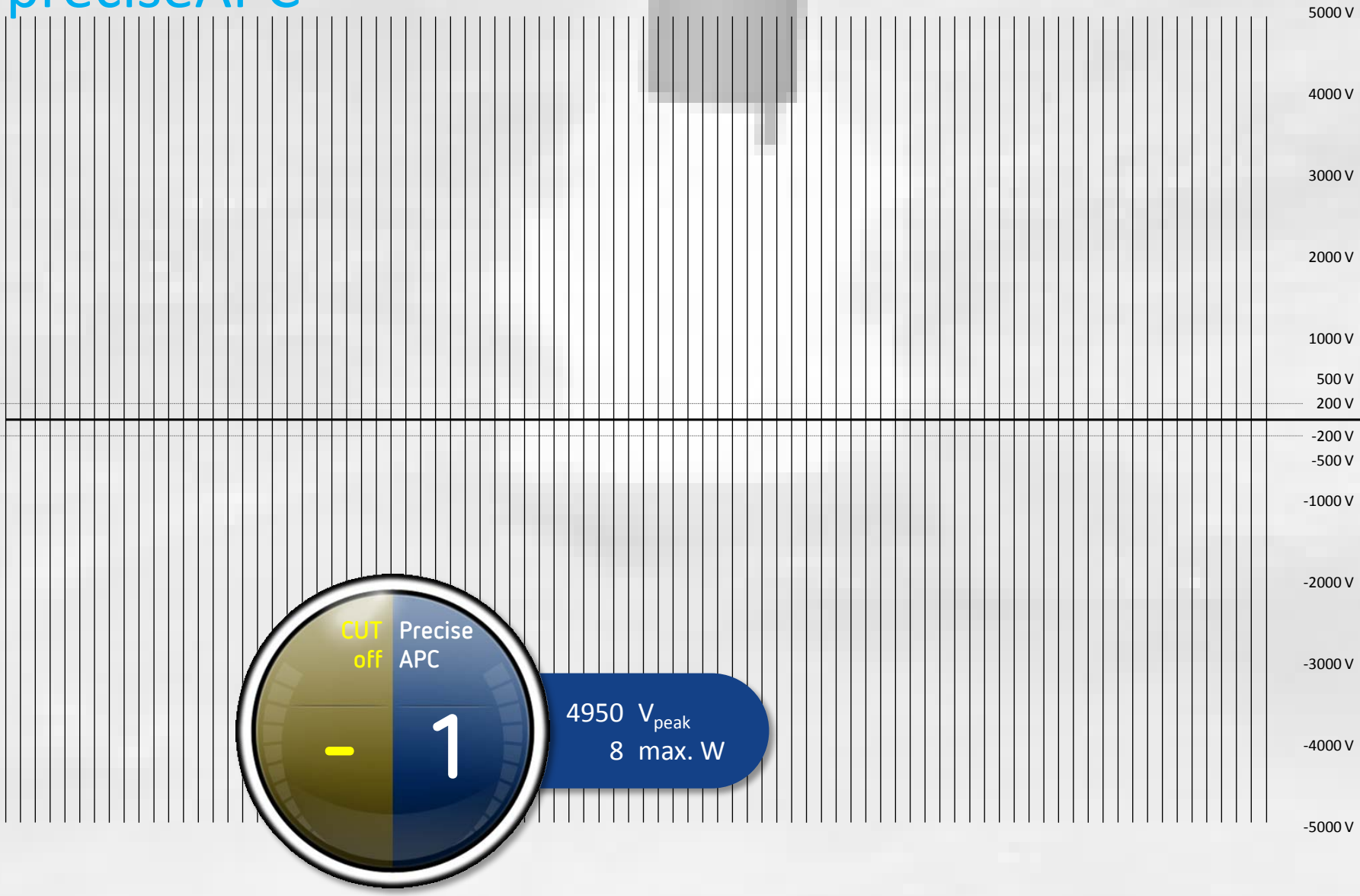
1 2 3 4 5 6 7 8 9 10

Effect


100 µs = 0.0001 s
erbe
preciseAPC
5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
1
2
3
4
5
6
7
8
9
10
Effect

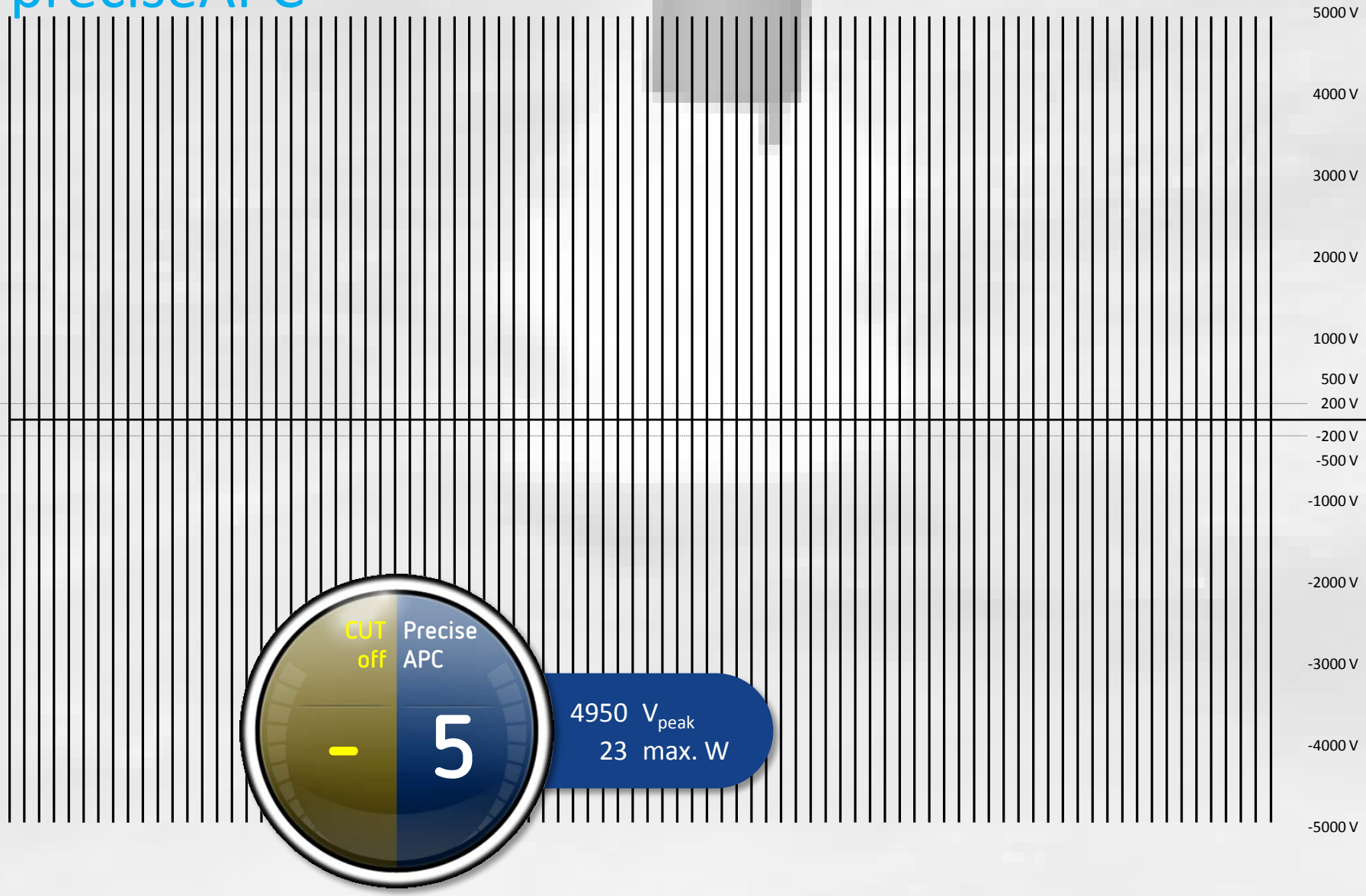
erbe

preciseAPC



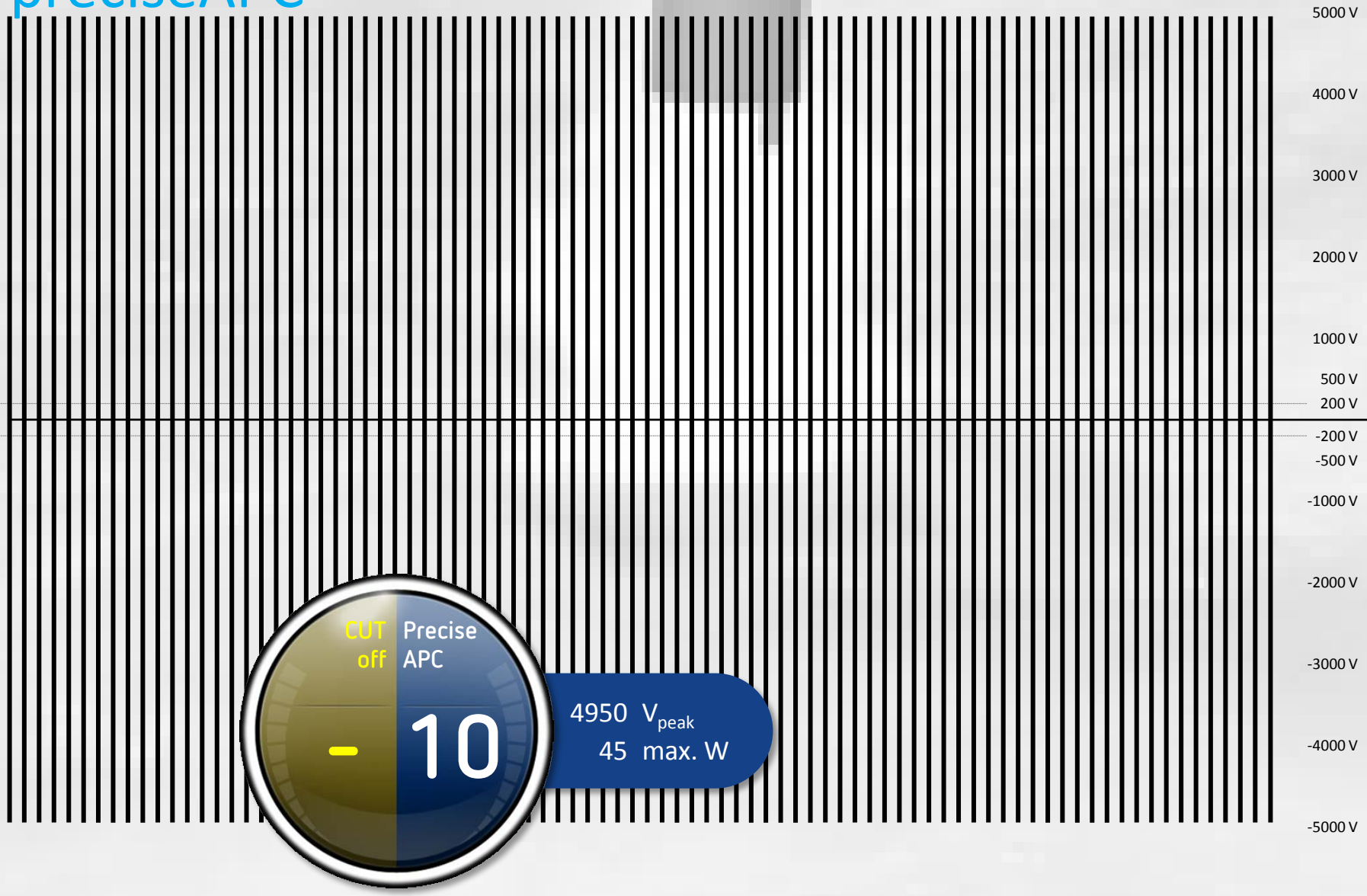
erbe

preciseAPC



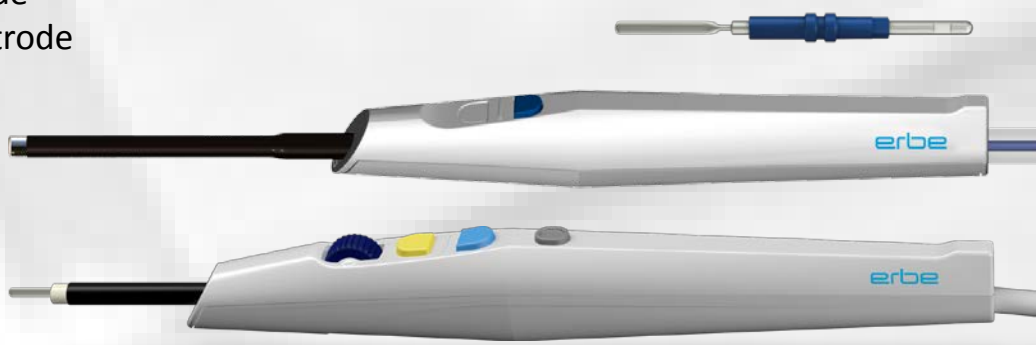
erbe

preciseAPC



swiftCOAG

Tissue effect	Intensive coagulation, enhanced with slight tissue-separating properties
Voltage range	750 – 2500 V_{peak} modulated (crest factor = 6.0)
Control technology	Constant voltage control
Specialist disciplines	General surgery, gynecology, urology, ENT, Orthopedics
Possible applications	Open and laparoscopic applications. For example: • Tissue separation with intensive hemostasis • Heminephrectomy • Breast surgery • Neck dissection (removal of lymphatic nodes in the neck) • Endoscopic: POEM (tunnel)
Examples for instruments	Monopolar instruments with sufficiently high dielectric strength: • Knife or spatula electrode • Laparoscopic hook electrode • Monopolar applicator • APCapplicator

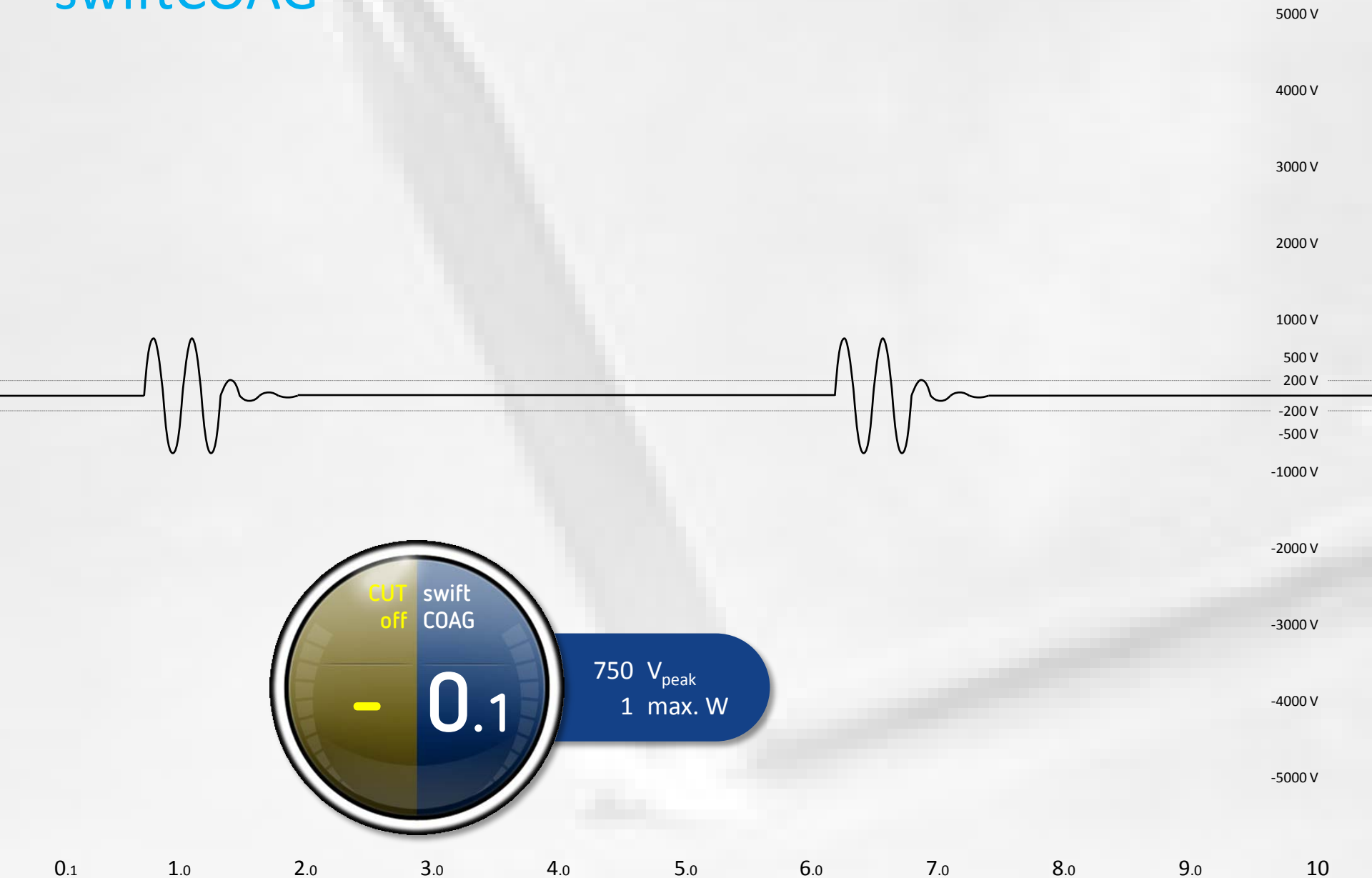


0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

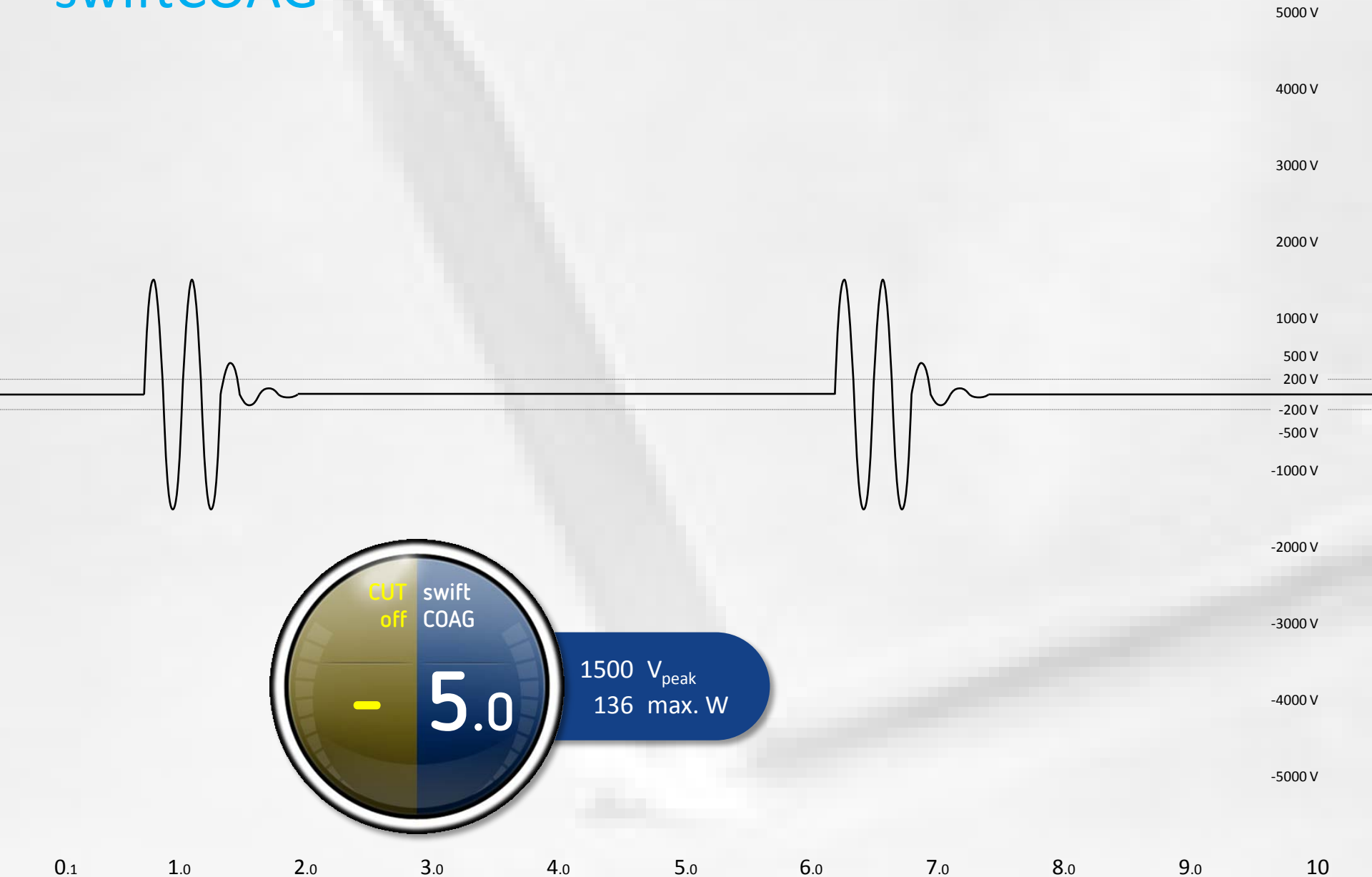
erbe

swiftCOAG



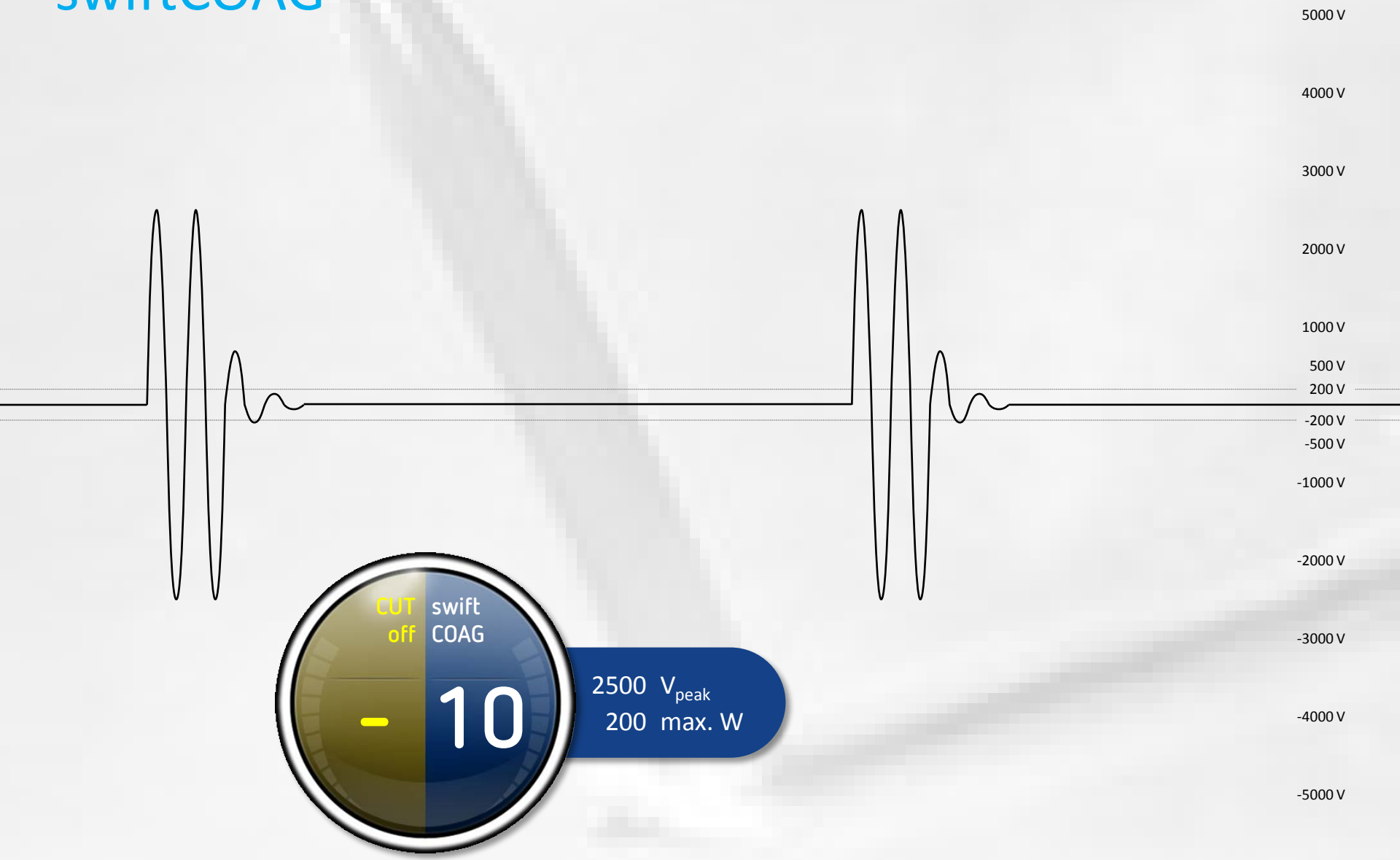
erbe

swiftCOAG



erbe

swiftCOAG



twinCOAG

Tissue effect	Consistent tissue effects, even when two monopolar instruments are activated at the same time with just one unit. Comparable to swiftCOAG.
Voltage range	800 – 2000 V_{peak} modulated (crest factor = 5.9)
Control technology	Constant voltage control
Specialist disciplines	General surgery, gynecology
Possible applications	Open and laparoscopic applications. For example: • Breast surgery • Cardiothoracic surgery
Examples for instruments	Monopolar instruments with sufficiently high dielectric strength: • Knife or spatula electrode • APCapplicator

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

twinCOAG – novelties

- Reduced interruption period
- Improved characteristics for exposing and separating tissue structures

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

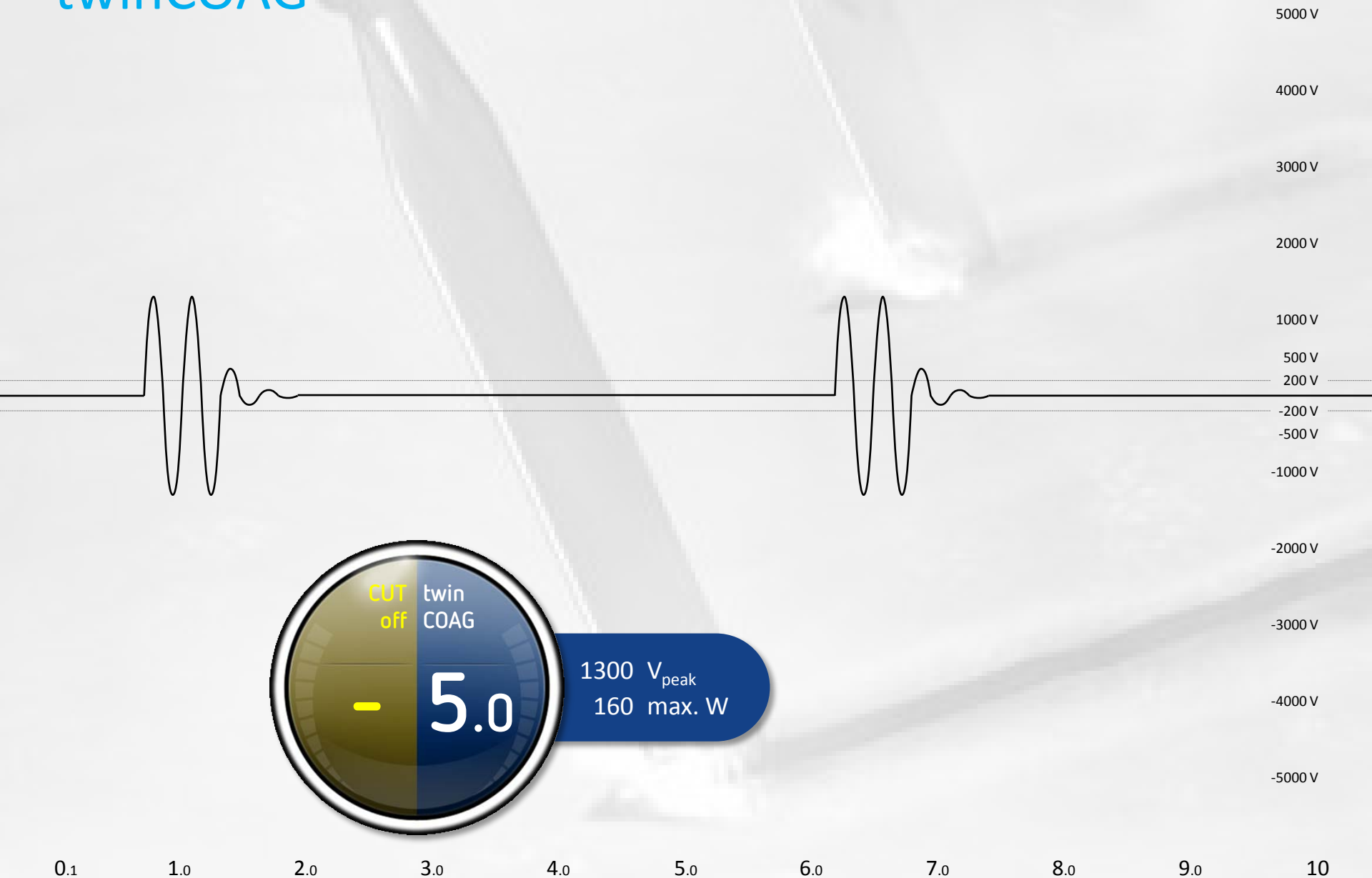
Effect

erbe

twinCOAG

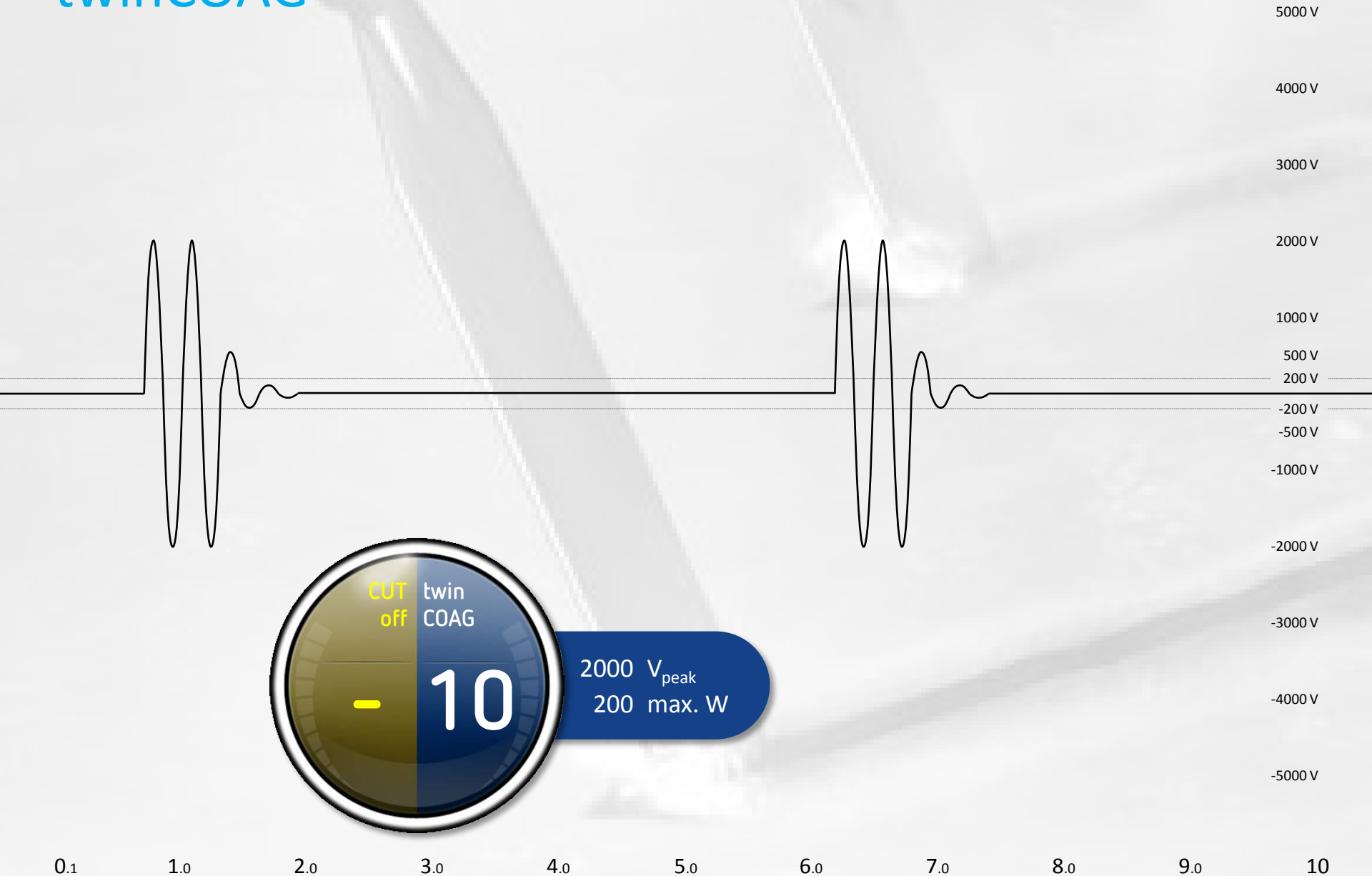
erbe

twinCOAG



erbe

twinCOAG



dryCUT

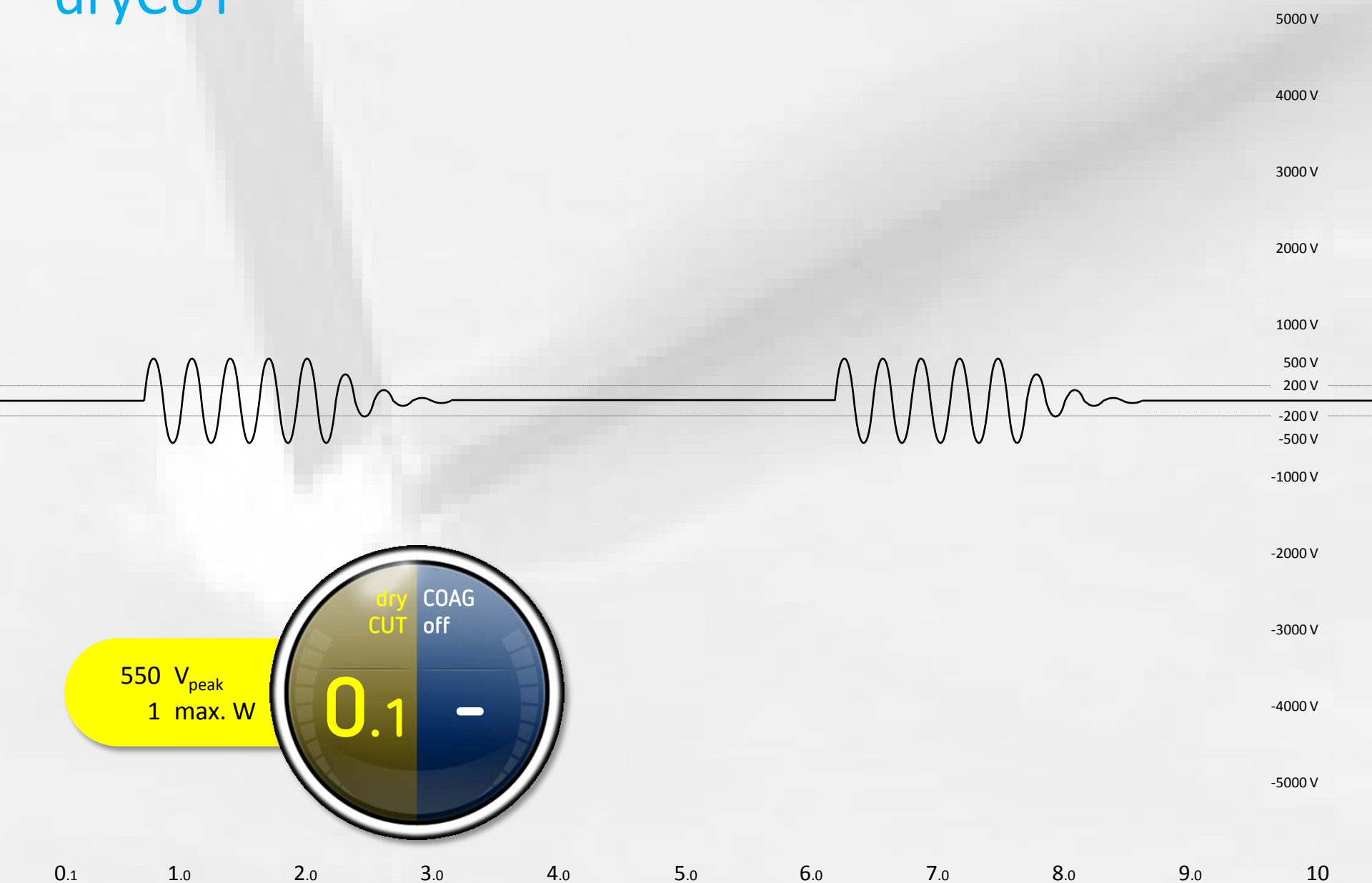
Tissue effect	Controlled incision with significant hemostasis
Voltage range	550 – 1400 V_{peak} modulated (crest factor = 3.4 to 3.8)
Control technology	Constant voltage control
Specialist disciplines	General surgery, gynecology, urology, gastroenterology
Possible applications	Open, laparoscopic and endoscopic applications. For example: • Hepatectomy • Nephrectomy • TUR-P, TUR-B with HybridKnife® • ESD with HybridKnife®
Examples for instruments	• Knife or spatula electrode • Laparoscopic hook electrode • HybridKnife® • Monopolar resectoscope

0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

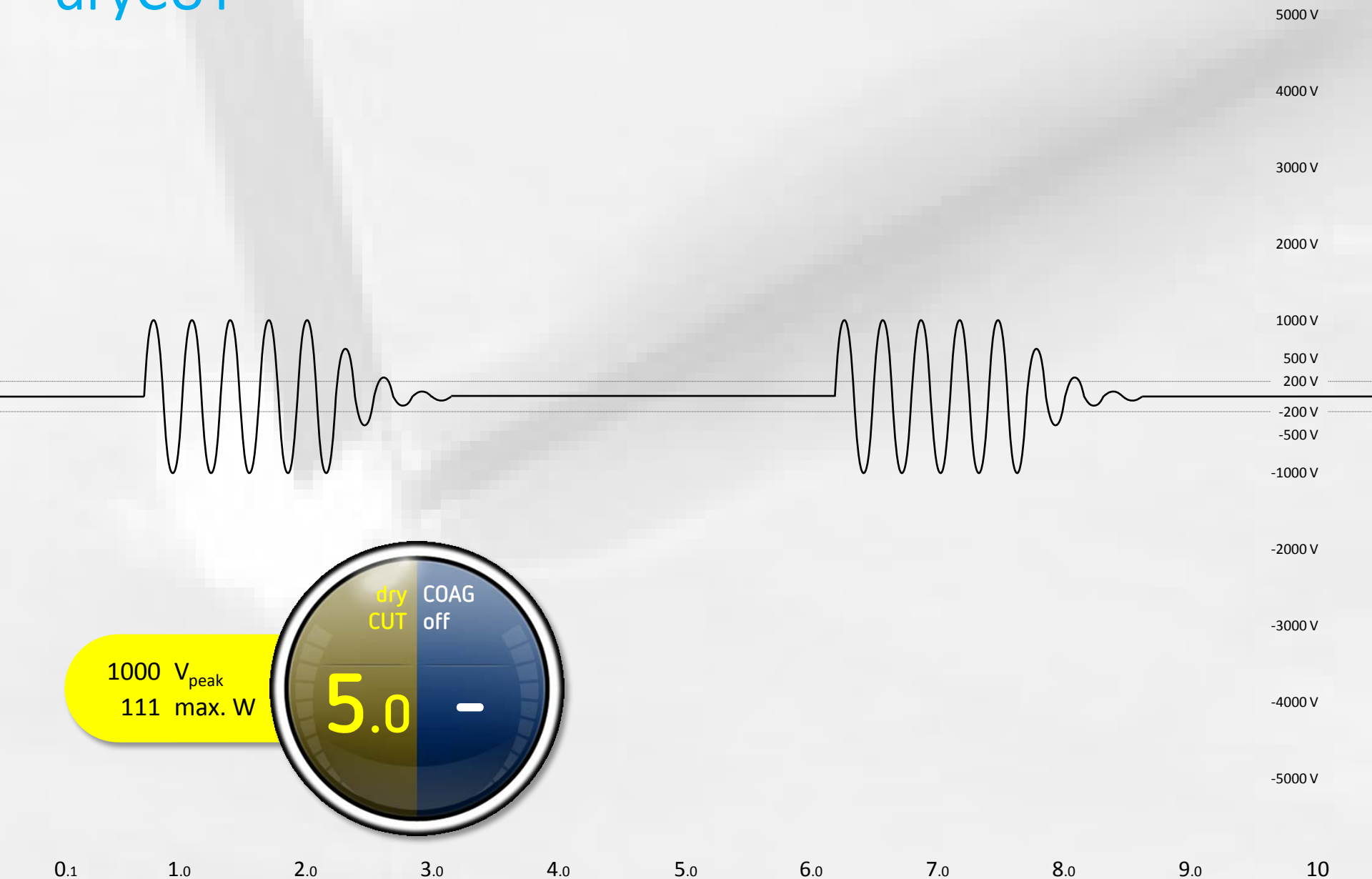
erbe

dryCUT


5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
dry CUT
COAG off
0.1
–
550 V_{peak}
1 max. W
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
Effect

erbe

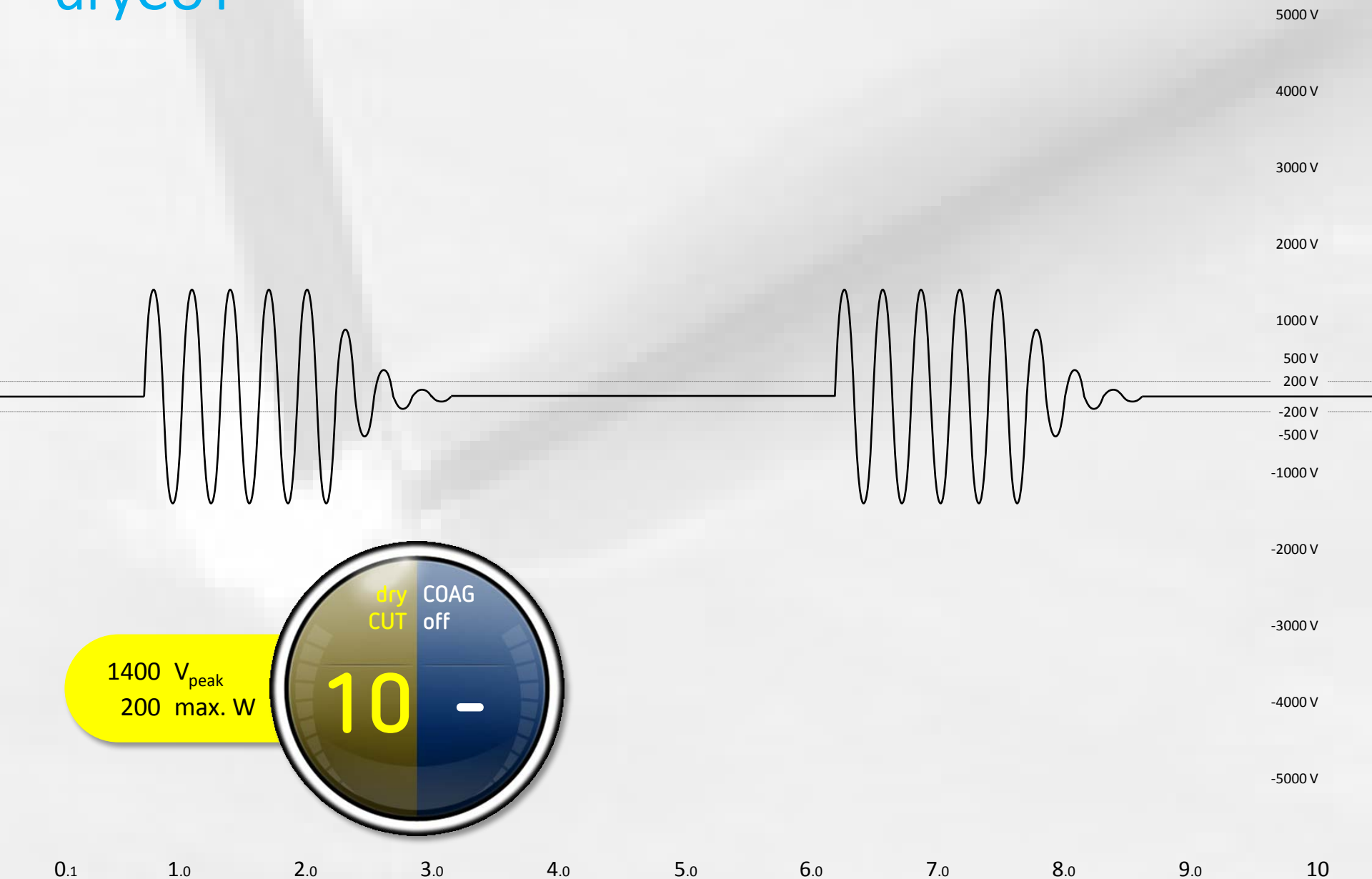
dryCUT



1000 V_{peak}
111 max. W

erbe

dryCUT


5000 V
4000 V
3000 V
2000 V
1000 V
500 V
200 V
-200 V
-500 V
-1000 V
-2000 V
-3000 V
-4000 V
-5000 V
dry CUT
COAG off
10
–
1400 V_{peak}
200 max. W
0.1
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10
Effect

dryCUT – novelties

Optimized initial incision:
higher modulation frequency
until first spark generation

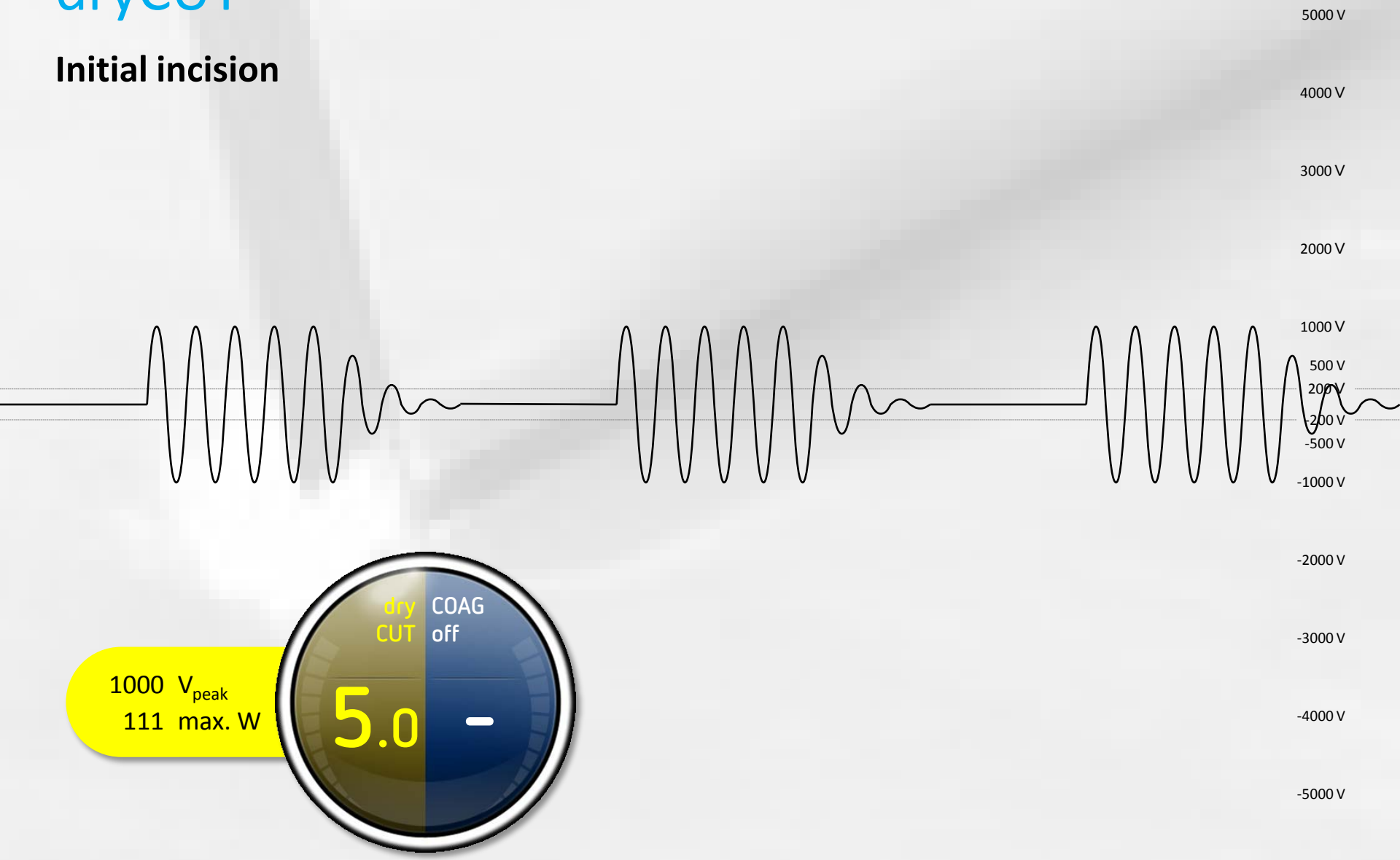
0.1 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10

Effect

erbe

dryCUT

Initial incision

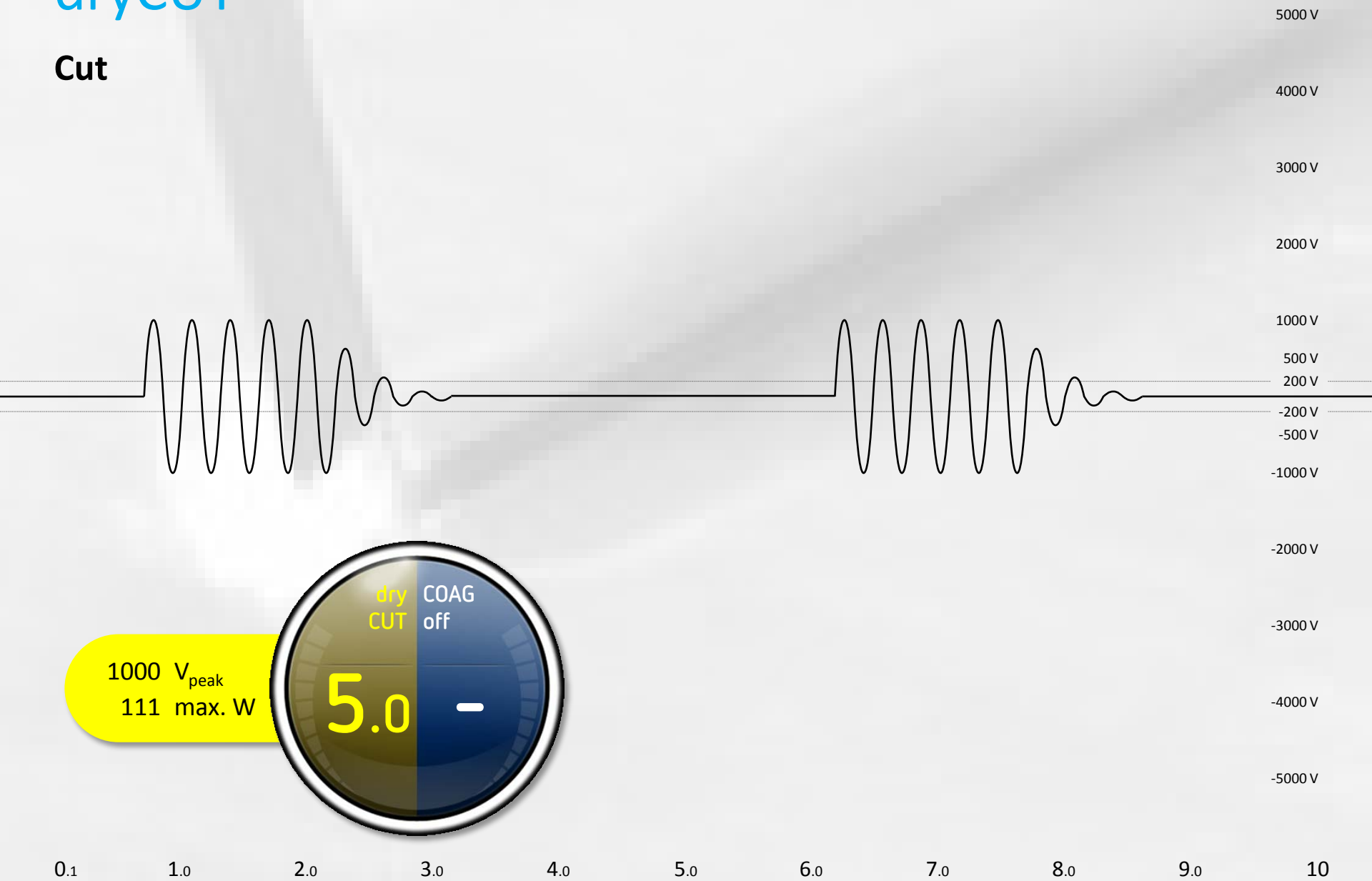


1000 V_{peak}
111 max. W

erbe

dryCUT

Cut



thermoSEAL

Vessel sealing

Tissue effect	Special COAG mode for sealing highly vascularized tissue bundles and vessels up to 7 mm diameter and min. 360 mmHg bursting pressure
Options	AUTO START
Voltage range	152 V_{peak}
Control technology	Dynamically controlled
Specialist disciplines	General surgery, gynecology, urology, ENT
Possible applications	Open and laparoscopic applications. Resection of organs or parts of organs. For example: • Hysterectomy, • Hemicolectomy • Hepatectomy • Gastric resection • Thyroidectomy • Nephrectomy • Tonsillectomy
Examples for instruments	• BiClamp®, BiClamp® Lap forceps • BiCision®

thermoSEAL – novelties

Vessel sealing

- Replaces BiClamp® mode
- Speed-optimized through new control technology, improved sensor technology
- Progression display shows projected duration of vessel sealing
- AUTO START – optional, can thus be activated without footswitch
- Only 2 effect stages required:
  Effect 1 = Standard setting for vessel sealing
  Effect 2 = Prolonged energy input
  (for example for thicker
  tissue structures, ligaments)

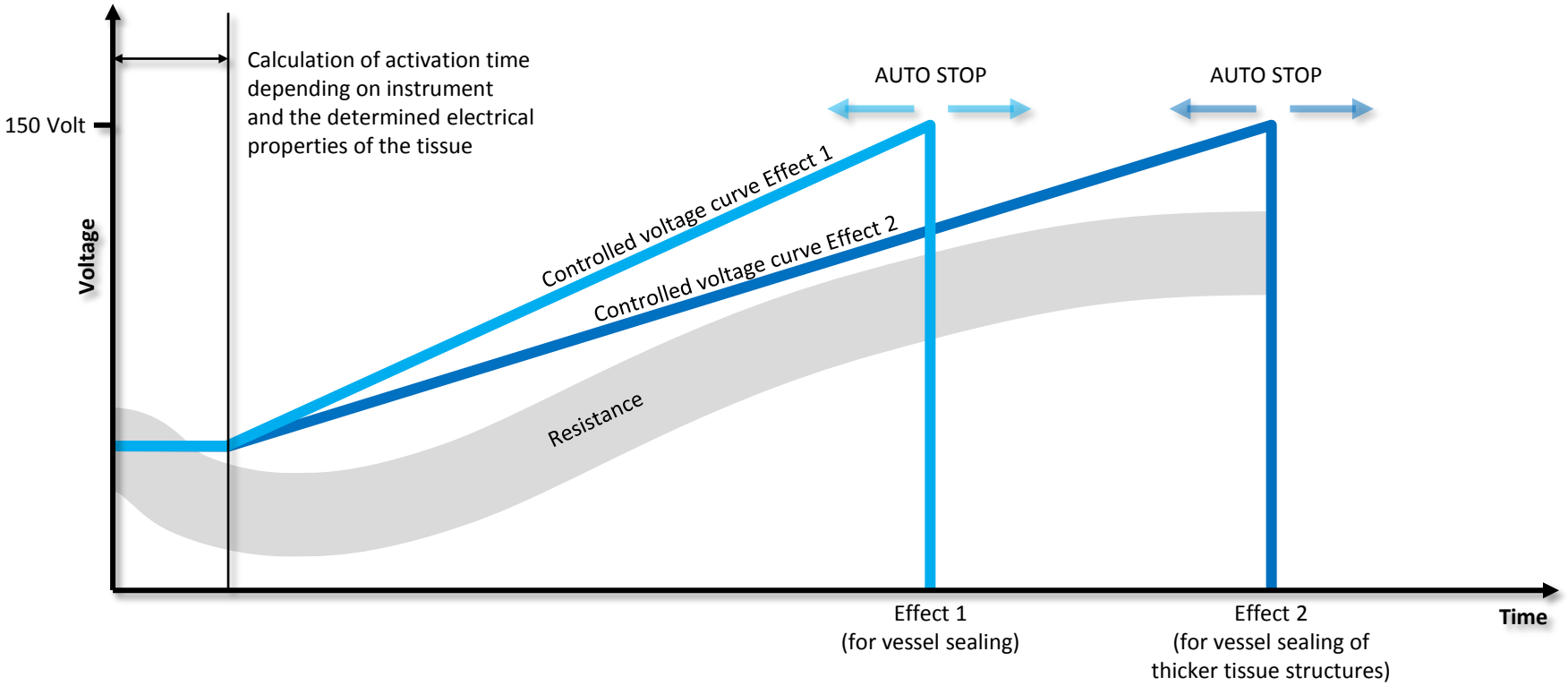
1 2

Effect I I

thermoSEAL

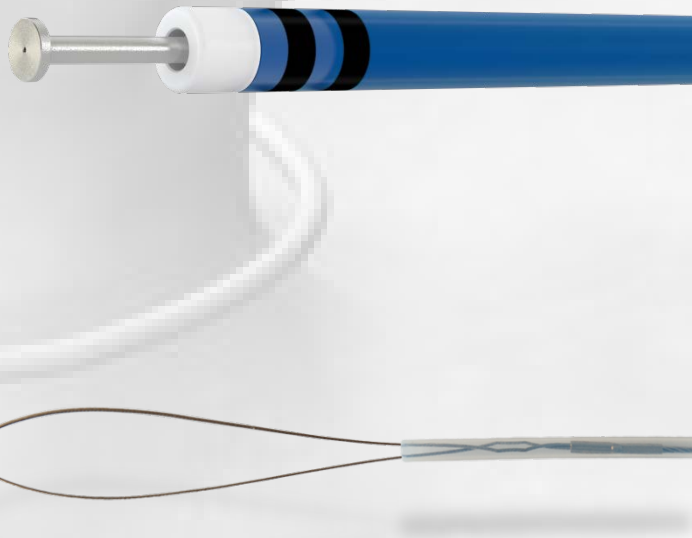
Vessel sealing

Progression display



endoCUT Q

Tissue effect	Fractionated cutting mode with cutting and coagulation intervals
Voltage range	800 V_{peak}
Settings	Effect 1-4, cut duration 1-4, cut interval 1 -10
Control technology	Constant voltage control, power limitation 275 Watt (related to 1 second)
Specialist disciplines	Gastroenterology in particular, also general surgery and pneumology
Possible applications	Endoscopic applications. For example: • Polypectomy • Endoscopic Submucosa Dissection (ESD) • Endoscopic Mucosal Resection (EMR) • Transanal Endoscopic Microsurgery (TEM) • Peroral Endoscopic Myotomy (POEM) • Loop dissection in pulmonology
Examples for instruments	• Polypectomy snare • HybridKnife®



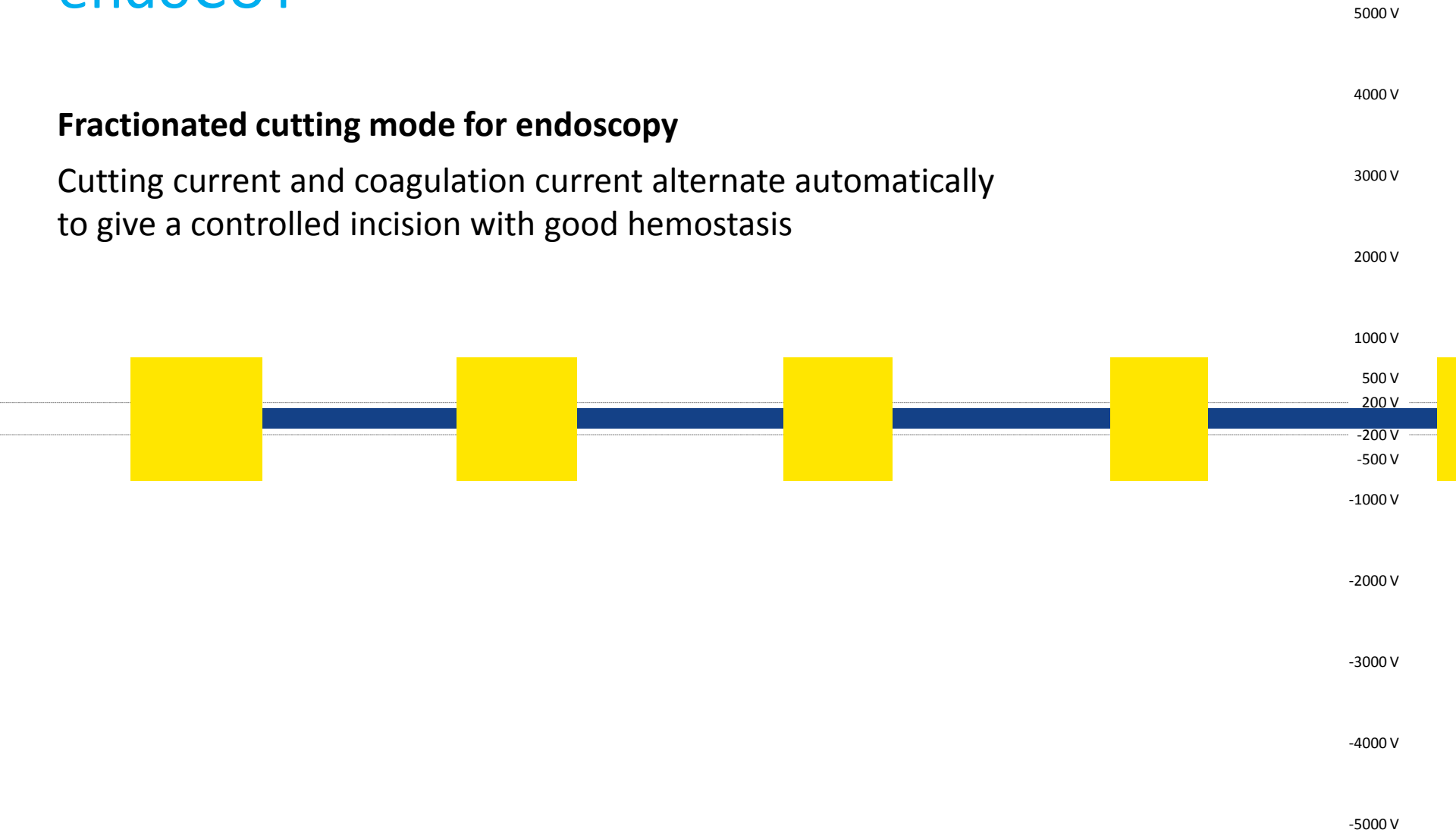
endoCUT I

Tissue effect	Fractionated cutting mode with cutting and coagulation intervals
Voltage range	700 V_{peak}
Settings	Effect 1-4, cut duration 1-4, cut interval 1 -10
Control technology	Constant voltage control, power limitation 160 Watt (related to 1 second)
Specialist disciplines	Gastroenterology
Possible applications	Endoscopic papillotomy / sphincterotomy in ERCP
Examples for instruments	Papillotome / sphincterotome

endoCUT

Fractionated cutting mode for endoscopy

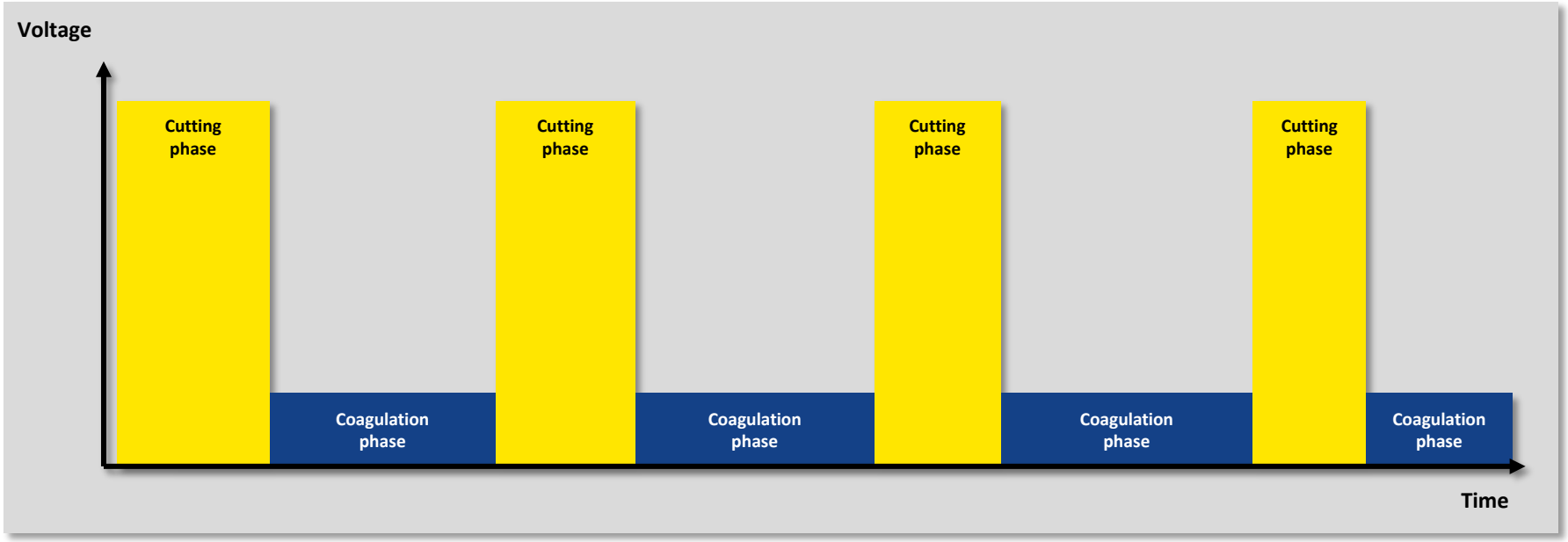
Cutting current and coagulation current alternate automatically to give a controlled incision with good hemostasis



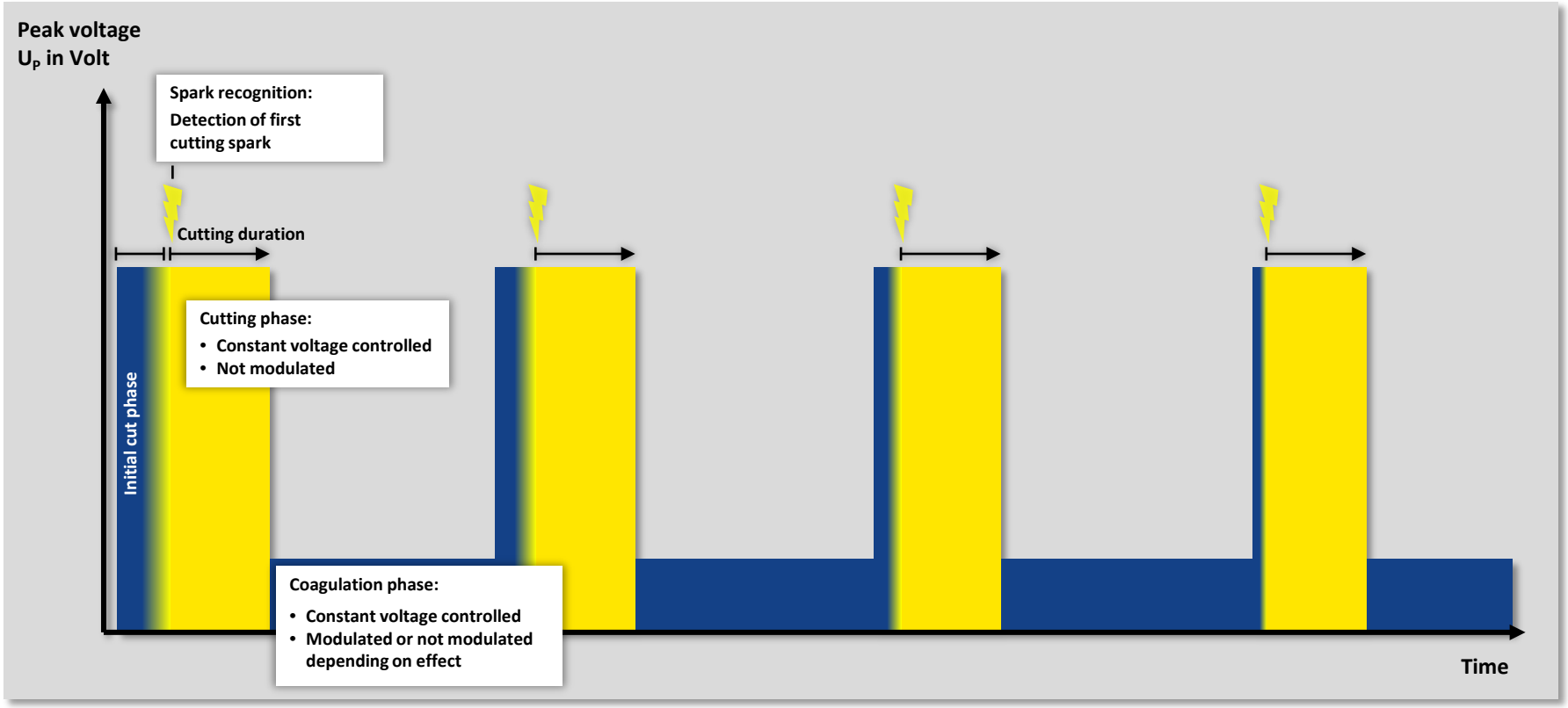
endoCUT

Fractionated cutting mode for endoscopy

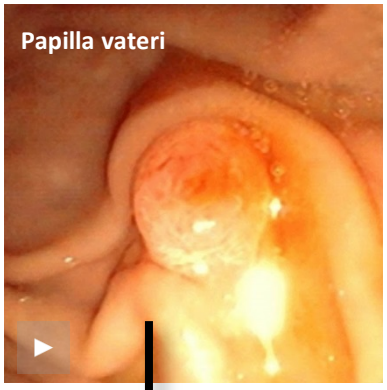
Cutting current and coagulation current alternate automatically to give a controlled incision with good hemostasis

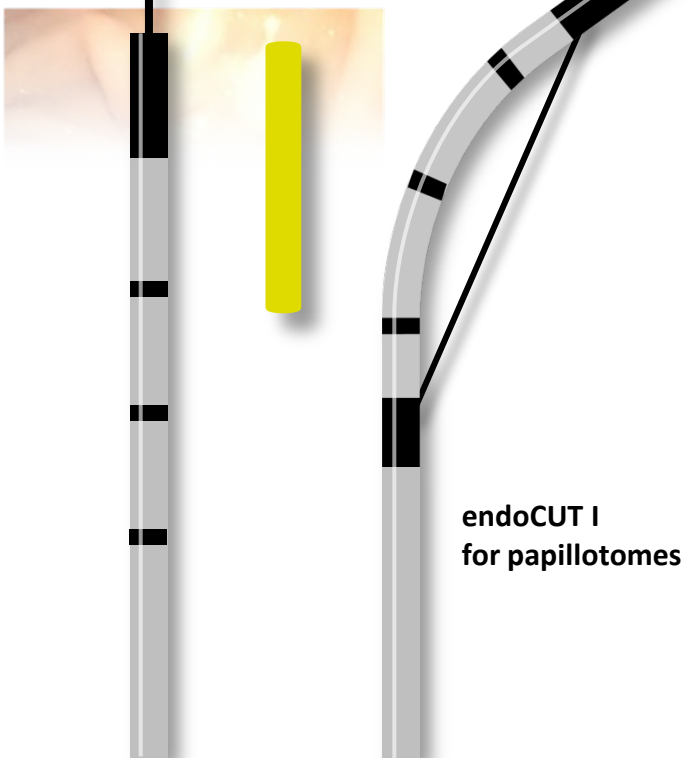


Initial cut phase and spark detection

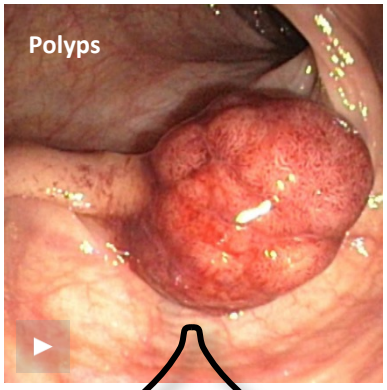


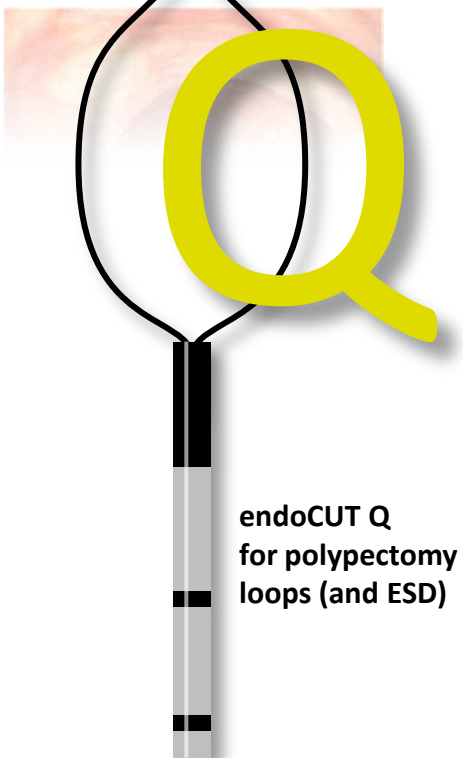
endoCUT I and endoCUT Q





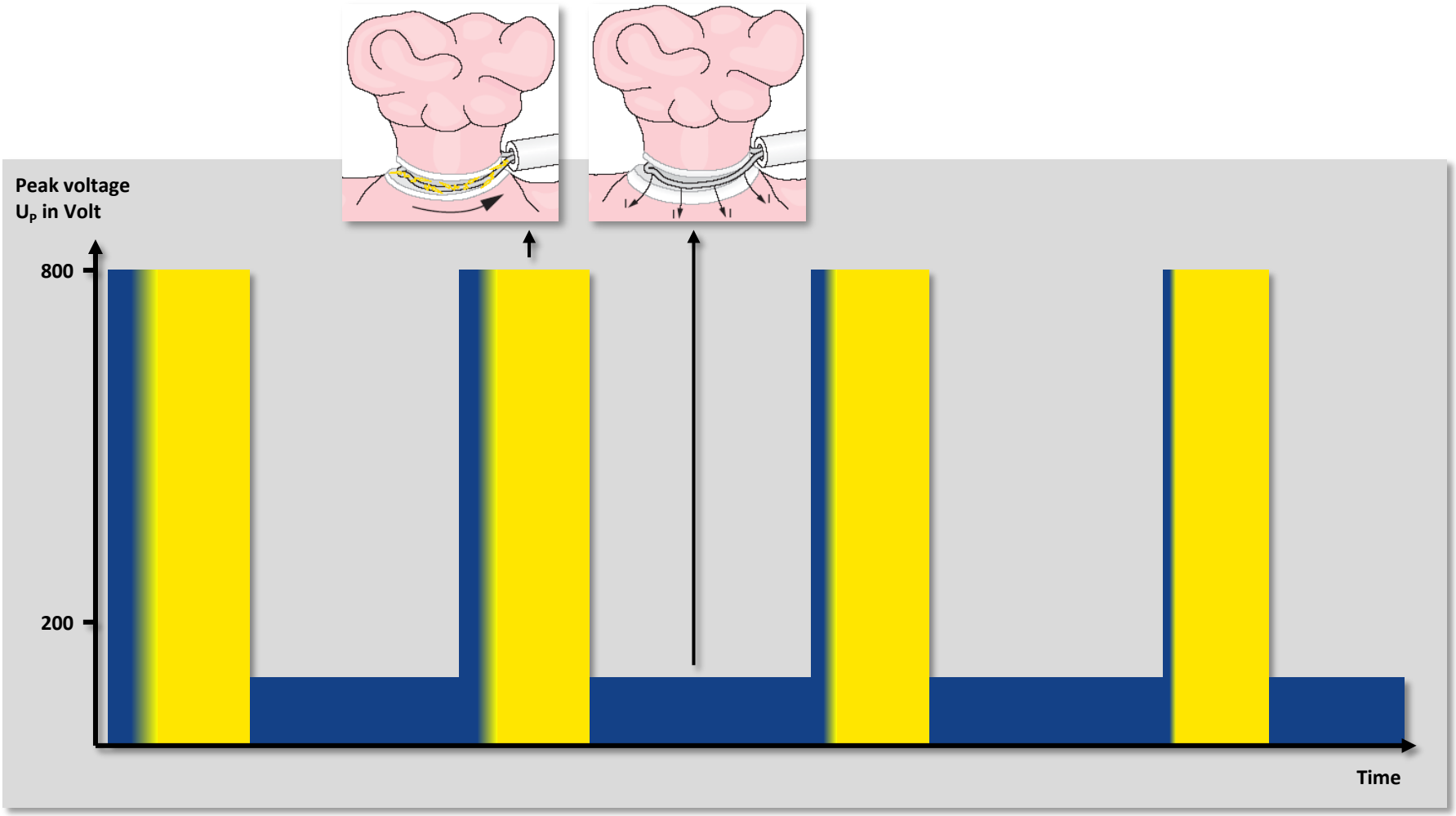
endoCUT I
for papillotomes



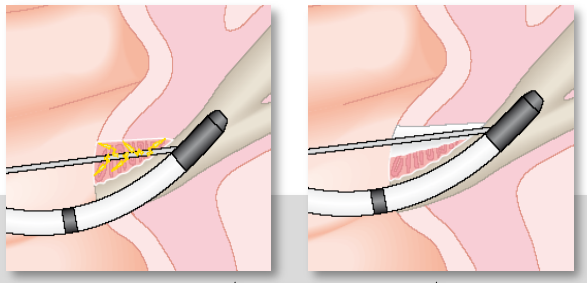


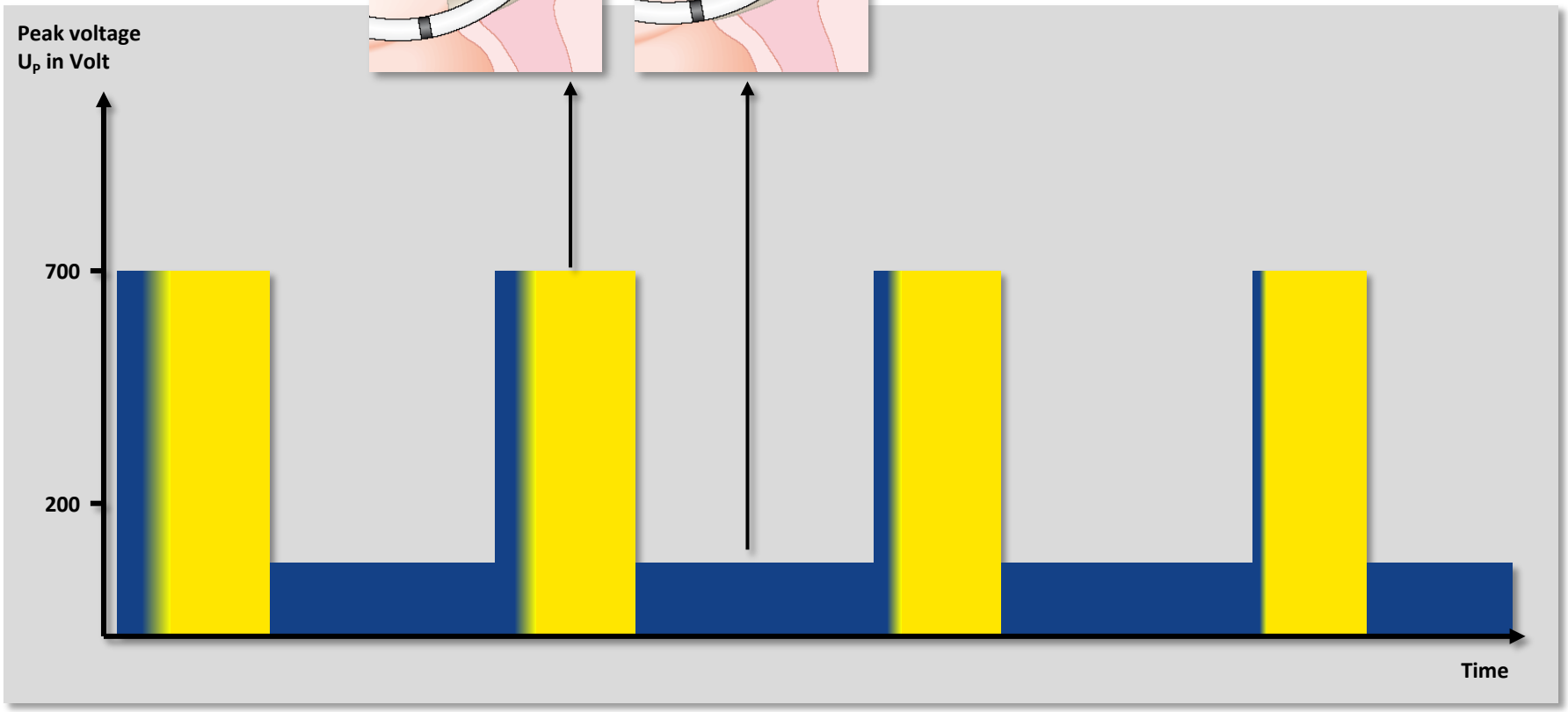
endoCUT Q
for polypectomy
loops (and ESD)

endoCUT Q



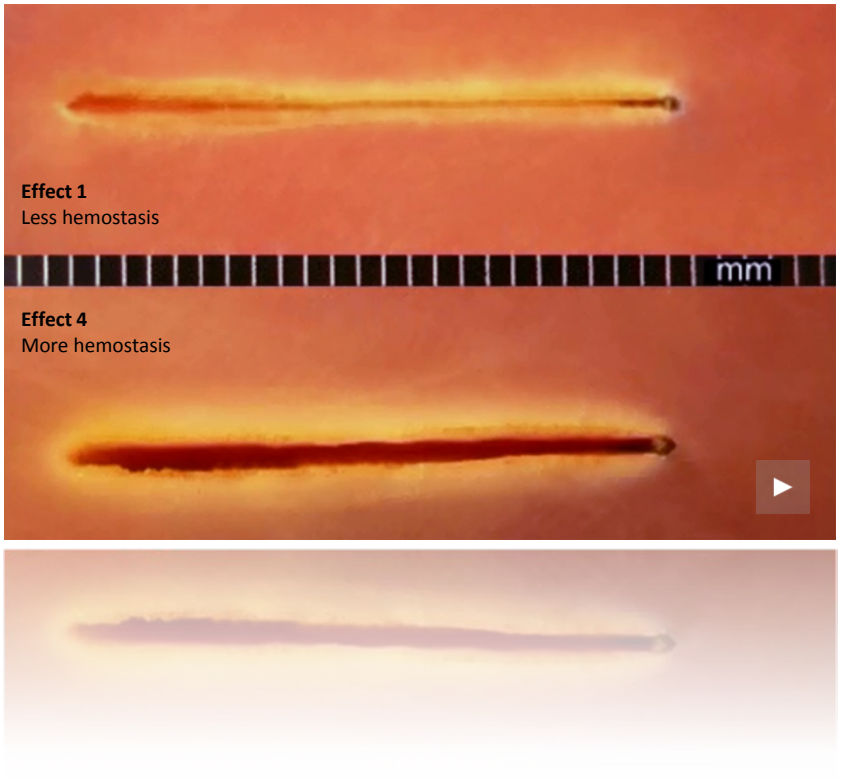
endoCUT I





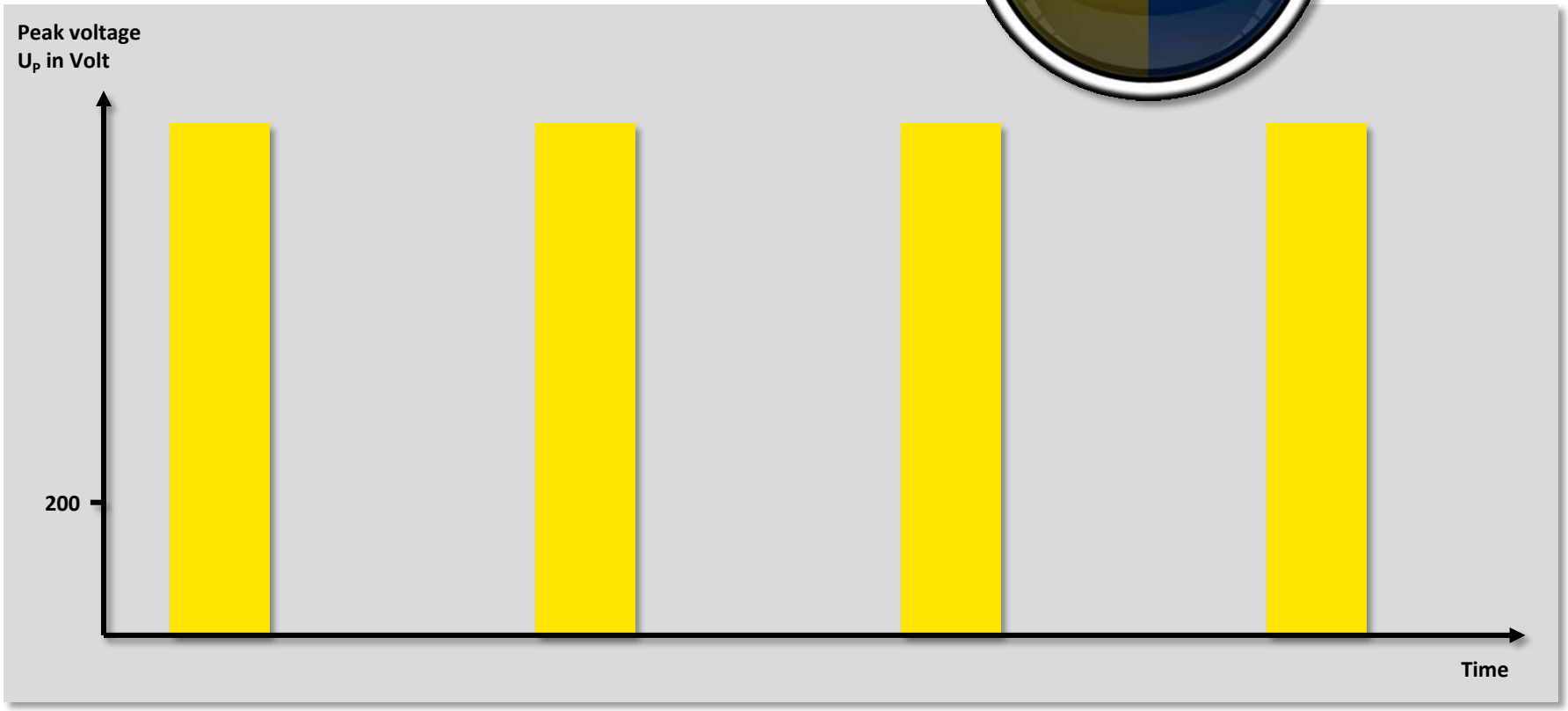
endoCUT effects

The intensity of the coagulation phase may be adjusted using effects 1-4



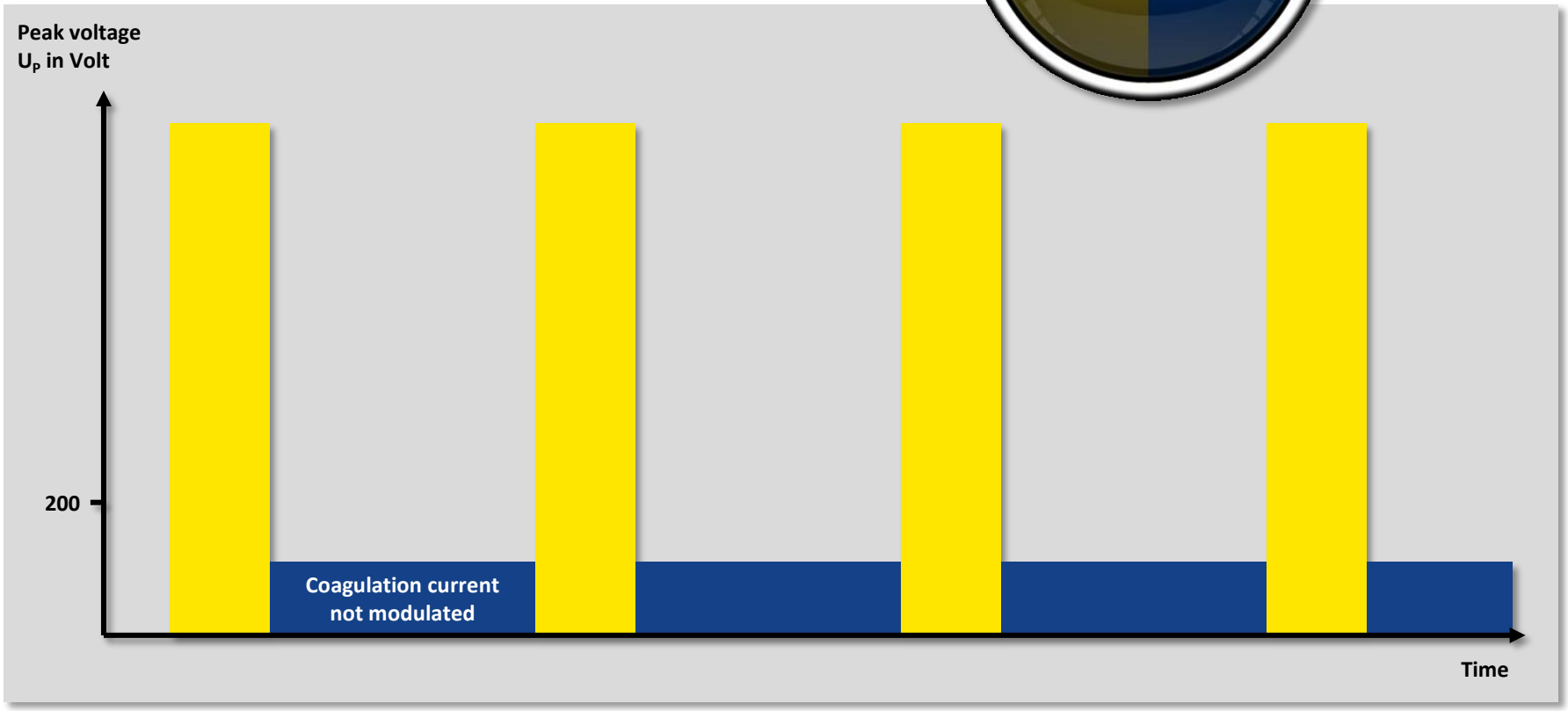
endoCUT effects

Effect 1



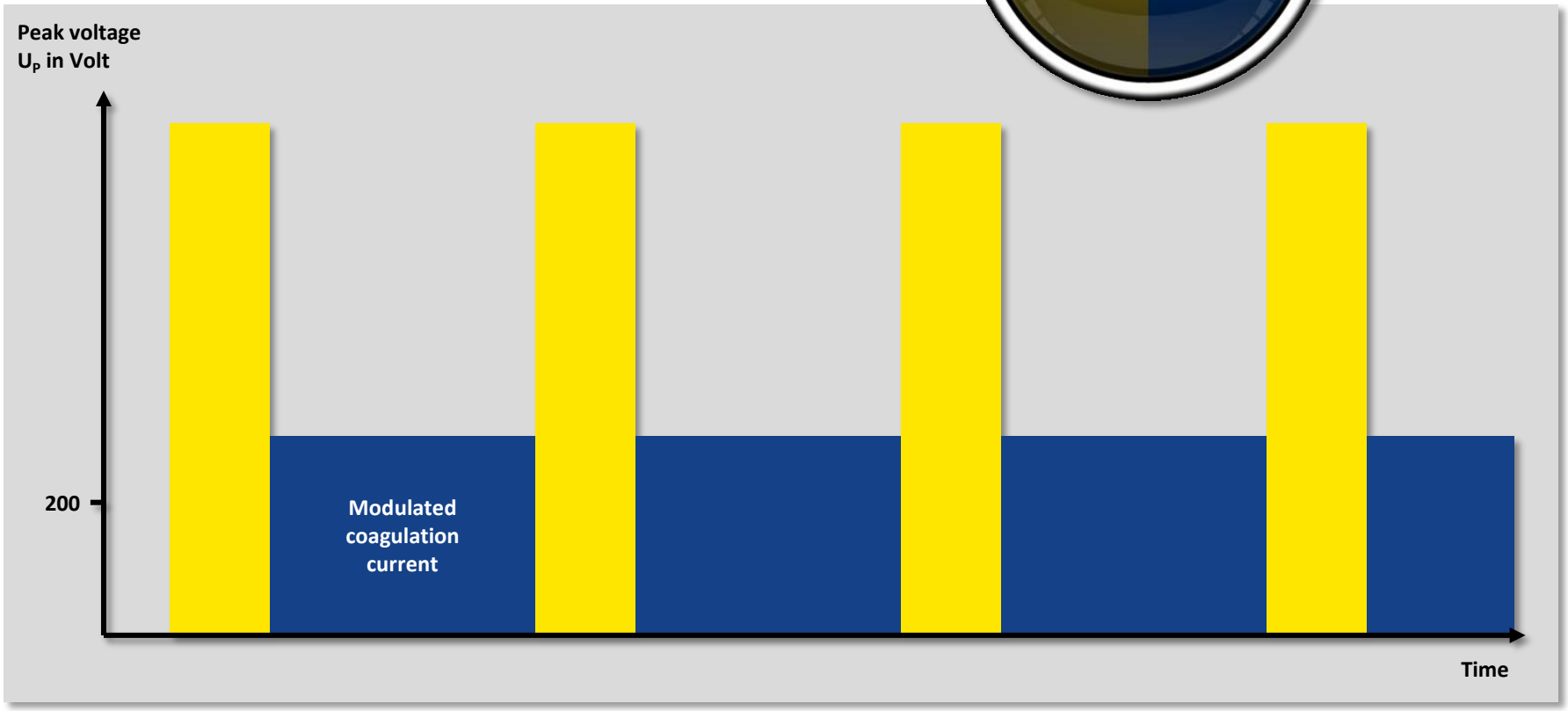
endoCUT effects

Effect 2



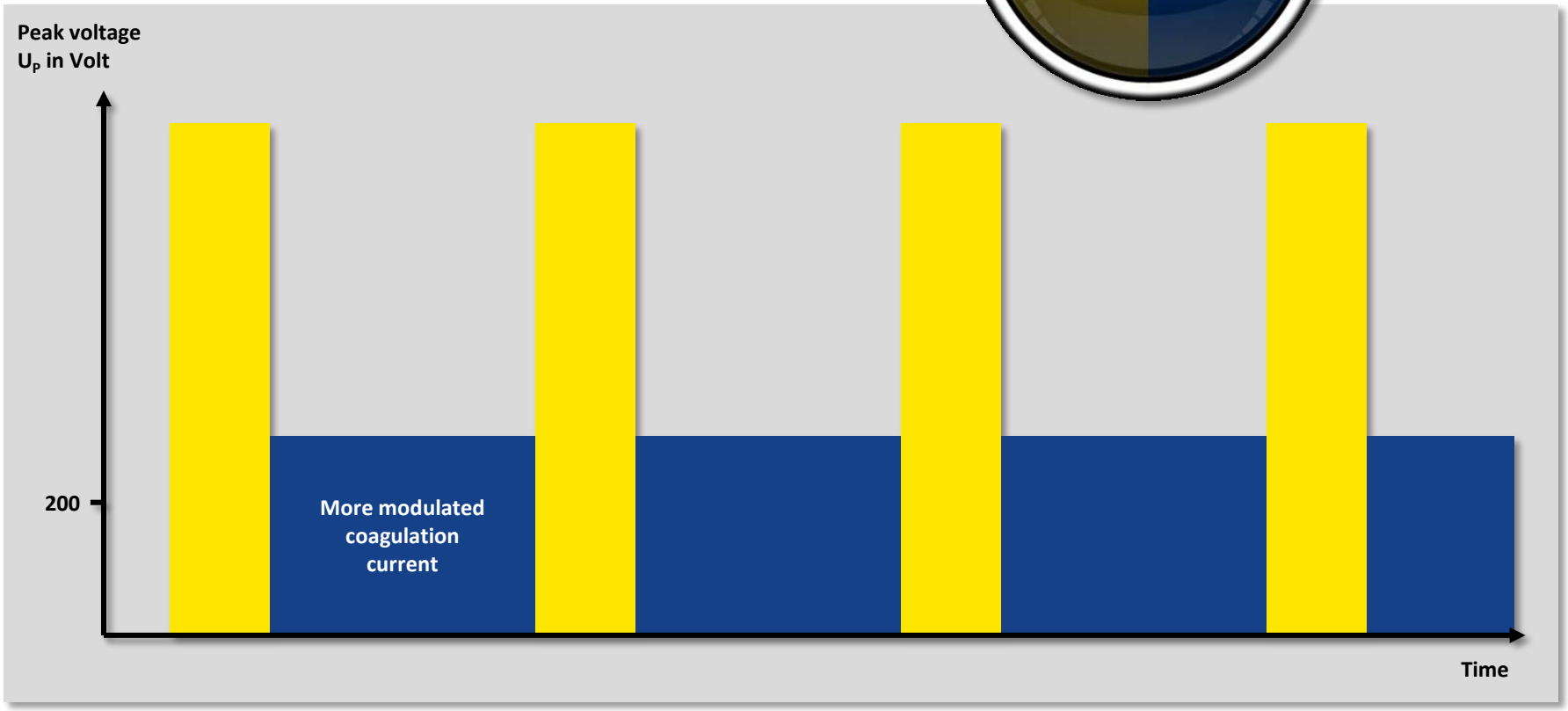
endoCUT effects

Effect 3



endoCUT effects

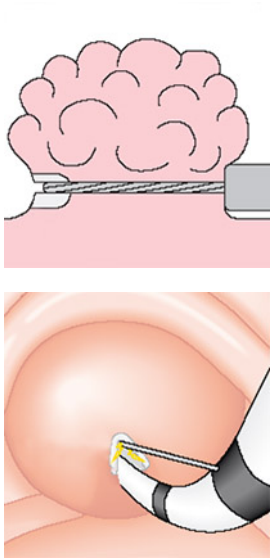
Effect 4



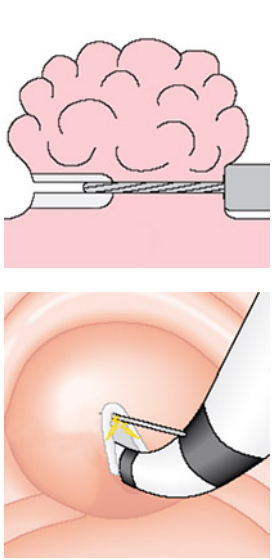
endoCUT cut duration

Cut duration 1-4

Cut duration 1
low incision depth

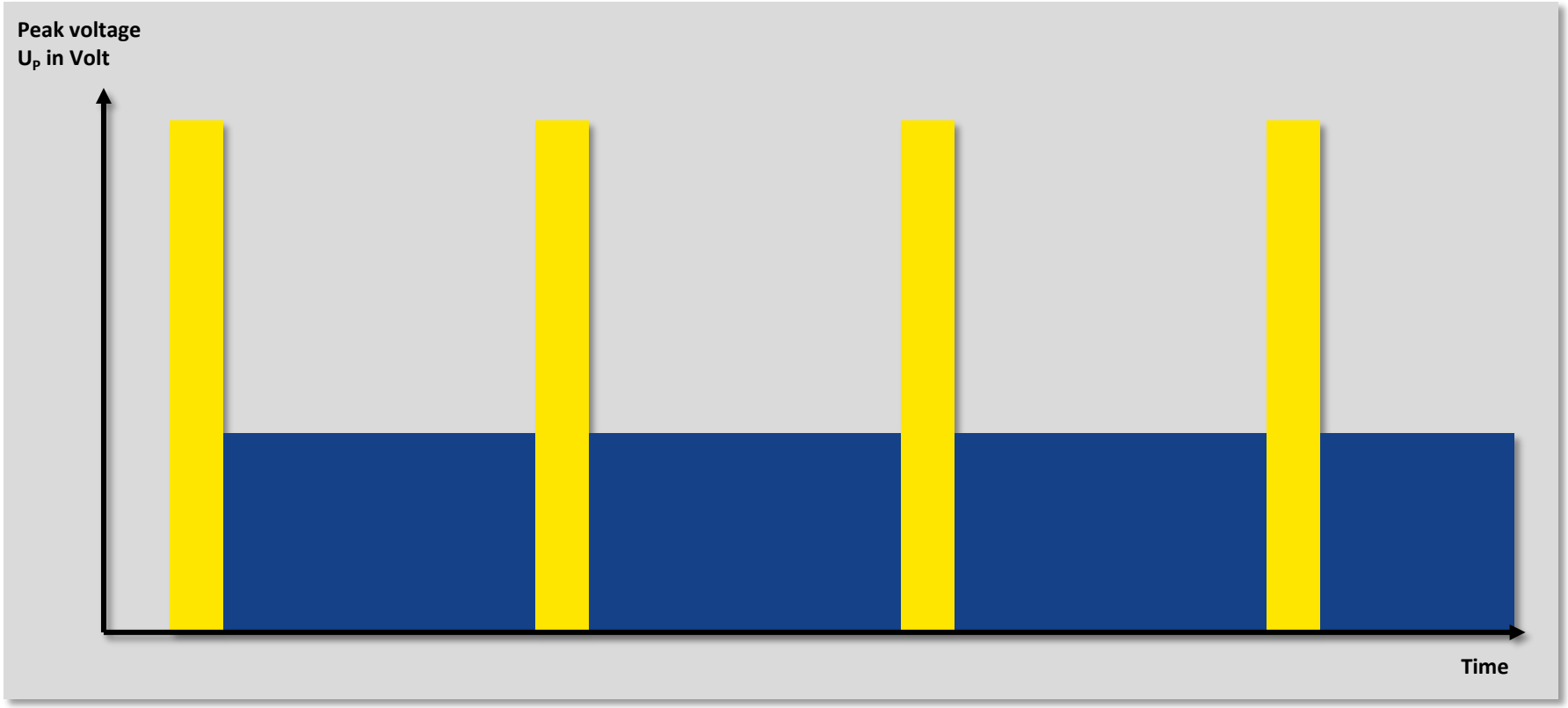


Cut duration 4
greater incision depth



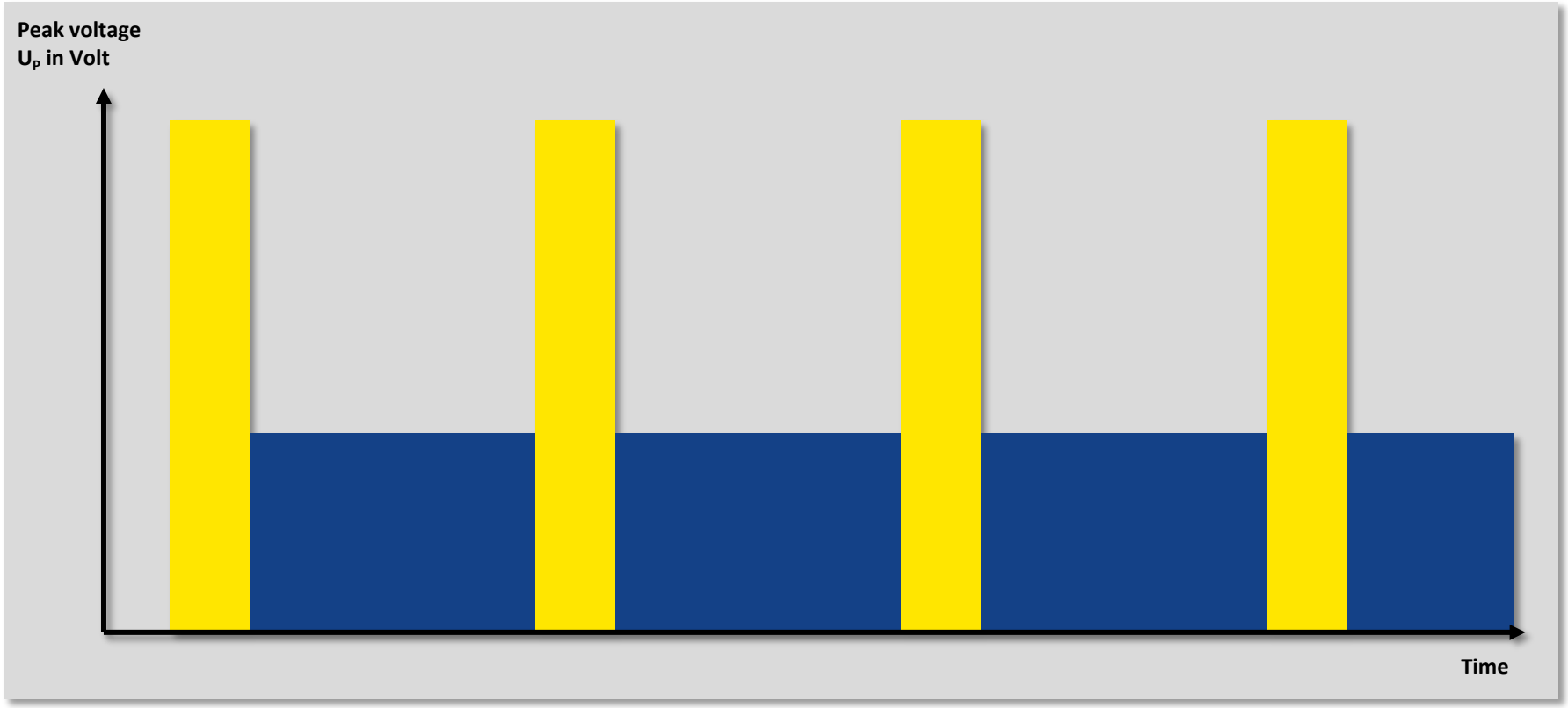
endoCUT cut duration

Cut duration 1



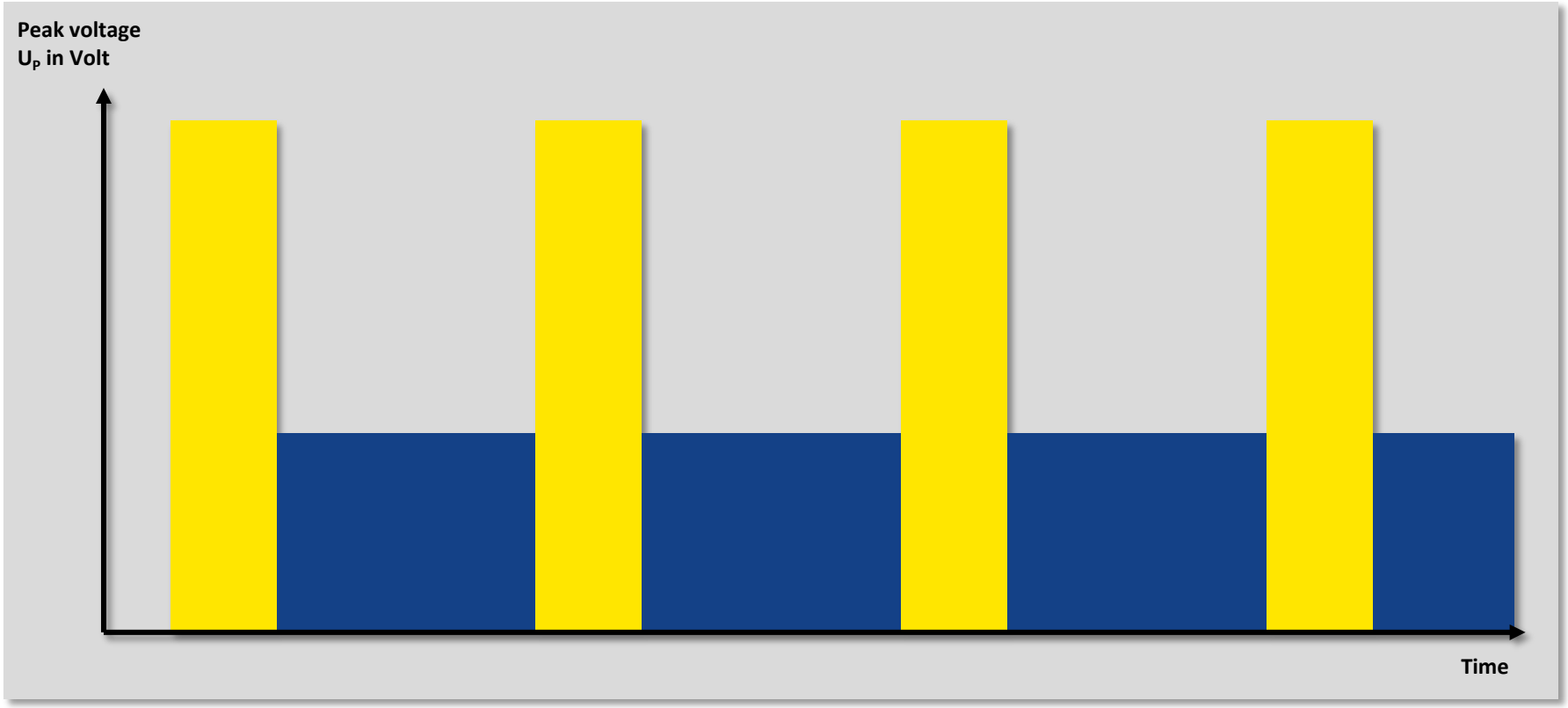
endoCUT cut duration

Cut duration 2



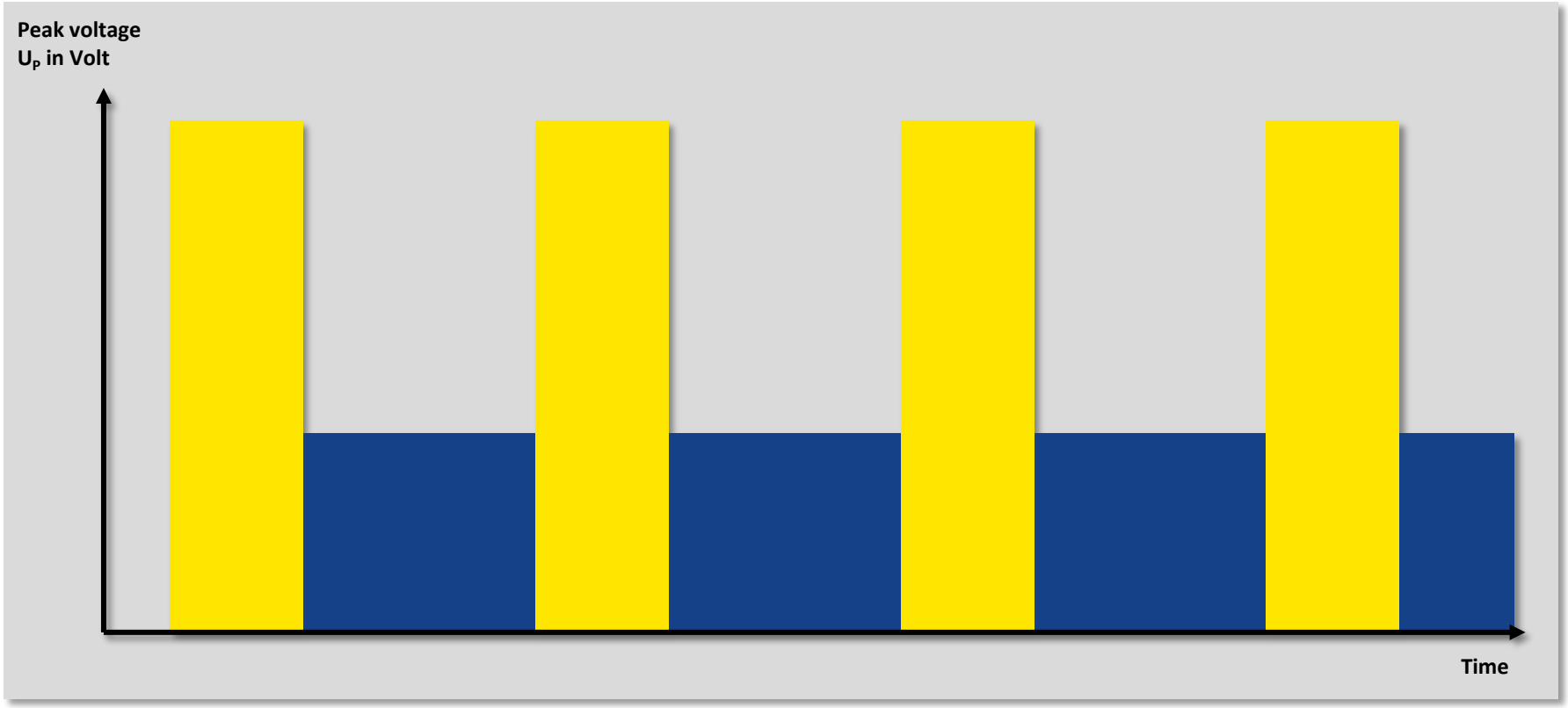
endoCUT cut duration

Cut duration 3



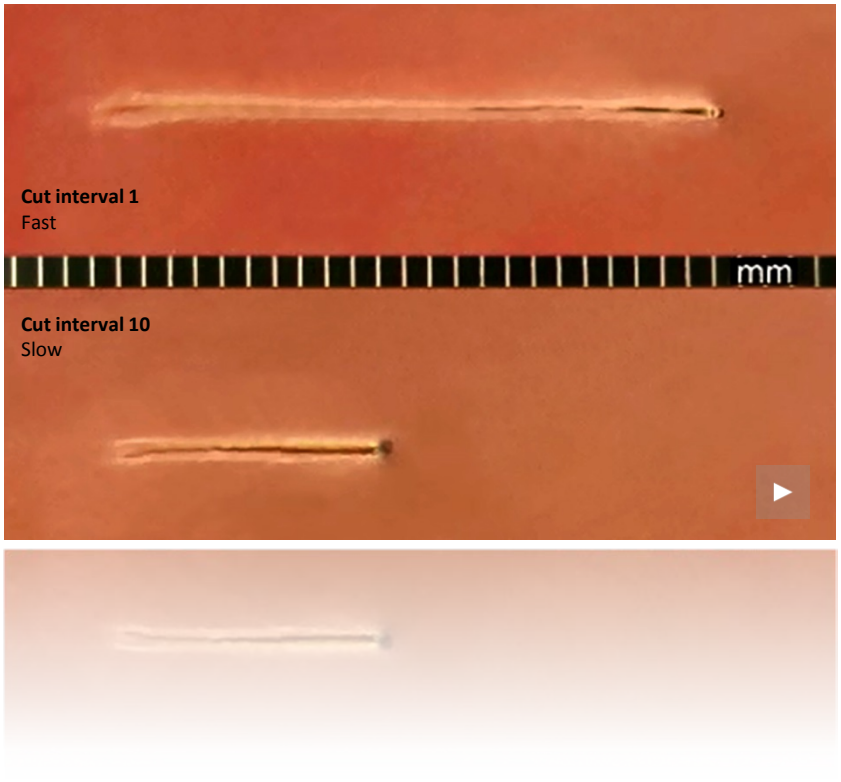
endoCUT cut duration

Cut duration 4



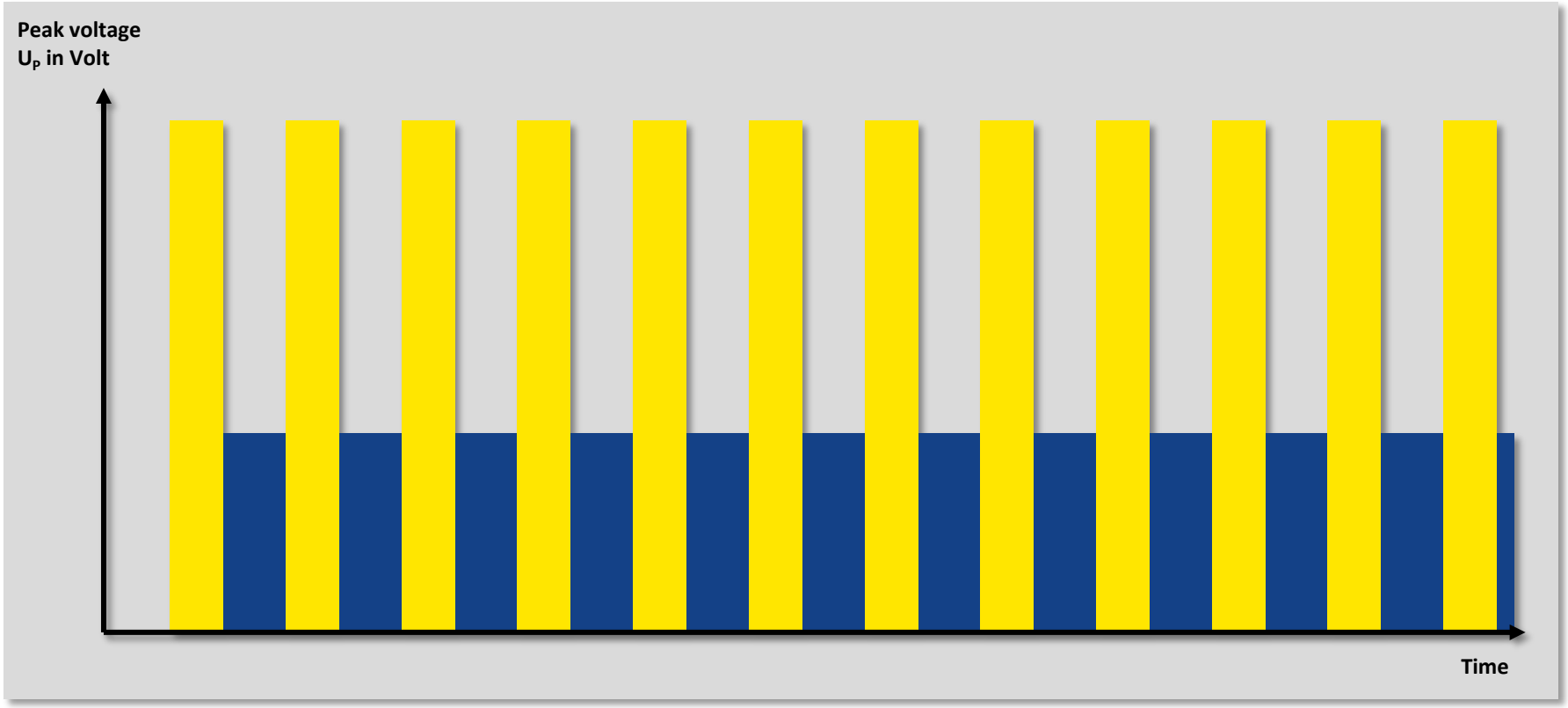
endoCUT cut interval

The cutting speed may be adjusted with the cut interval 1-10.



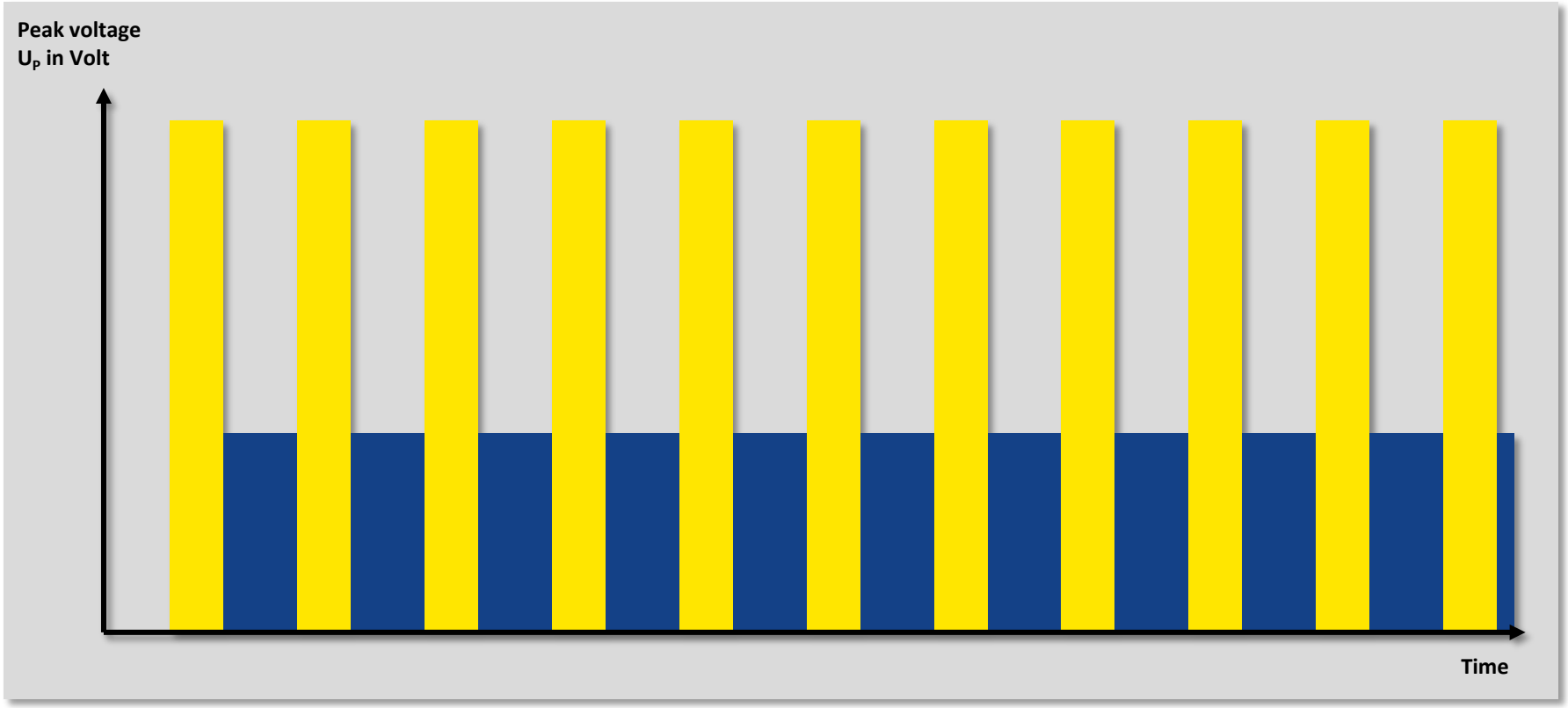
endoCUT cut interval

Cut interval 1



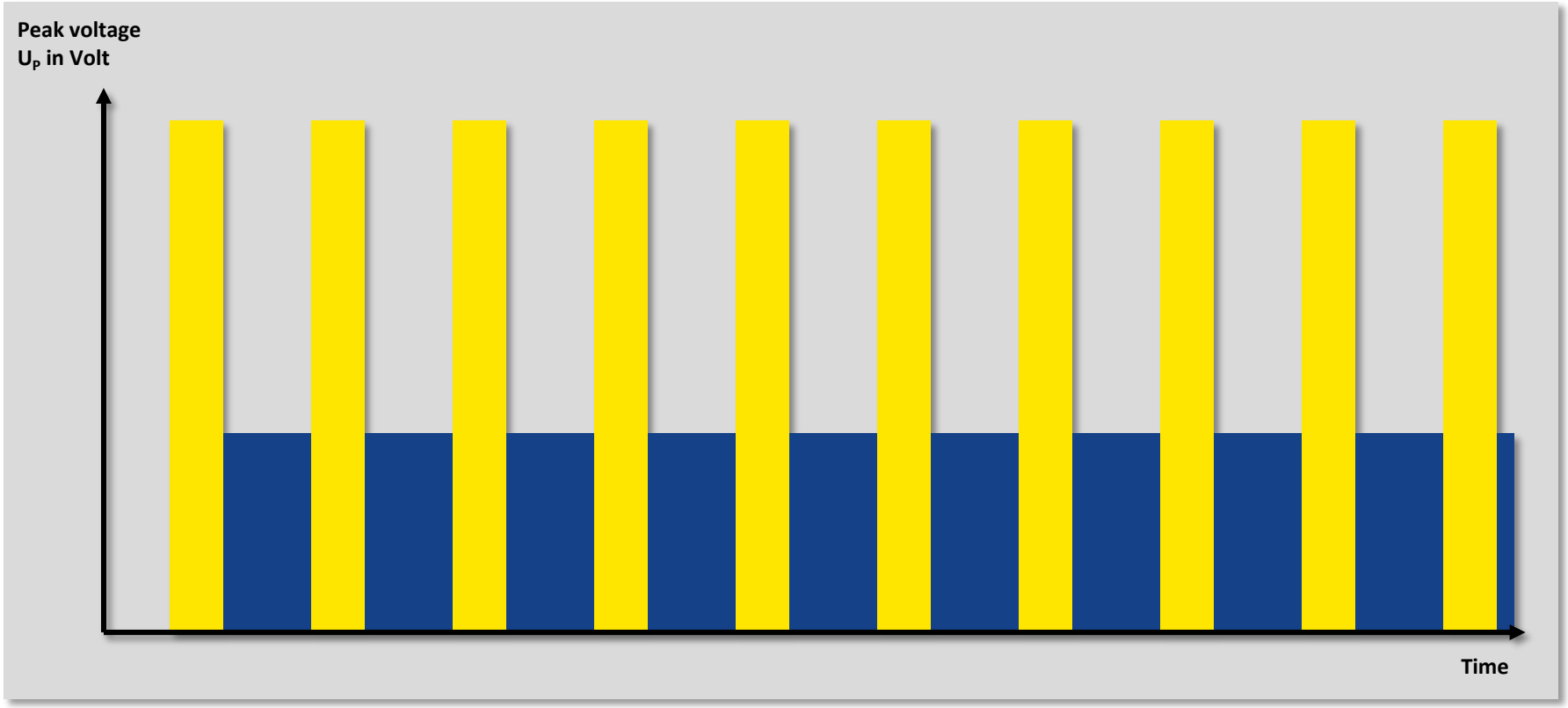
endoCUT cut interval

Cut interval 2



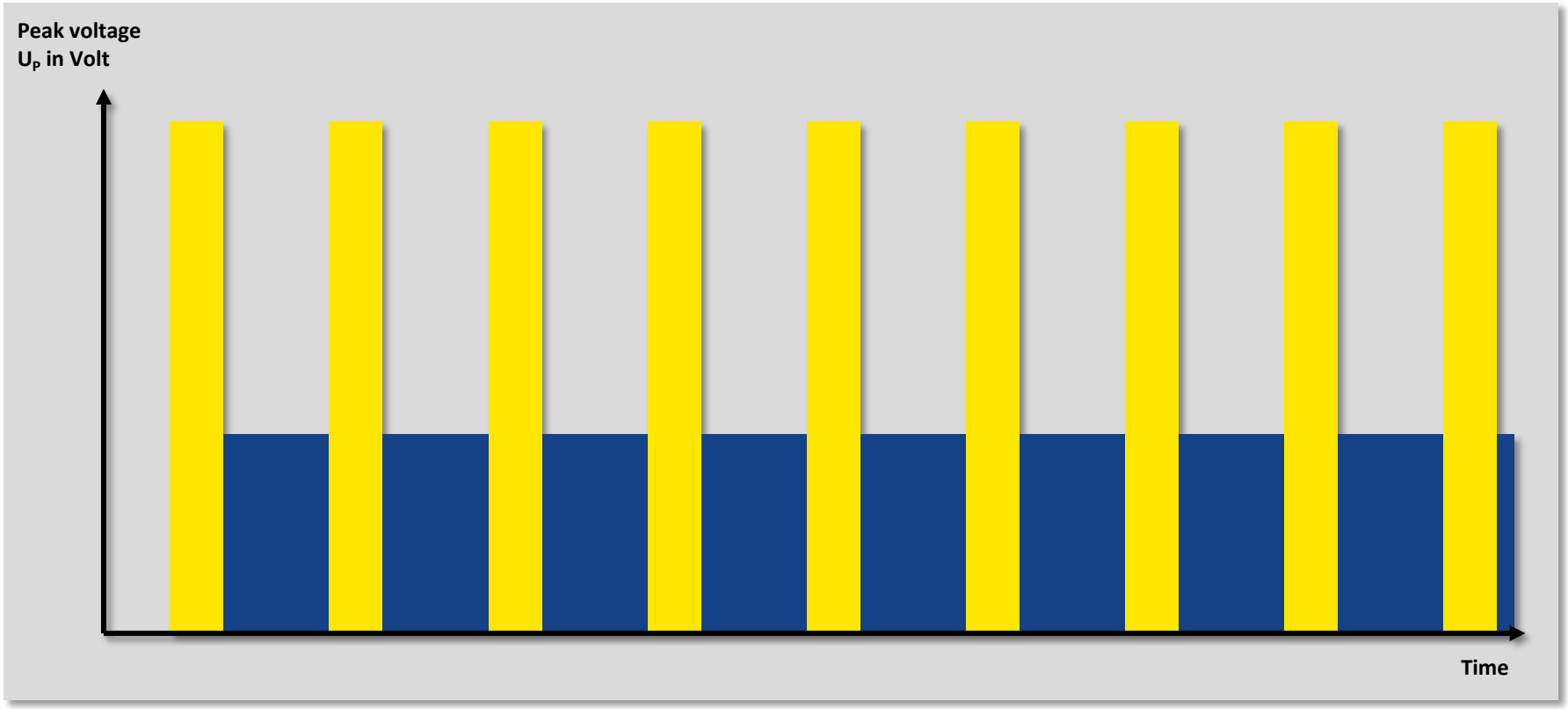
endoCUT cut interval

Cut interval 3



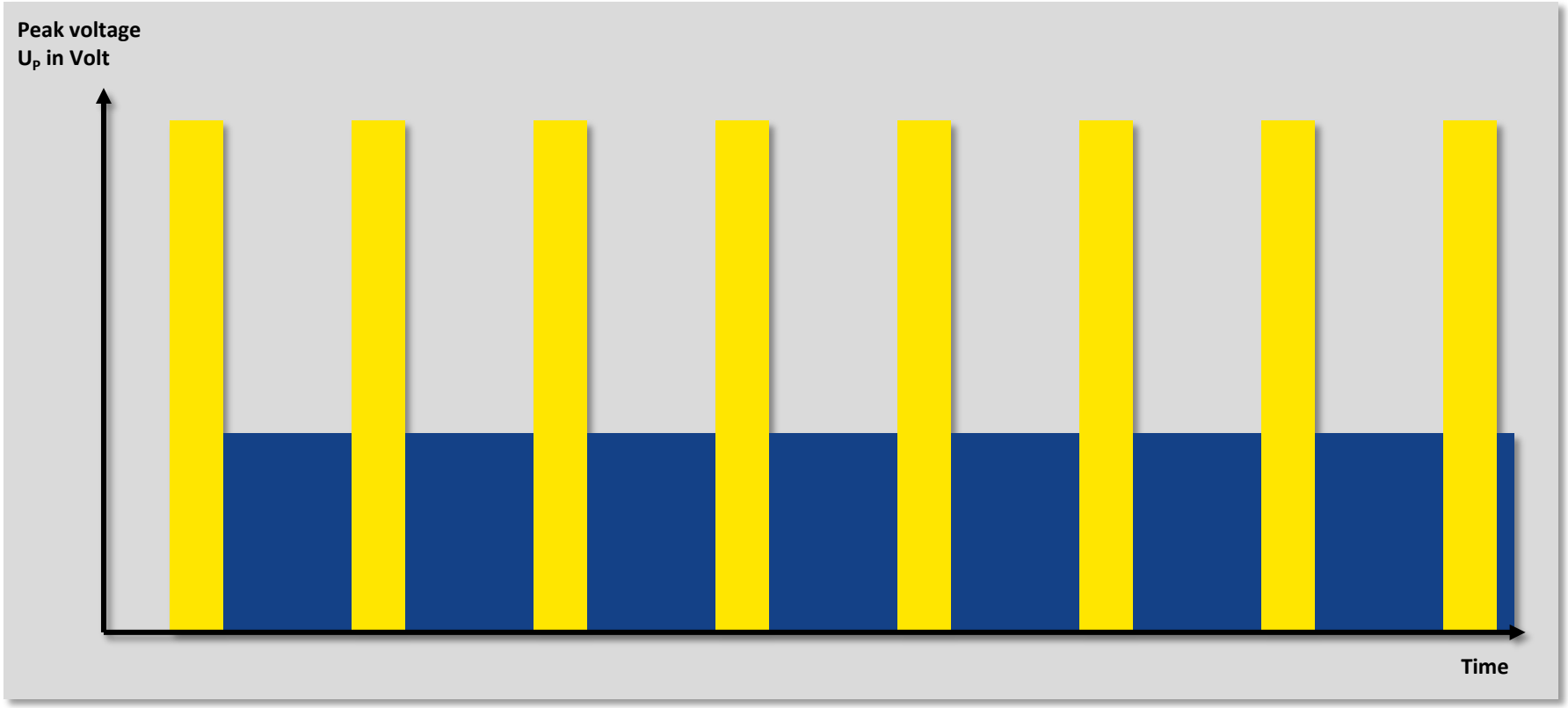
endoCUT cut interval

Cut interval 4



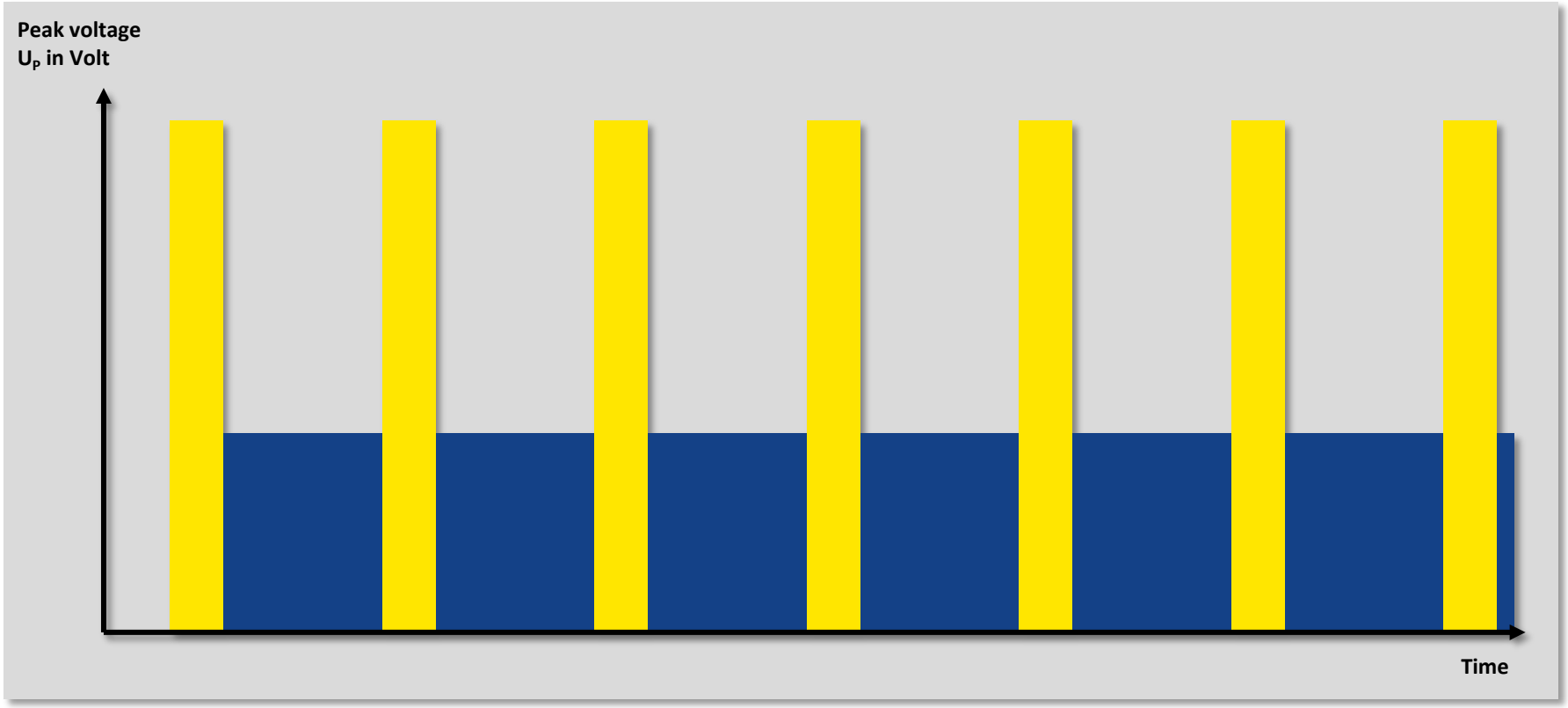
endoCUT cut interval

Cut interval 5



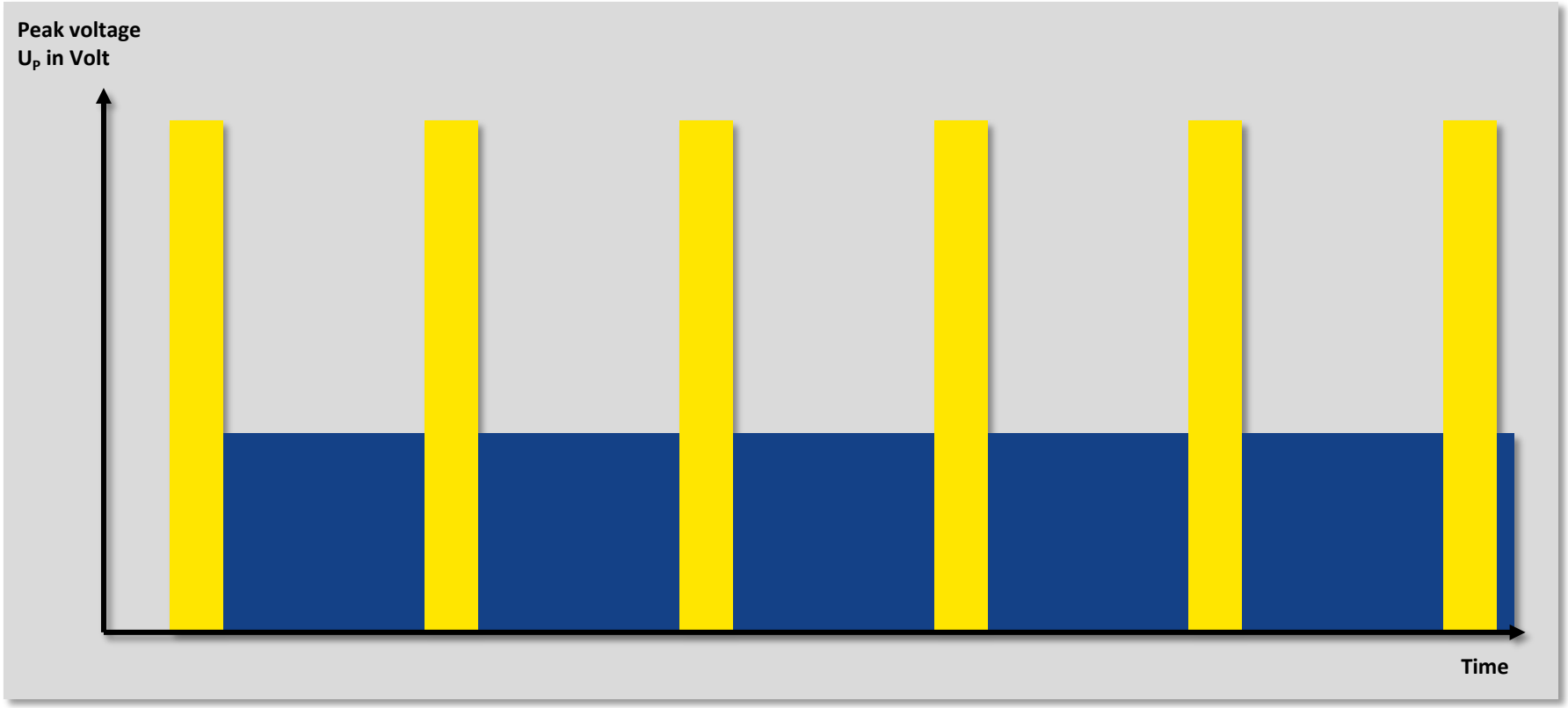
endoCUT cut interval

Cut interval 6



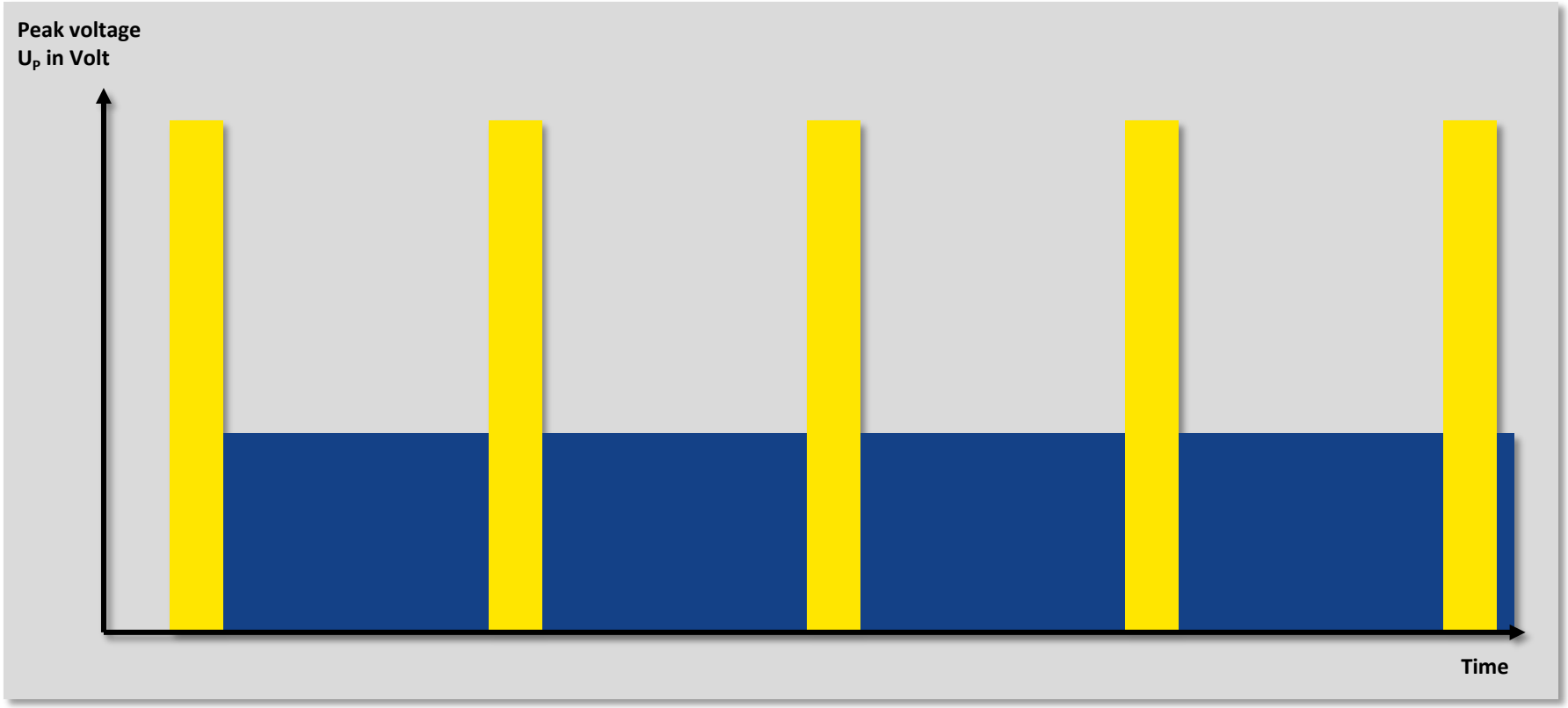
endoCUT cut interval

Cut interval 7



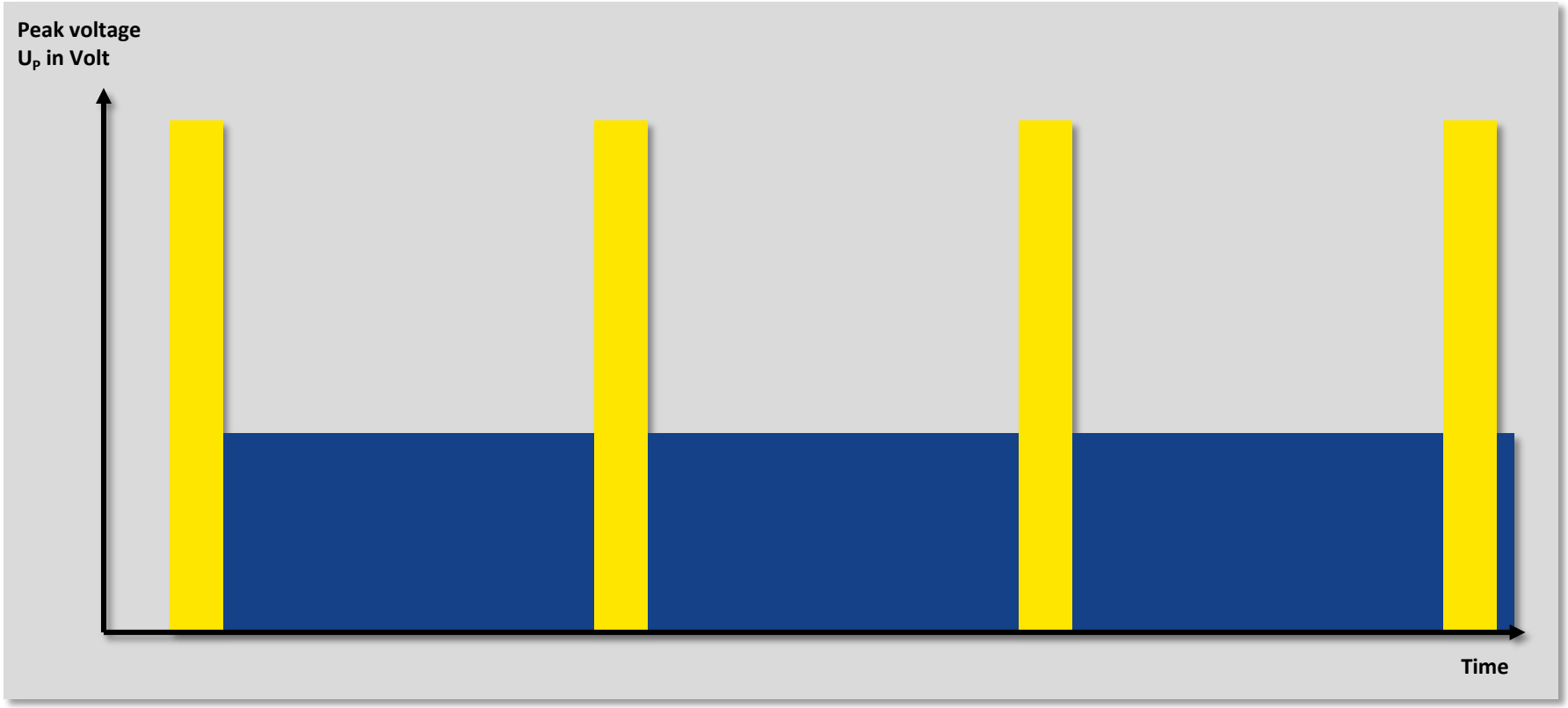
endoCUT cut interval

Cut interval 8



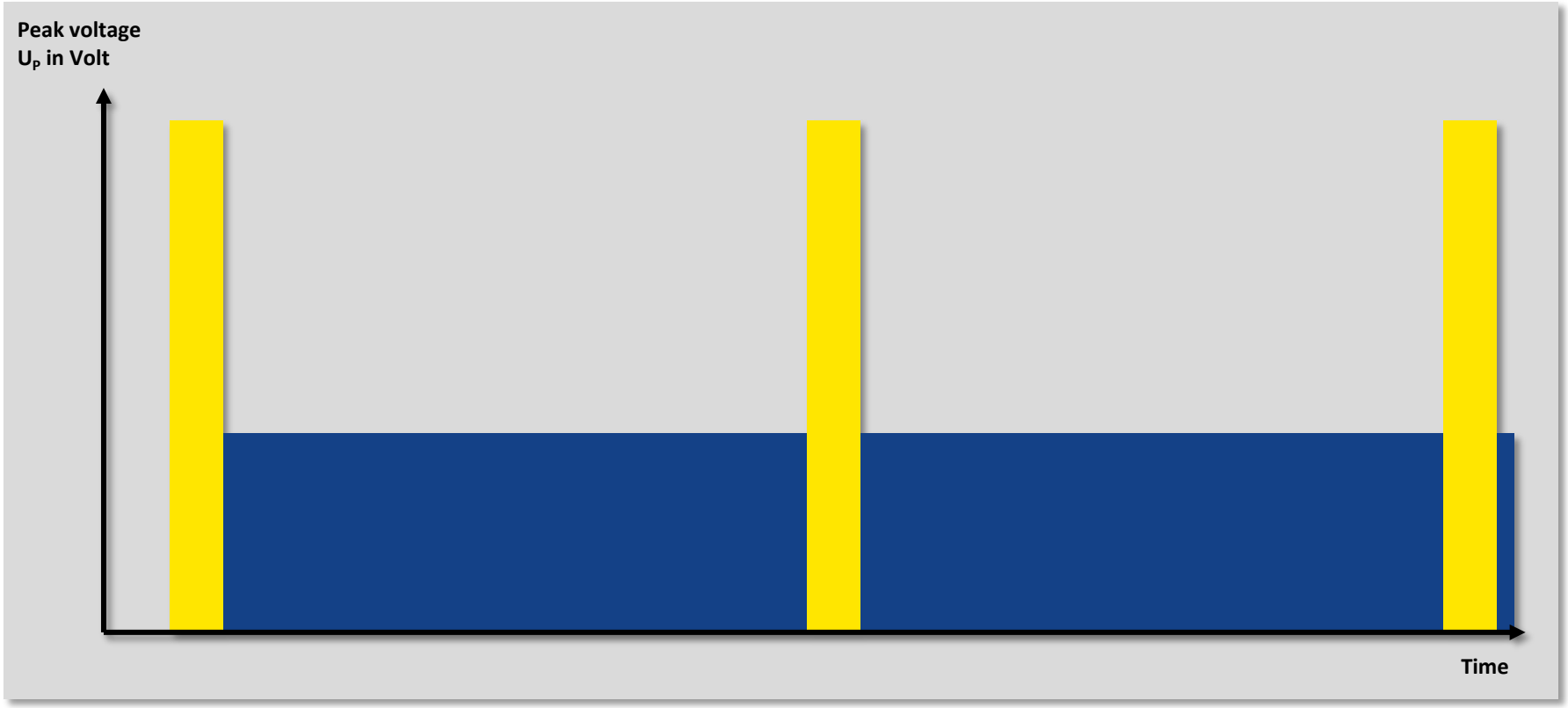
endoCUT cut interval

Cut interval 9

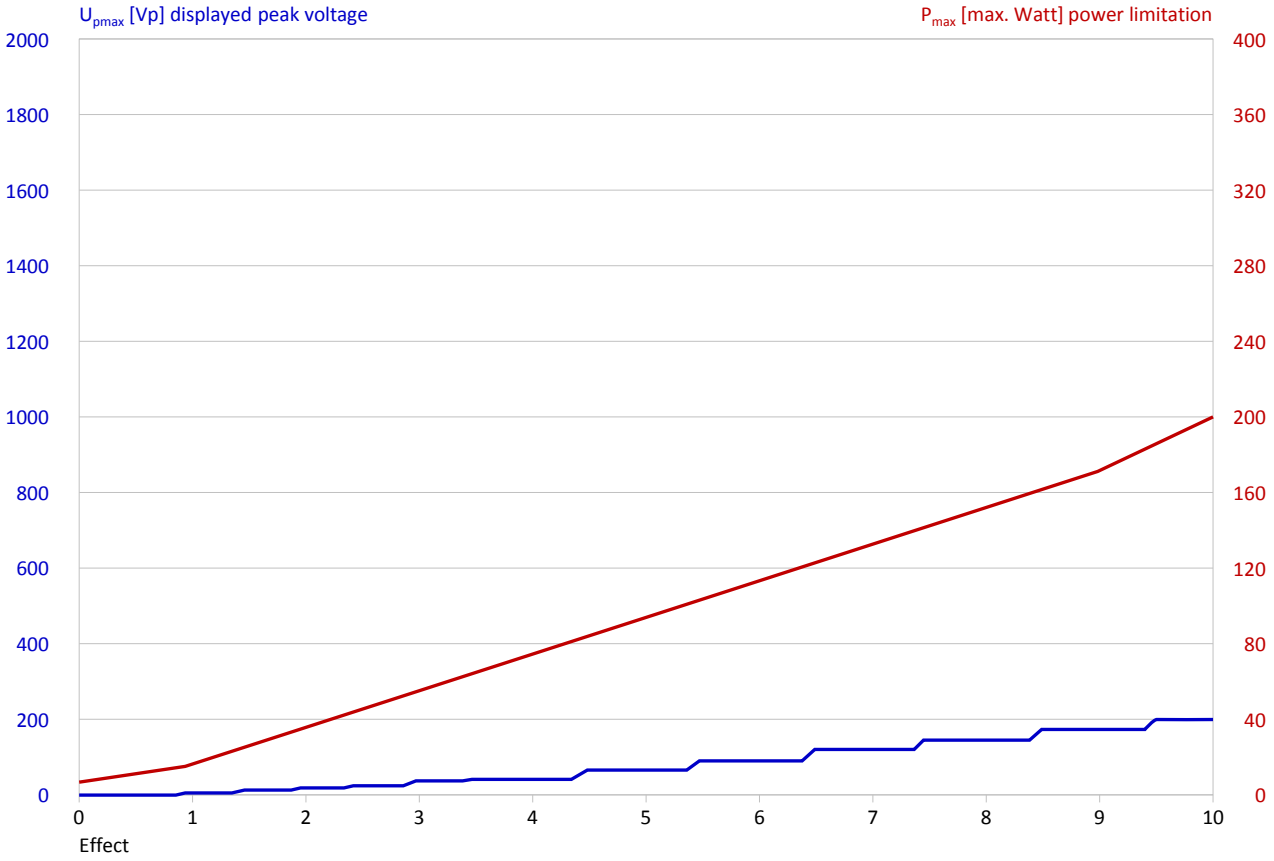


endoCUT cut interval

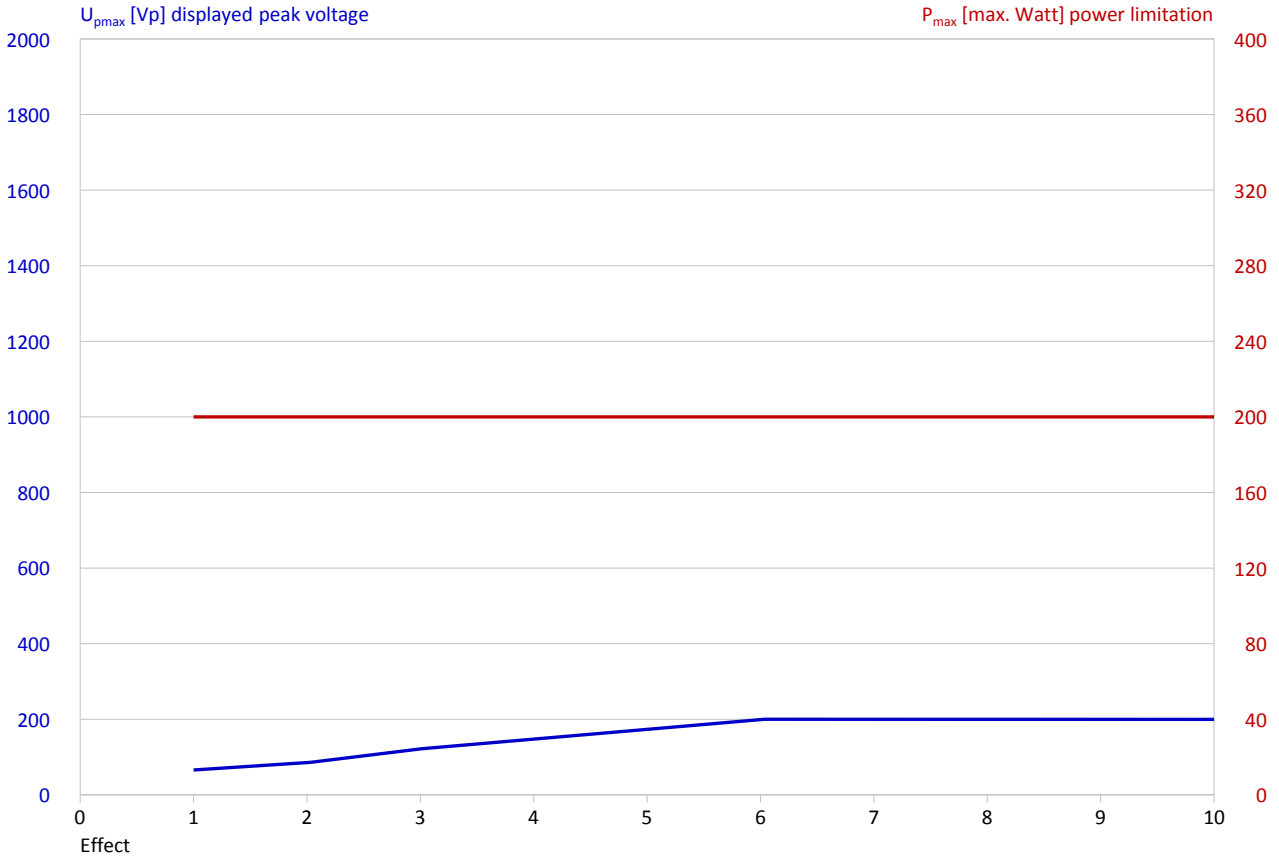
Cut interval 10



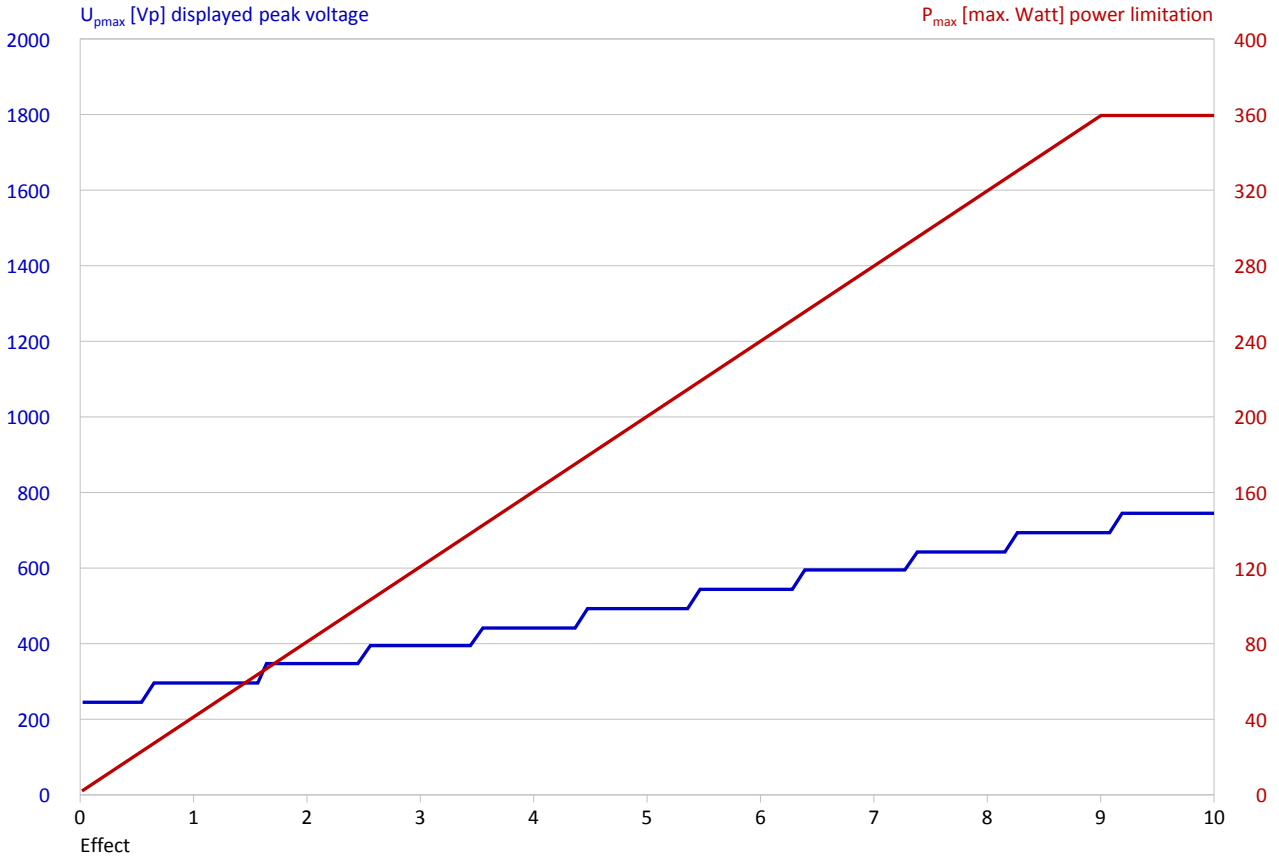
softCOAG and softCOAG bipolar



softCOAG bipolar (bipolar resectoscopes)



autoCUT


U_{pmax} [Vp] displayed peak voltage
P_{max} [max. Watt] power limitation
2000
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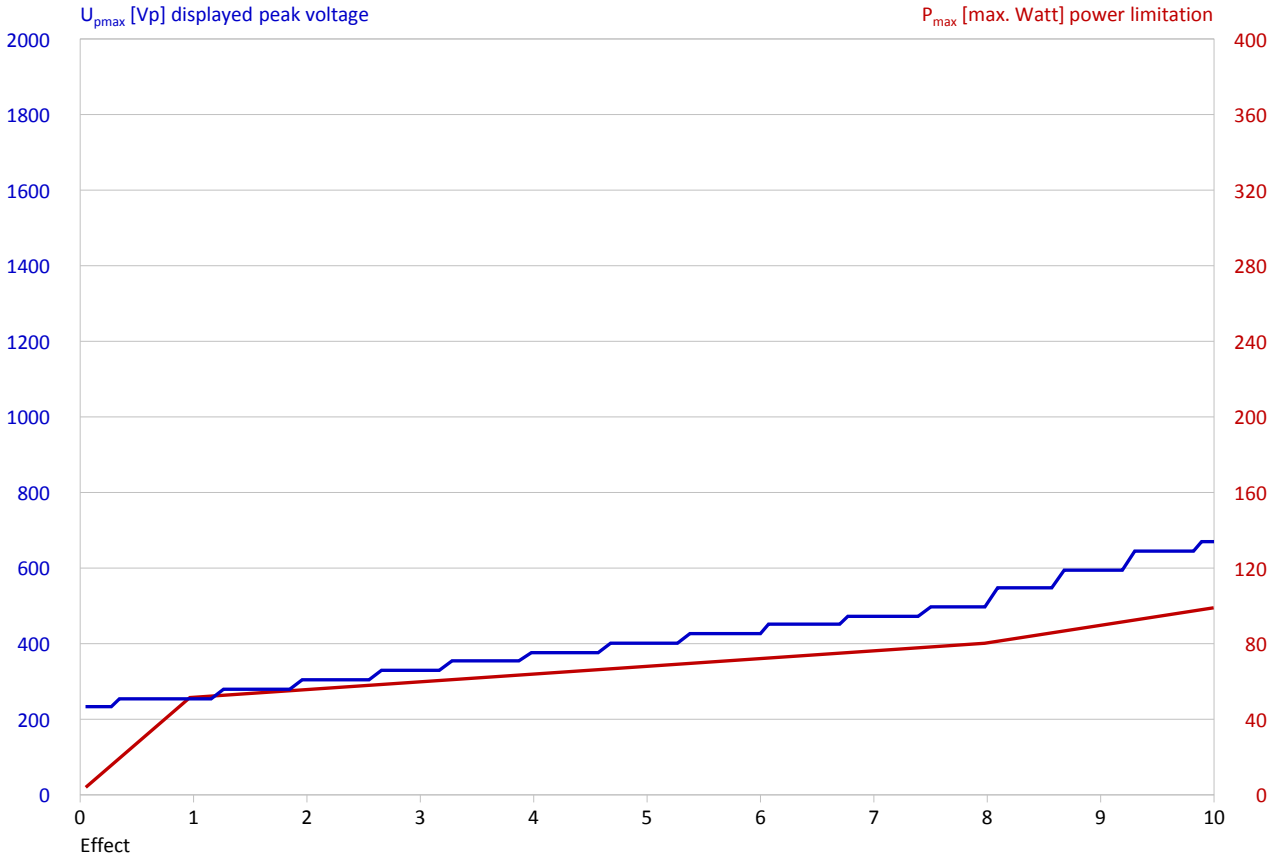
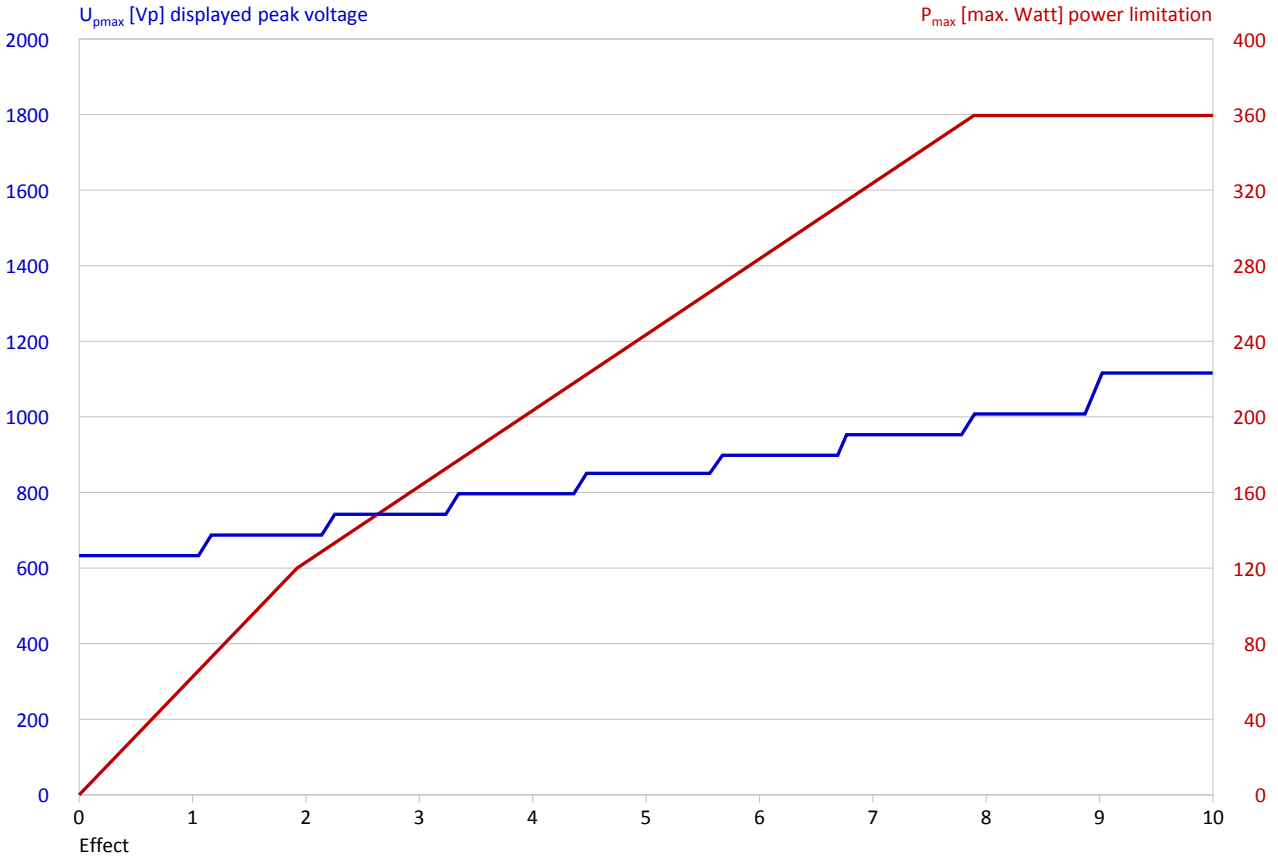
Effect

autoCUT bipolar



highCUT


U_{pmax} [Vp] displayed peak voltage
P_{max} [max. Watt] power limitation
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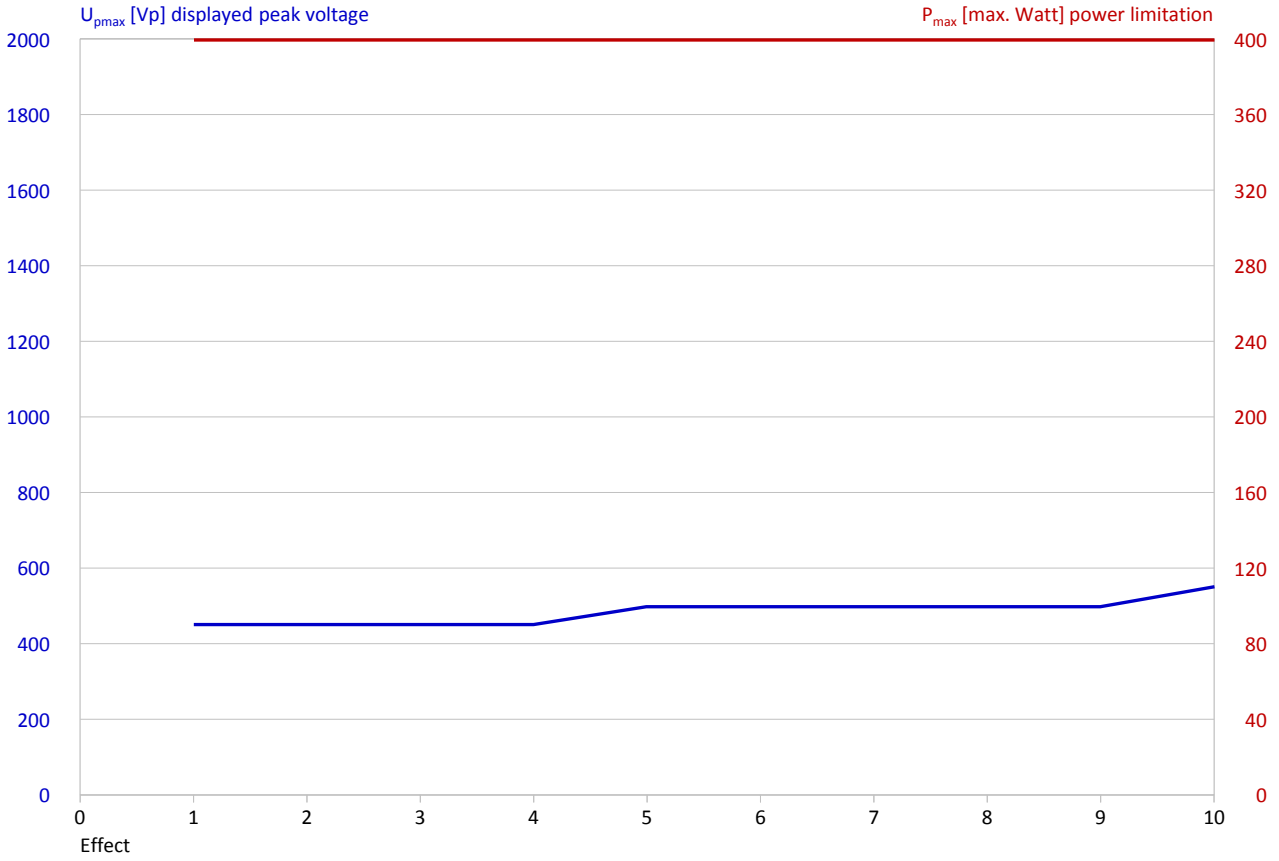
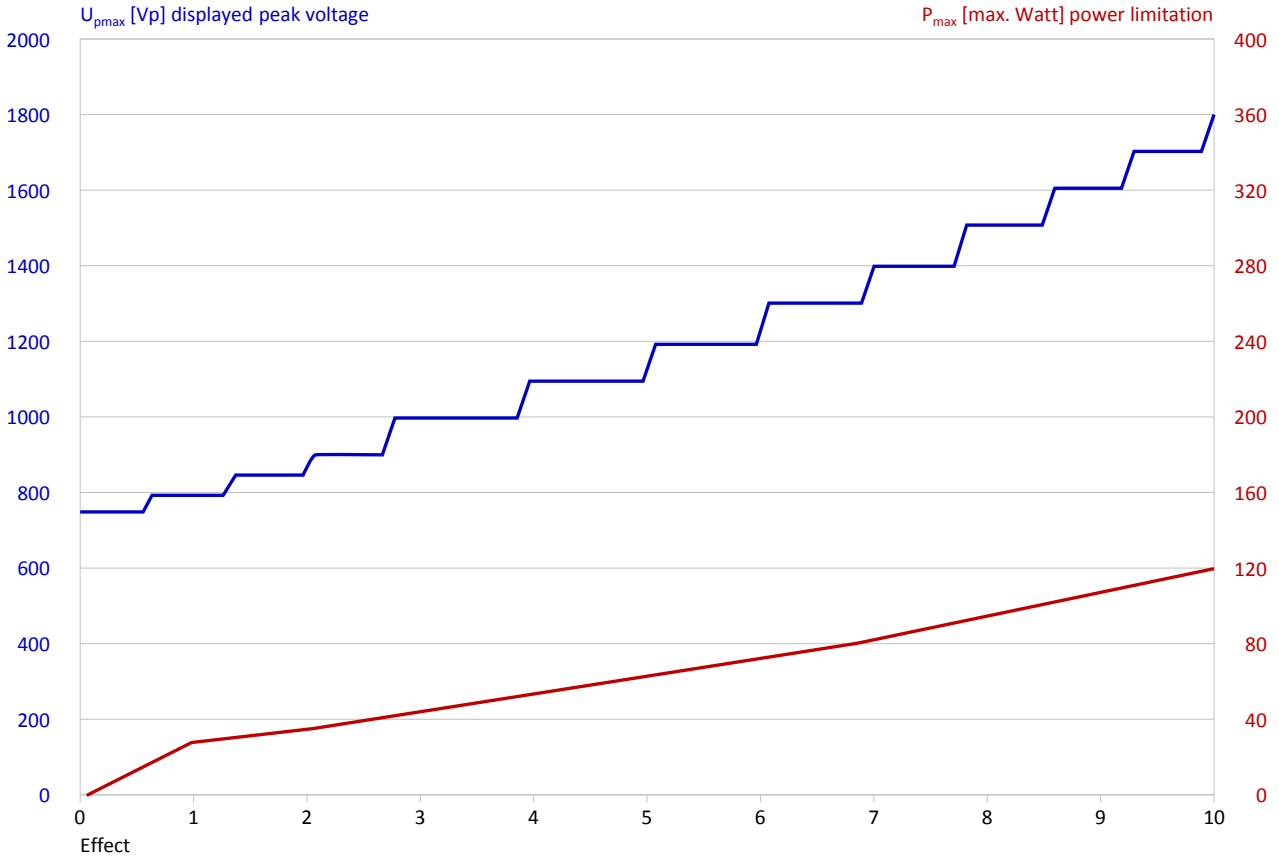
Effect

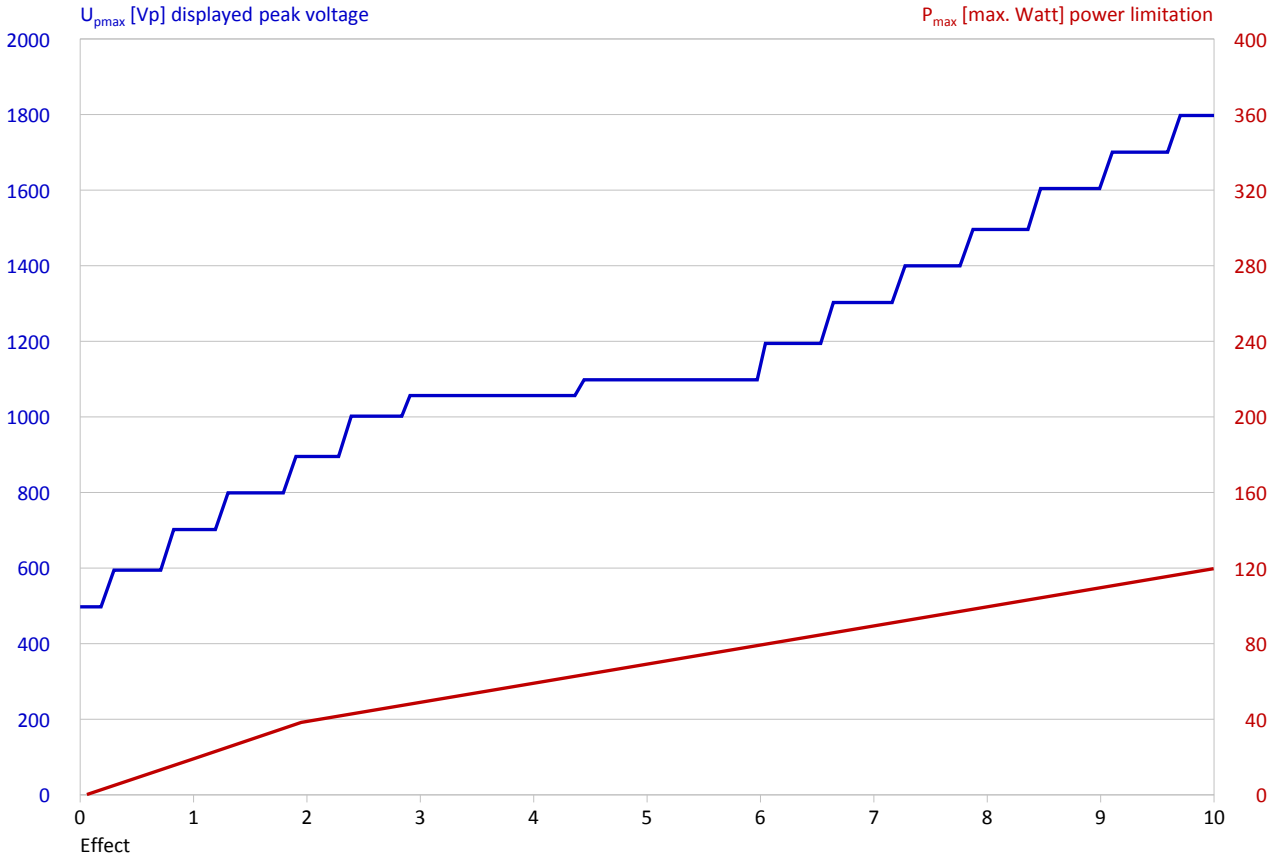
highCUT bipolar



preciseSECT



forcedCOAG


U_{pmax} [Vp] displayed peak voltage
P_{max} [max. Watt] power limitation
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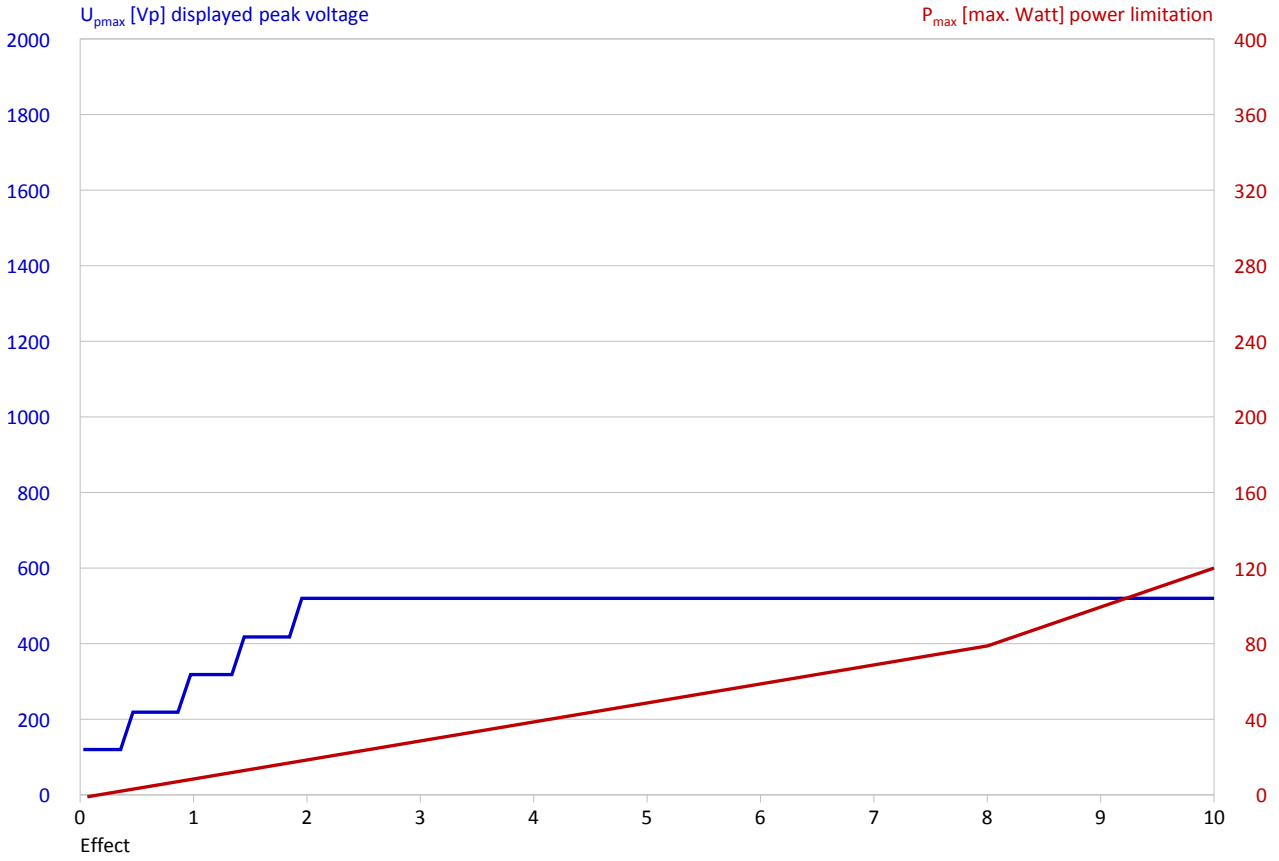
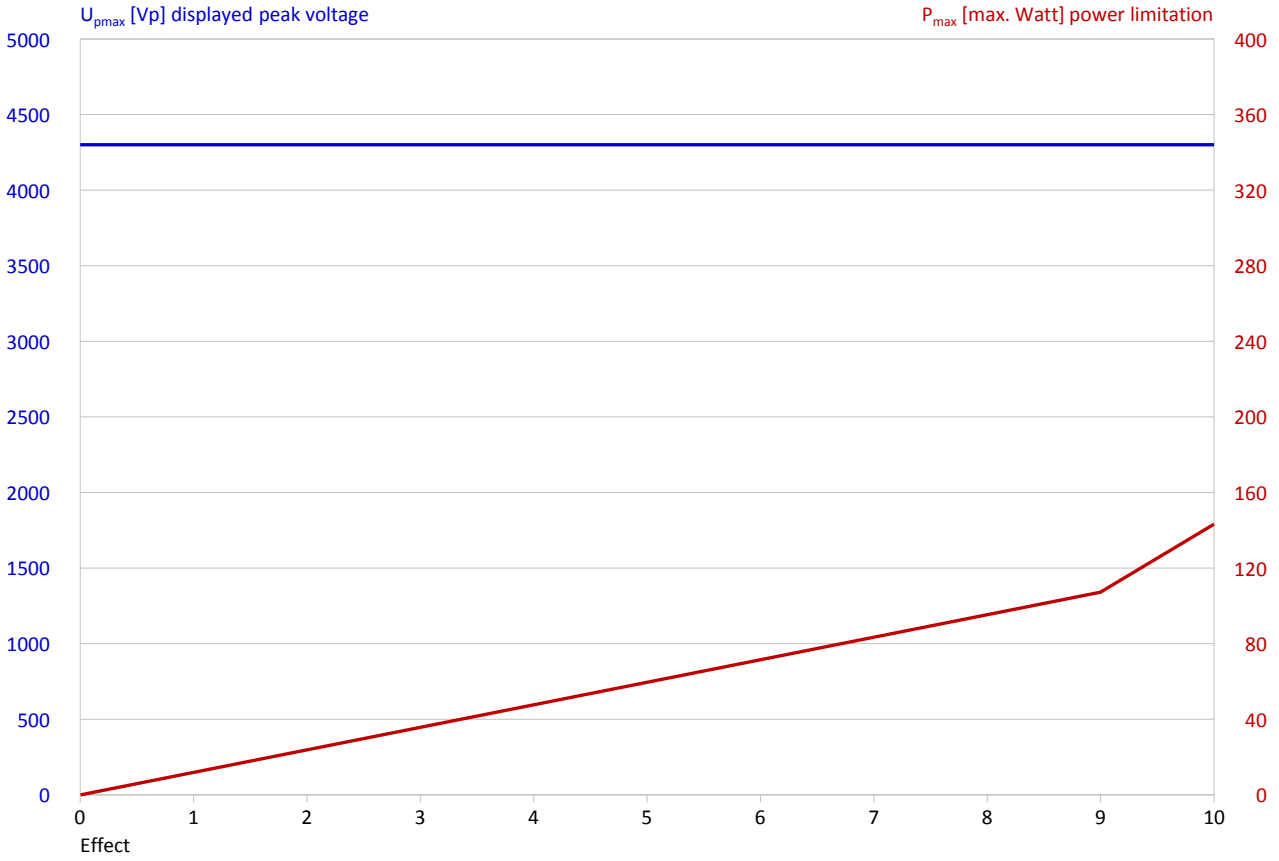
Effect

forcedCOAG bipolar



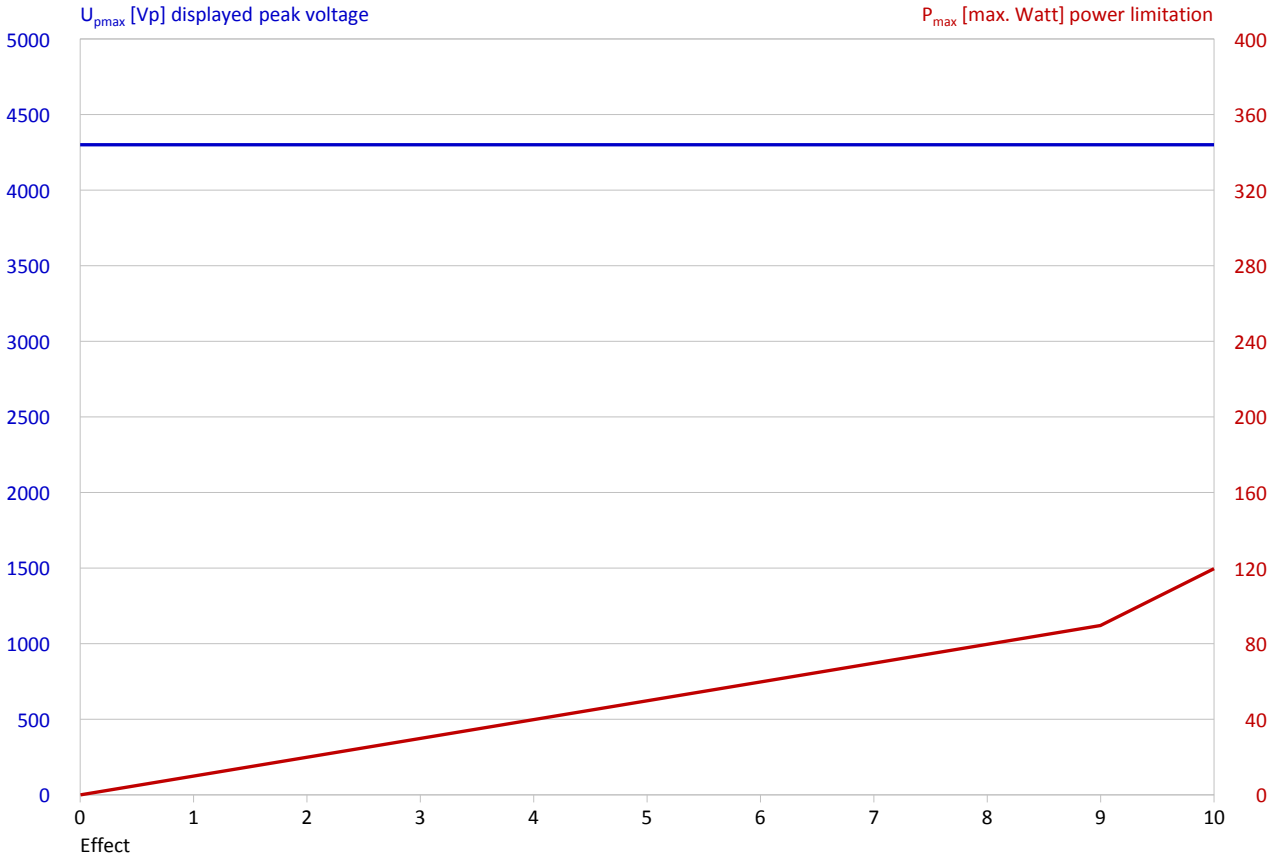
sprayCOAG



At this strongly modulated mode, the instrument used must meet the maximum dielectric strength also at low effect stages.

Therefore, the displayed peak voltage is the same for all effects.

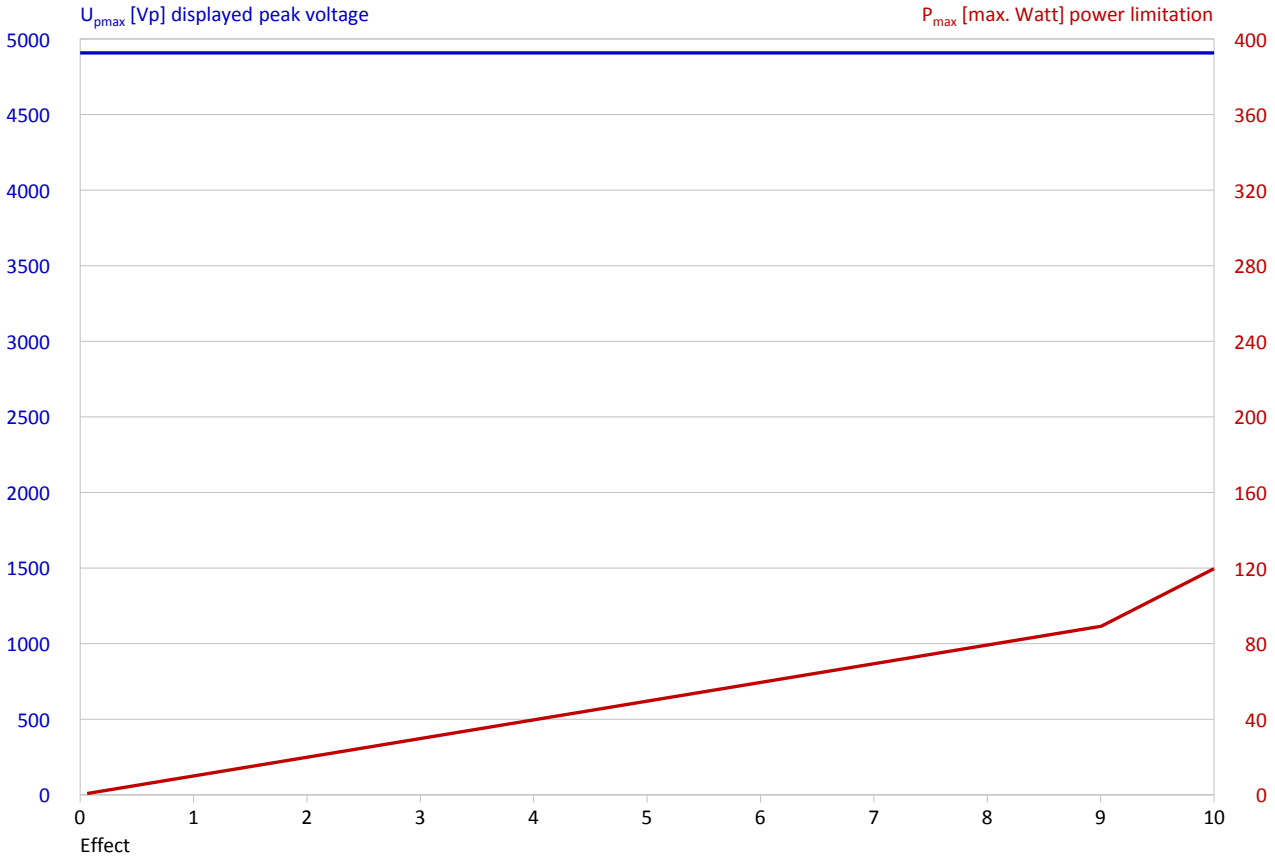
forcedAPC



At this strongly modulated mode, the instrument used must meet the maximum dielectric strength also at low effect stages.

Therefore, the displayed peak voltage is the same for all effects.

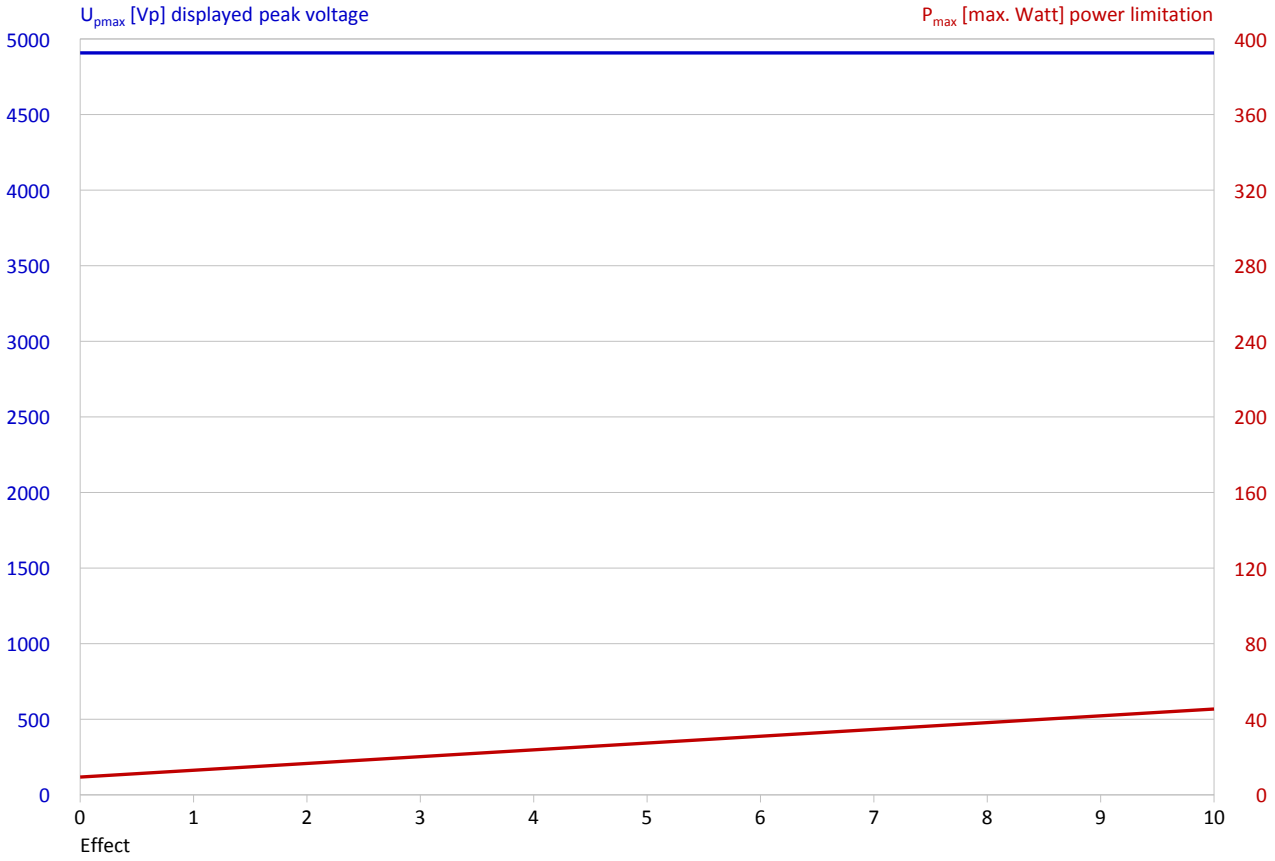
pulsedAPC



At this strongly modulated mode, the instrument used must meet the maximum dielectric strength also at low effect stages.

Therefore, the displayed peak voltage is the same for all effects.

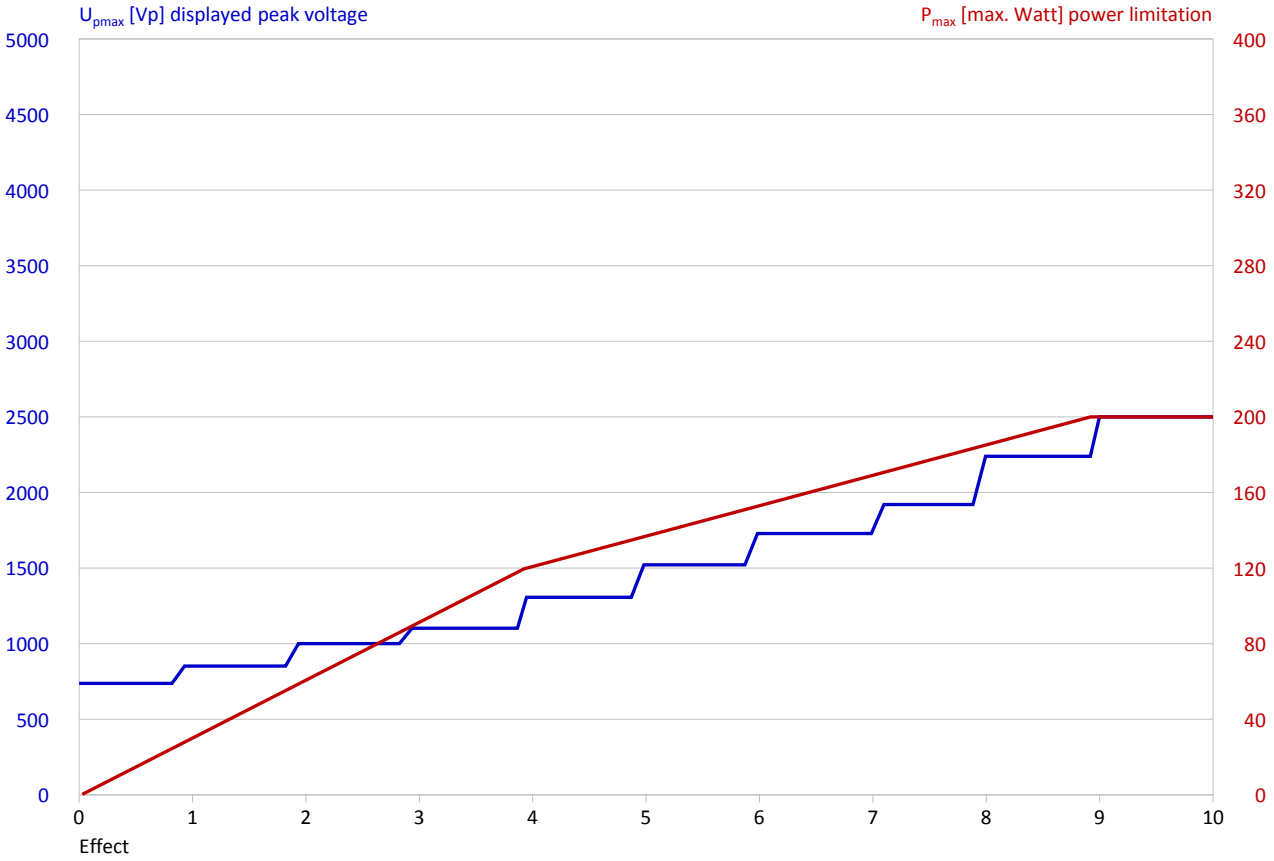
preciseAPC



At this strongly modulated mode, the instrument used must meet the maximum dielectric strength also at low effect stages.

Therefore, the displayed peak voltage is the same for all effects.

swiftCOAG


U_{pmax} [Vp] displayed peak voltage
P_{max} [max. Watt] power limitation
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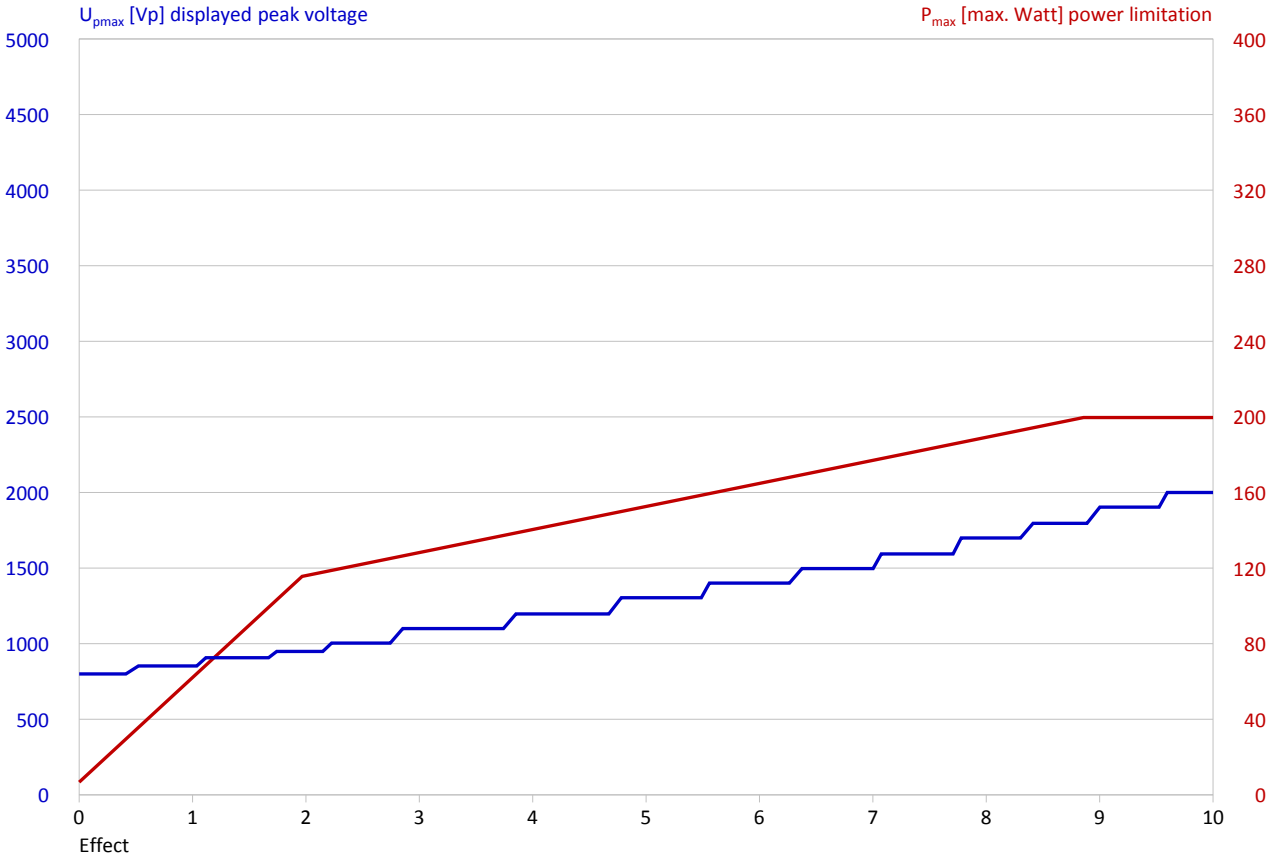
Effect

twinCOAG


U_{pmax} [Vp] displayed peak voltage
P_{max} [max. Watt] power limitation
5000
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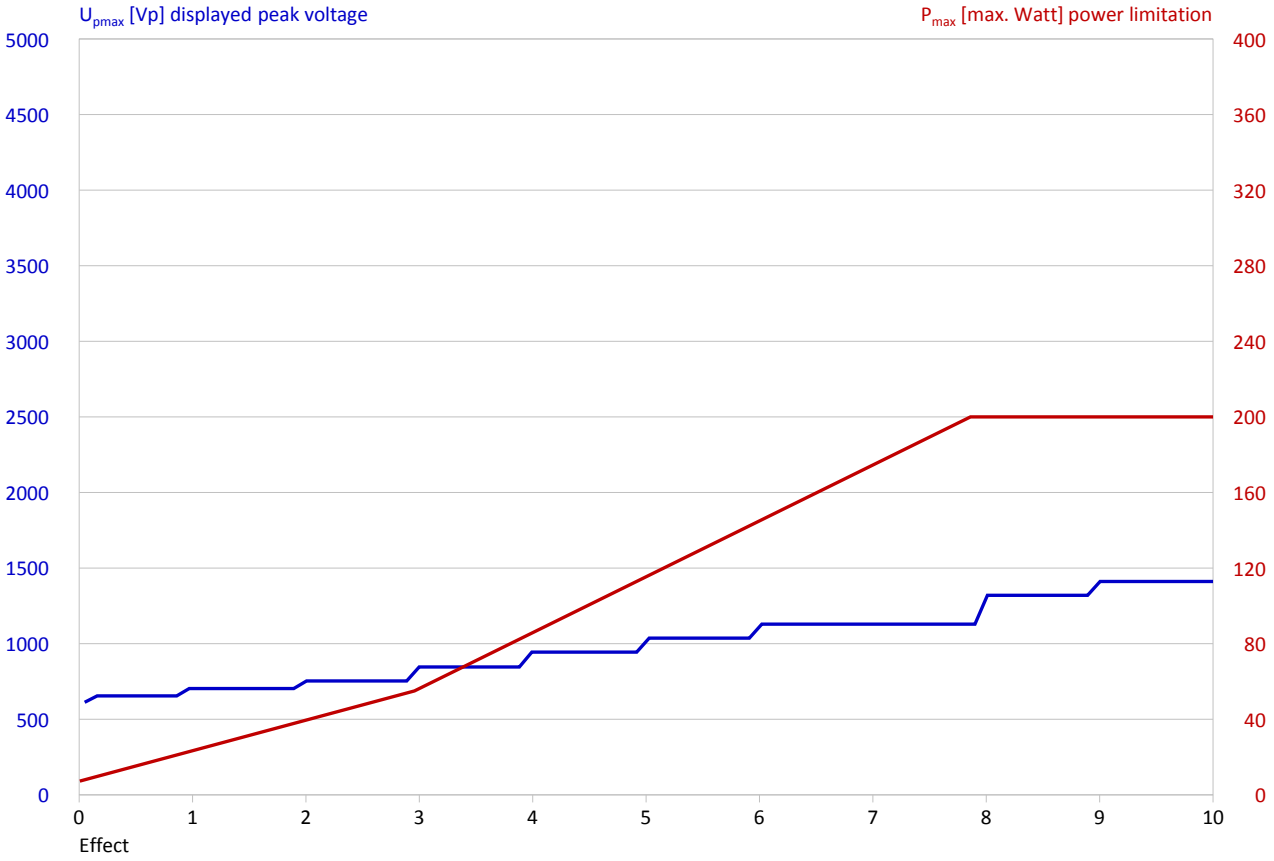
Effect

dryCUT


U_{pmax} [Vp] displayed peak voltage
P_{max} [max. Watt] power limitation
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Effect

Arguments

1. Reproducible tissue effects
2. Simple setting - only mode and effect
3. Improved and new modes
4. stepGUIDE – new, visual and instrument-oriented operator guidance
5. Extension of the ReMode® technology
6. Up to six instruments may be connected with the APC 3
7. Supports hybrid instruments together with ERBEJET® 2
8. May be extended as workstation
9. WLAN connection
10. For all specialist disciplines

Reproducible tissue effects

- Multi-processor technology and the latest digital signal processors
- 25 million measuring cycles per second
- This adds even greater precision to the control technology

Simple setting - only mode and effect

Improved and new modes

thermoSEAL

With AUTO START and optimized speed, not only ideal for vessel sealing, but also for highly-efficient coagulation

preciseSECT

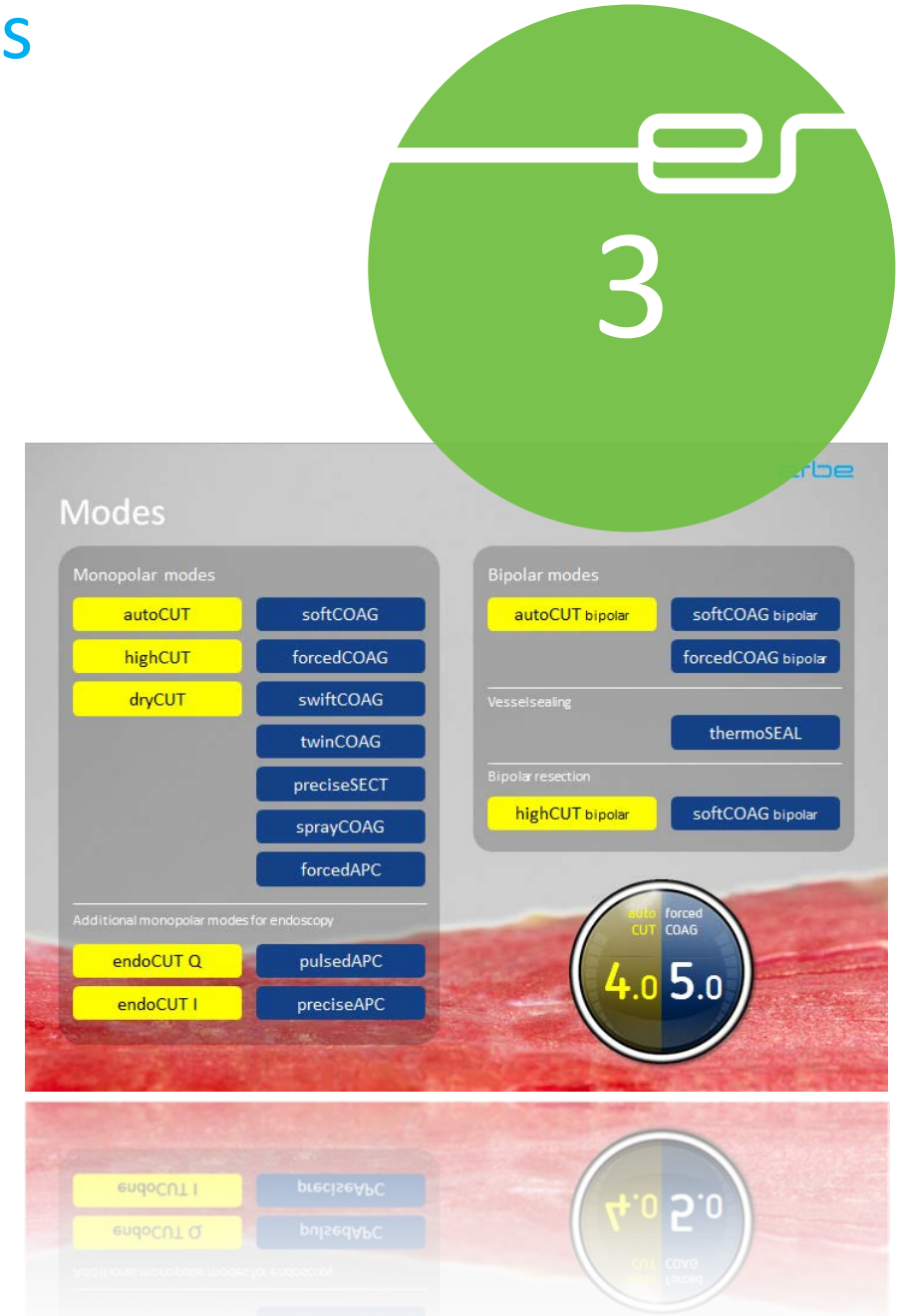
The dynamic adjustment of the modulation frequency is ideally suited for the exposure and separation of tissue structures. With limited development of smoke and carbonization

highCUT bipolar

Optimized for bipolar resection. Short-term current peaks allow a fast initial incision and fast incision with stable plasma

softCOAG

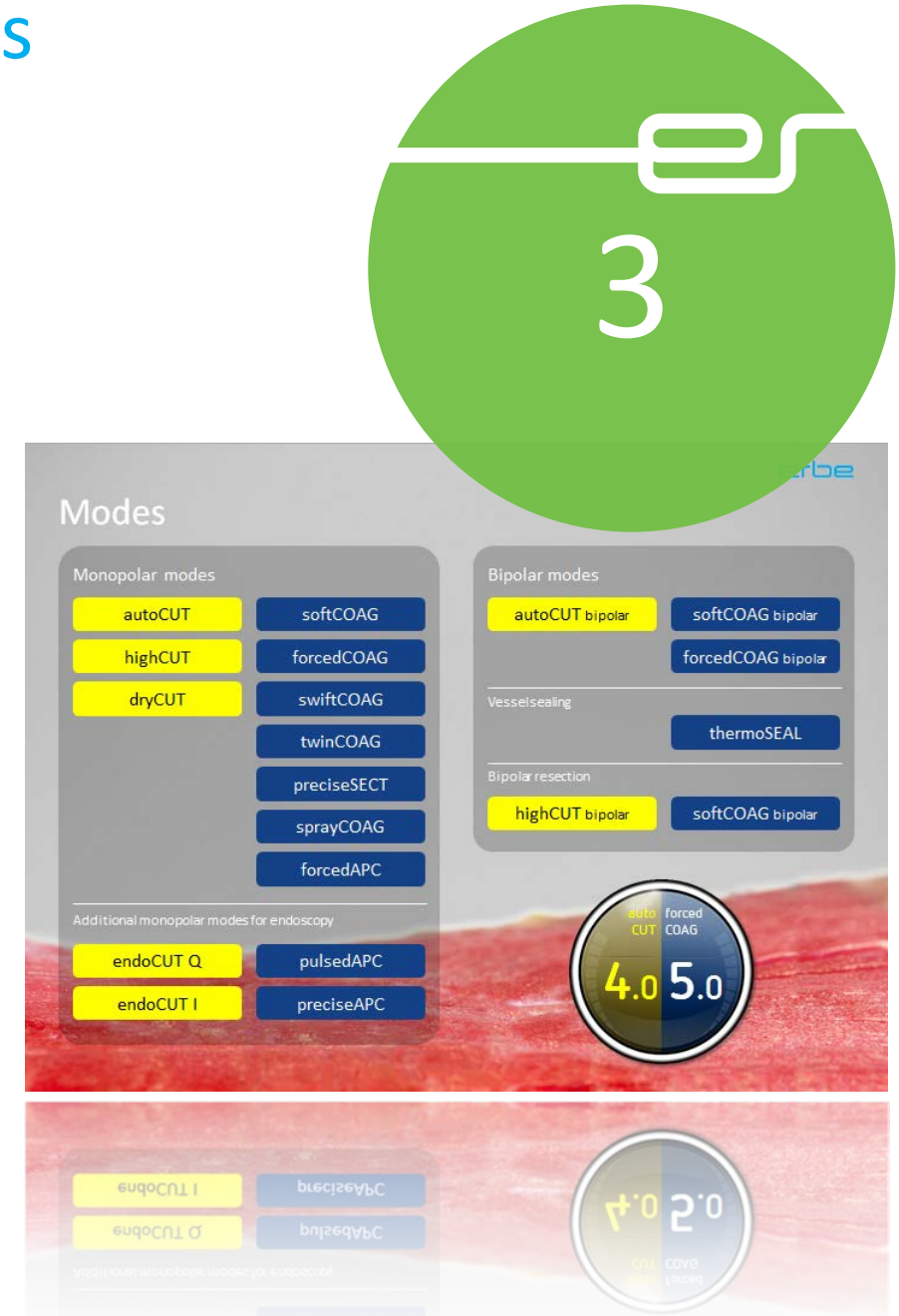
With QuickStart – short energy burst for accelerated coagulation



Improved and new modes

Improvements

- All modes benefit from the high number of measuring cycles and the thus improved control technology
- Integrated "Precise" settings
- Fine adjustment of effect stages
- dryCUT with improved initial incision
- twinCOAG with reduced interruption periods and improved characteristics for the exposure and separation of tissue structures
- Additional options:
  - softCOAG with QuickStart
  - forcedCOAG with AUTO STOP
  - thermoSEAL with AUTO START

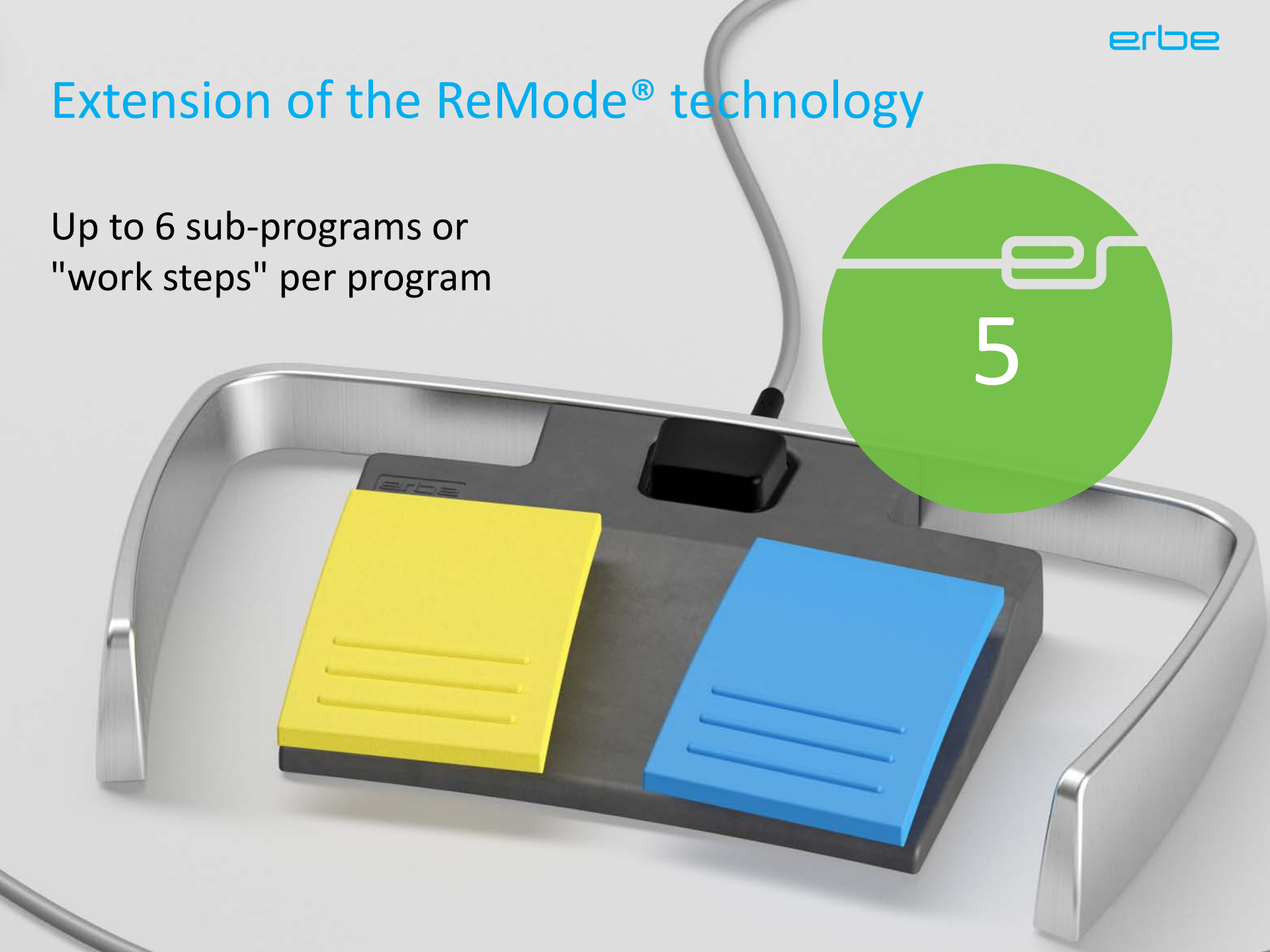


stepGUIDE

Instrument-oriented operator guidance

Extension of the ReMode® technology

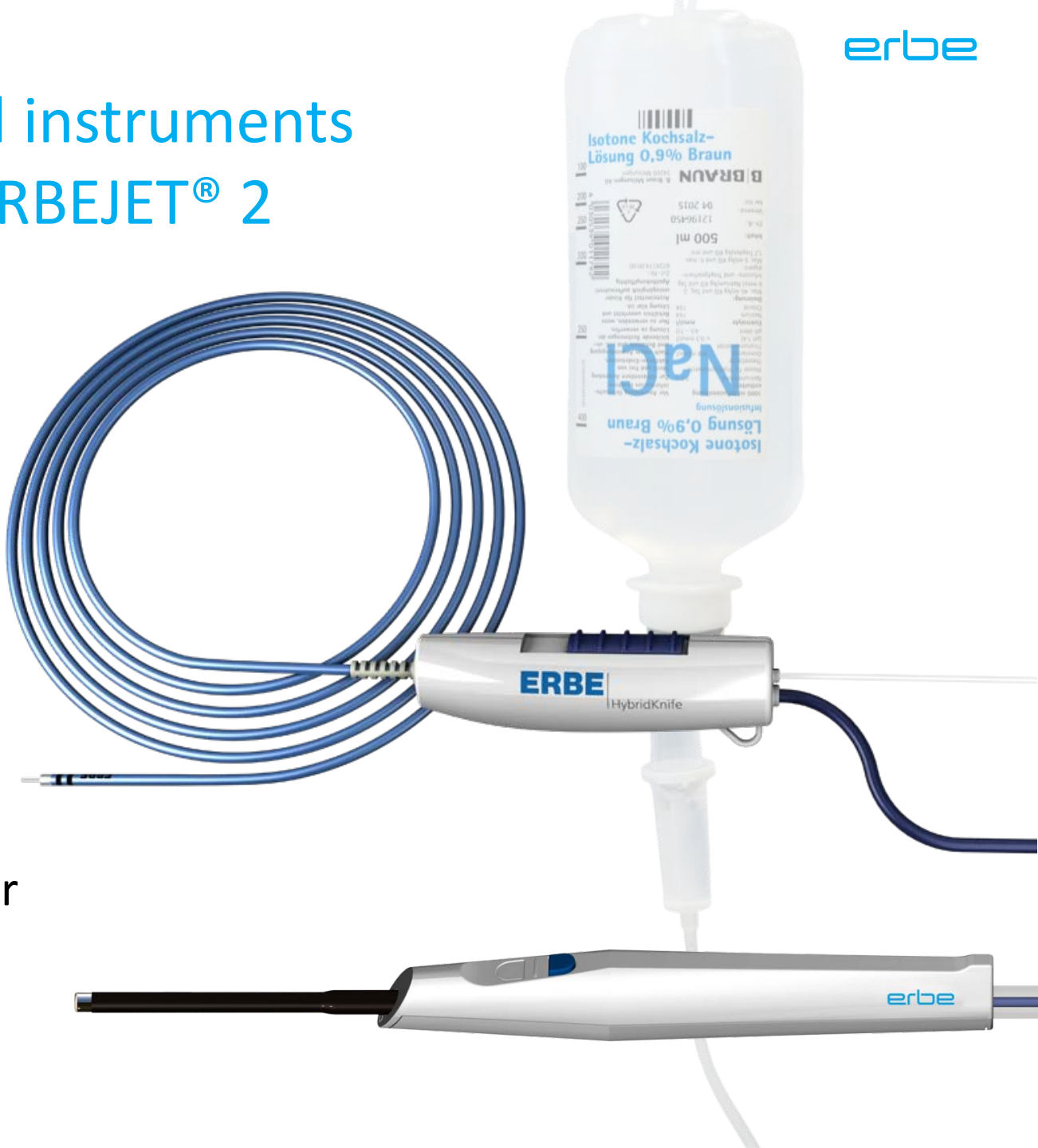
Up to 6 sub-programs or
"work steps" per program



Up to 6 instruments may be connected with APC 3

Supports hybrid instruments together with ERBEJET® 2

7



HybridKnife®

Monopolar applicator

HybridAPC

May be extended as workstation

WLAN

9

Advantages for Sales

Wireless programming, updates, copying, archiving

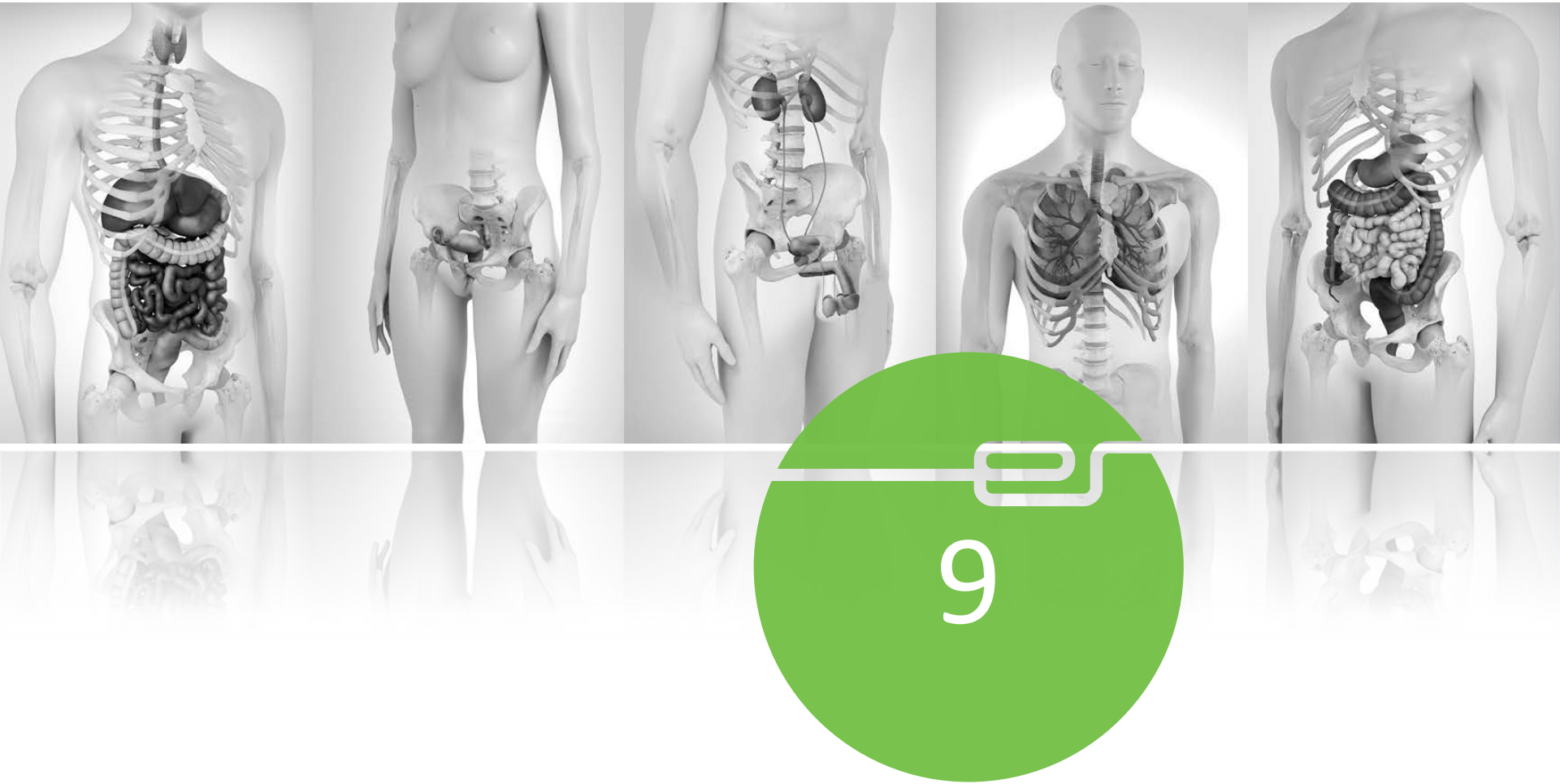
Advantages for Service

Wireless error analysis

Advantages for key-users

Transferable programs

VIO® 3 for all specialist disciplines



General surgery

Topics

- preciseSECT: precise exposure and separation of tissue structures
- thermoSEAL: fast vessel sealing with AUTO START
- forcedAPC: large surface, contact-free coagulation (i.e. liver surgery)
- dryCUT: intensive hemostasis
- autoCUT: smooth incision
- twinCOAG: simultaneous activation of two monopolar instruments
- stepGUIDE: instrument-oriented operation
- ReMode®: adjustable settings from the sterile field
- MF-U socket: flexibility in choice of instruments
- APCapplicator: multi-functional, open and laparoscopic applications
- Workstation (APC, IES, ERBEJET, ESM)
- Unique Erbe hybrid technology (i.e. monopolar applicator, liver surgery)

Cardiothoracic surgery

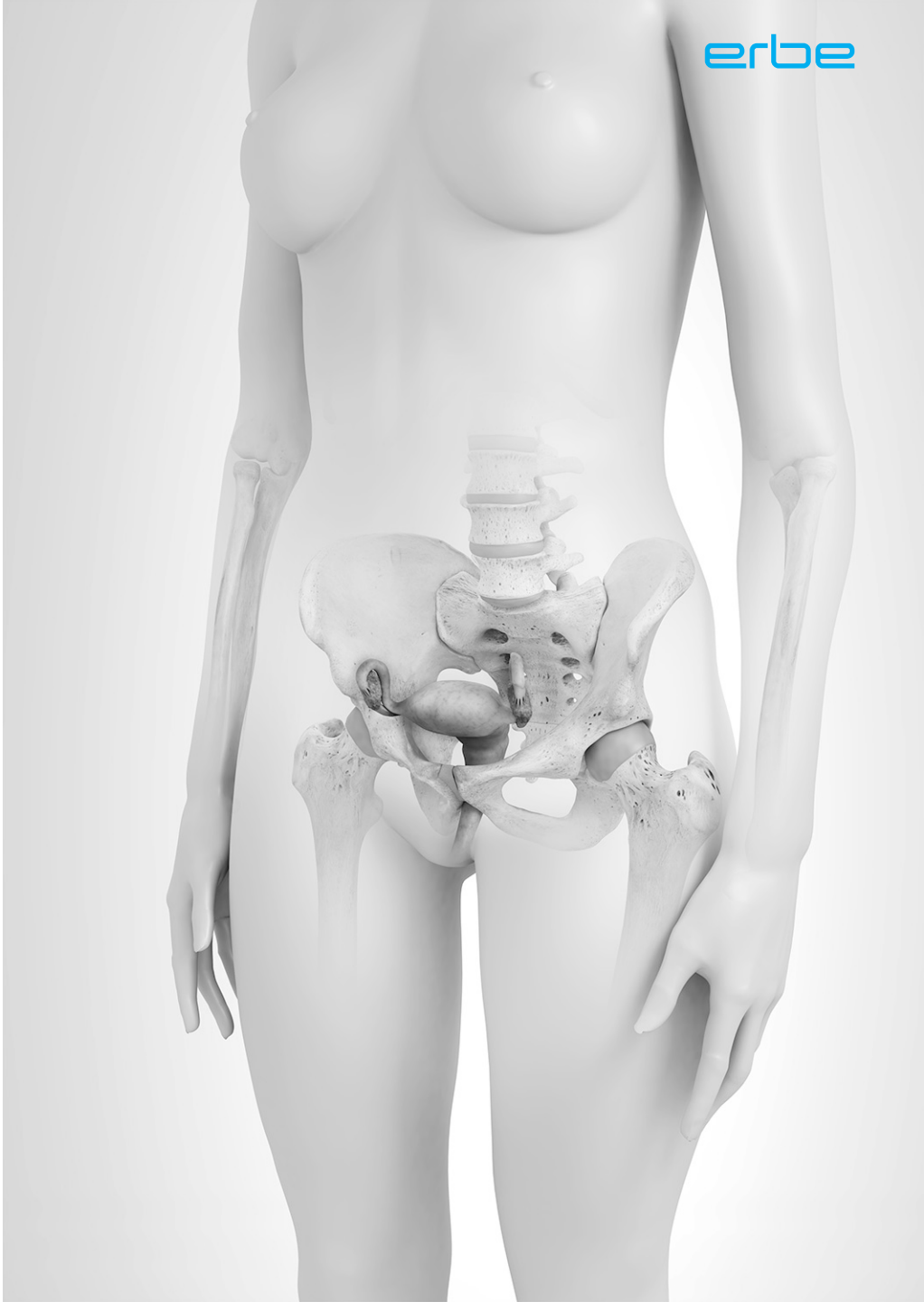
Topics

- preciseSECT: precise exposure and separation of tissue structures
- twinCOAG: simultaneous activation of two monopolar instruments
- stepGUIDE: instrument-oriented operation
- ReMode®: adjustable settings from the sterile field
- MF-U socket: flexibility in choice of instruments
- Workstation (IES)
- VIO® 3 with 3 active sockets

Gynecology

Topics

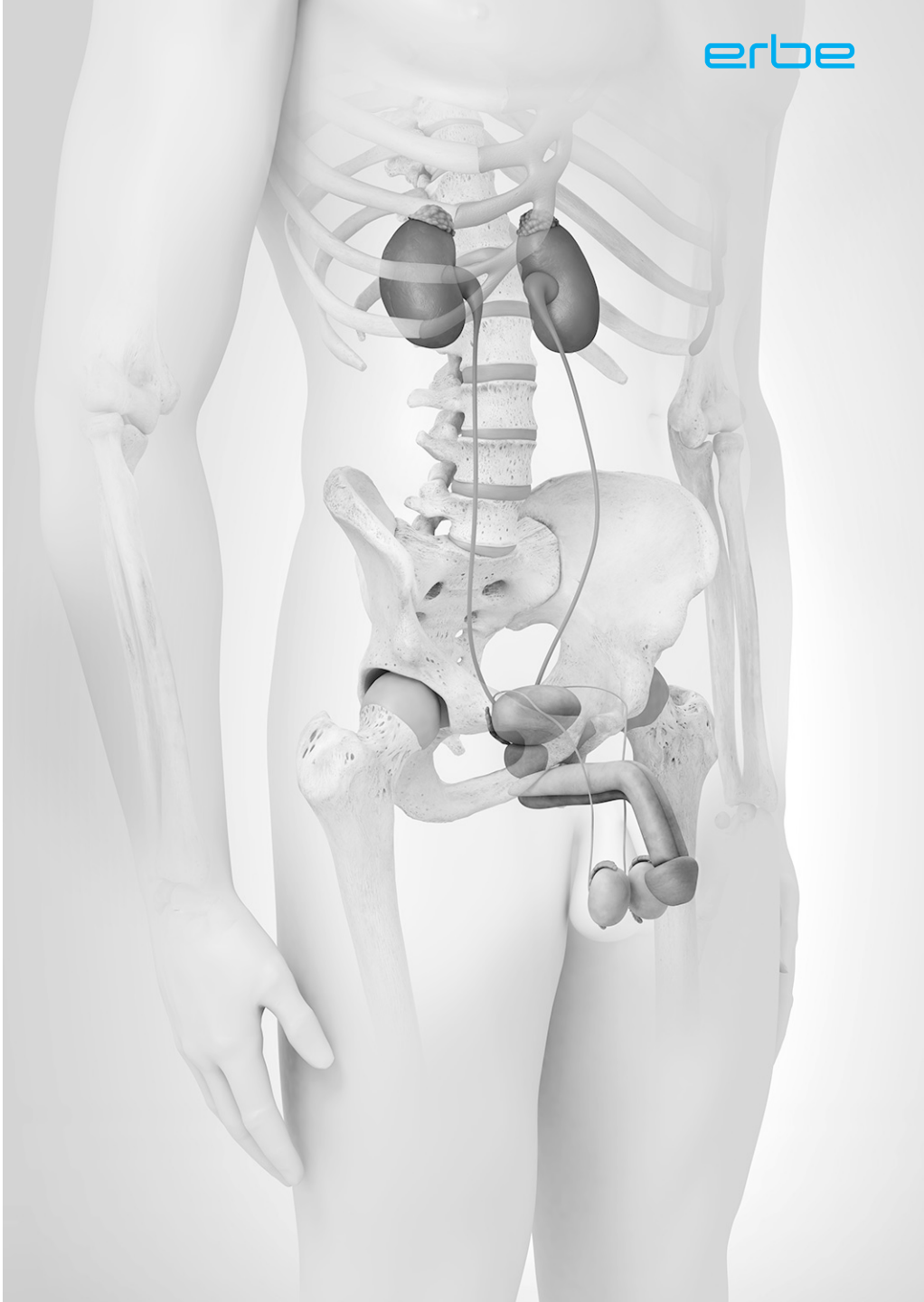
- highCUT and highCUT bipolar: TCR
- preciseSECT: precise exposure and separation of tissue structures
- thermoSEAL: fast vessel sealing with AUTO START
- forcedAPC: large surface, contact-free coagulation (i.e. endometriosis)
- dryCUT: intensive hemostasis
- autoCUT: smooth incision for conization
- twinCOAG: simultaneous activation of two monopolar instruments
- stepGUIDE: instrument-oriented operation
- ReMode®: adjustable settings from the sterile field
- MF-U socket: flexibility in choice of instruments
- APCapplicator: multi-functional, open and laparoscopic applications
- Workstation (APC, IES)



Urology

Topics

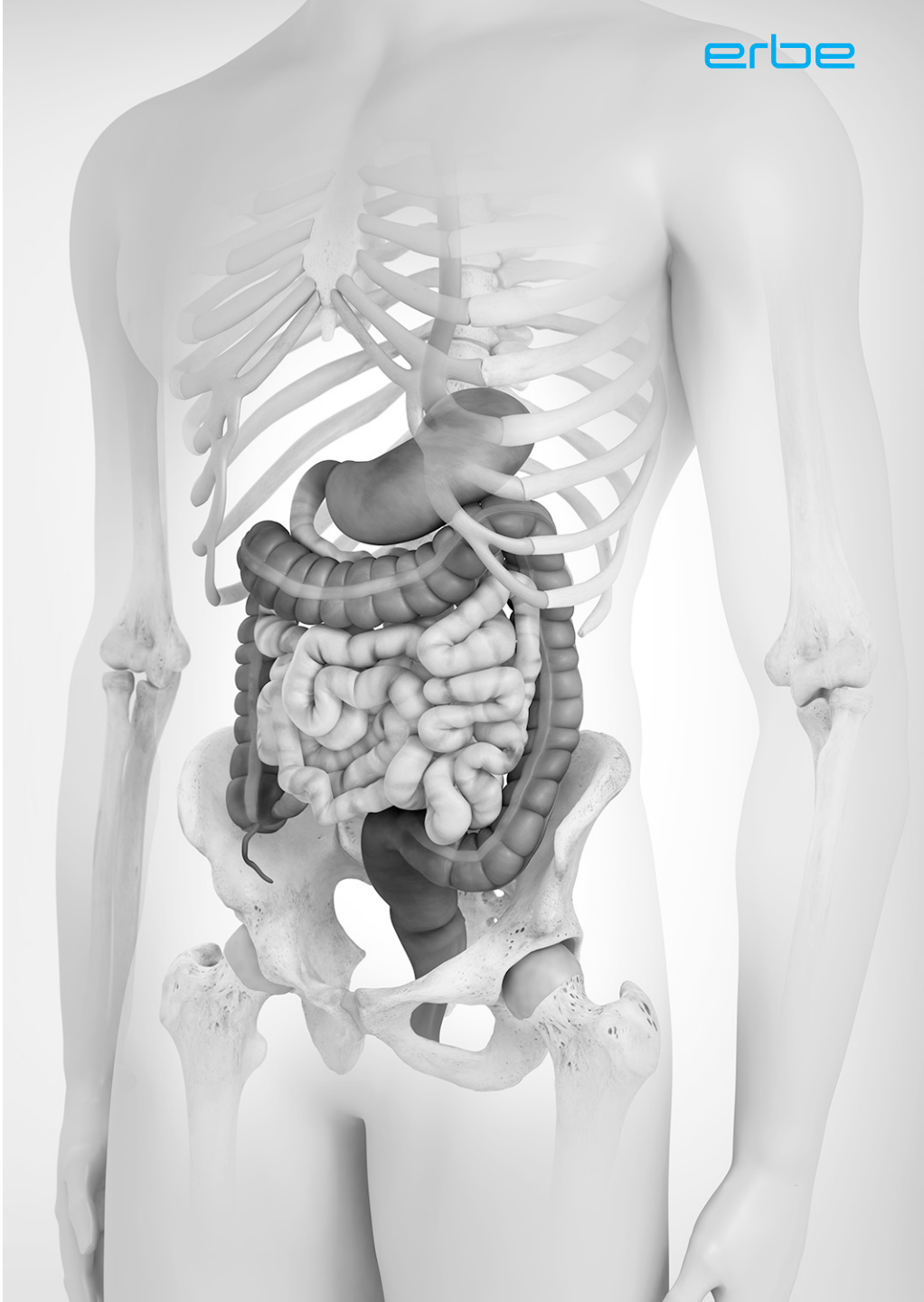
- highCUT and highCUT bipolar: TUR with good cutting characteristics
- preciseSECT: precise exposure and separation of tissue structures
- thermoSEAL: fast vessel sealing with AUTO START
- forcedAPC: large surface, contact-free coagulation
- dryCUT: intensive hemostasis
- stepGUIDE: instrument-oriented operation
- ReMode®: adjustable settings from the sterile field
- MF-U socket: flexibility in choice of instruments
- APCapplicator: multi-functional, open and laparoscopic applications
- Workstation (APC, IES, ERBEJET, ESM)
- Unique Erbe hybrid technology (partial nephrectomy, TUR-B en-bloc with HybridKnife®



Gastroenterology

Topics

- endoCUT: polypectomy and papillotomy
- preciseAPC: finest surface coagulation (right colon)
- pulsedAPC: for effective hemostasis and tissue ablation
- stepGUIDE: instrument-oriented operation
- ReMode®: up to 6 sub-programs (work steps)
- FiAPC probes: Integrated membrane filter
- Workstation (APC, EIP, ERBEJET, ESM)
- Unique Erbe hybrid technology (HybridKnife for ESD, POEM, HybridAPC)
- VIO® 3 with 2 active sockets



Pulmonology

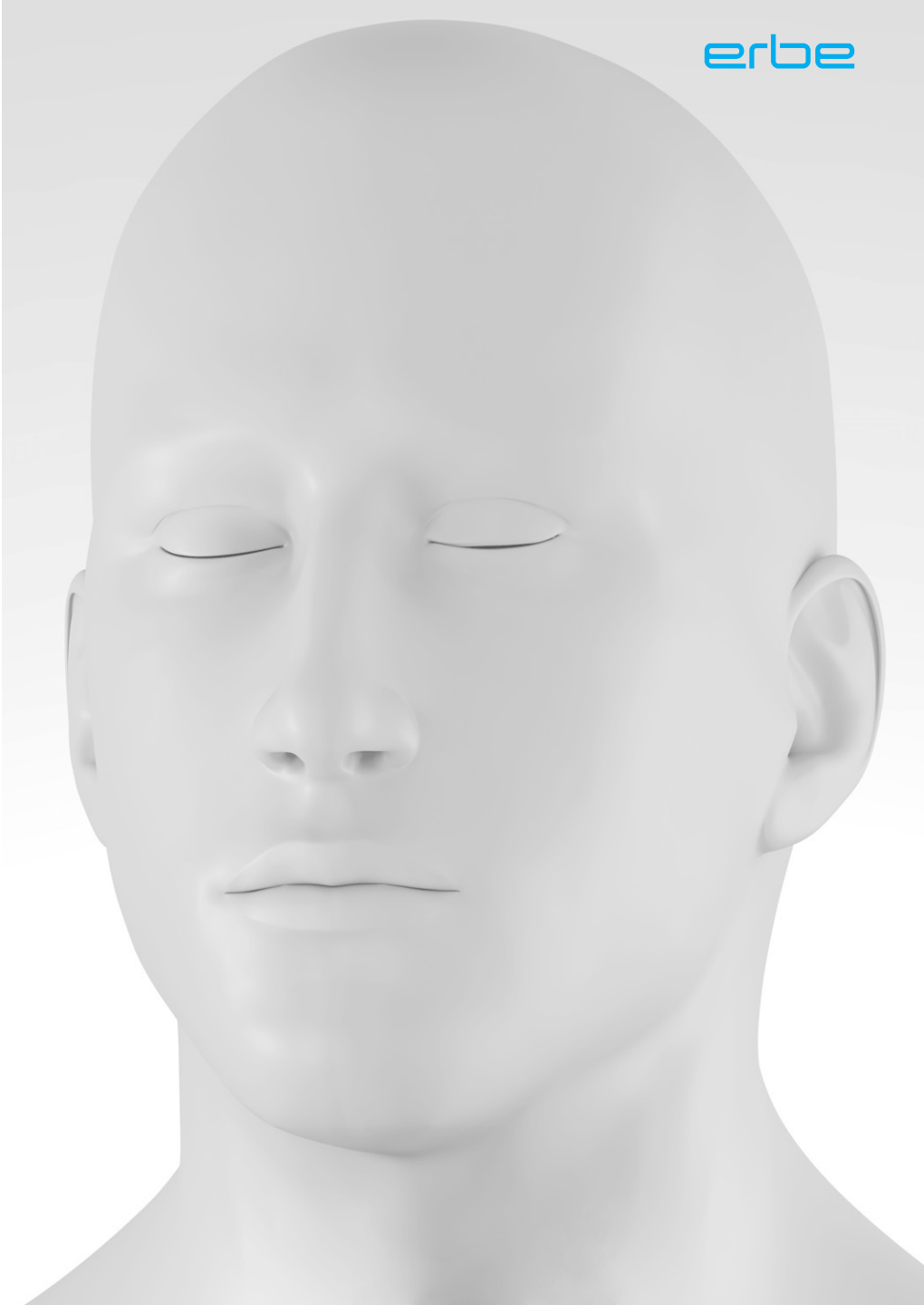
Topics

- forcedAPC: large and surface, contact-free coagulation
- pulsedAPC: for effective hemostasis and tissue ablation
- stepGUIDE: instrument-oriented operation
- ReMode®: adjustable settings from the sterile field
- MF-U socket: flexibility in choice of instruments
- FiAPC probes: Integrated membrane filter
- Workstation (APC)
- VIO® 3 with 2 active sockets

Plastic surgery

Topics

- autoCUT and highCUT: extremely fine dosing with minimal coagulation
- preciseSECT: precise exposure and separation of tissue structures
- forcedAPC: large surface, contact-free
- stepGUIDE: instrument-oriented operation
- ReMode®: adjustable settings from the sterile field
- MF-U socket: flexibility in choice of instruments
- APCapplicator: multi-functional handle
- Workstation (APC, IES)
- VIO® 3 with 3 active sockets



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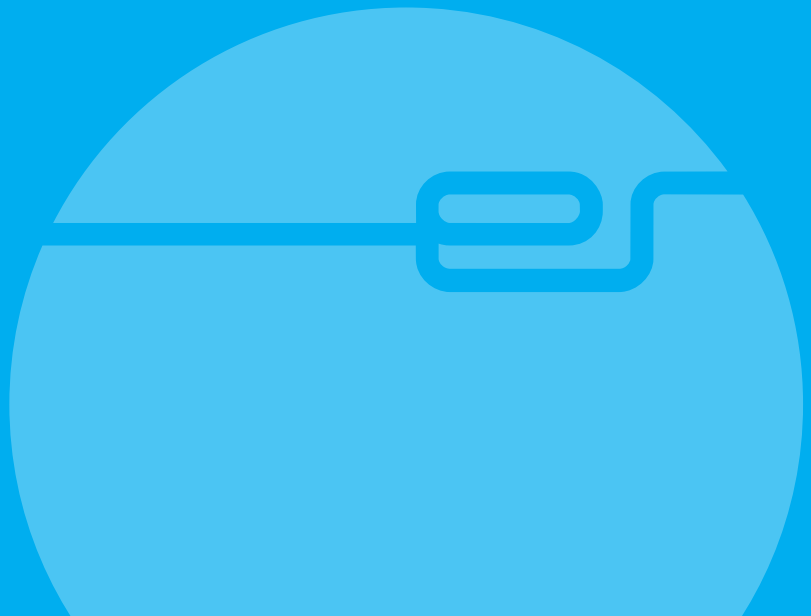
Thank you

for your attention!



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ERBE Elektromedizin GmbH has taken extreme care in preparing this brochure which includes recommended settings. However, we cannot completely rule out errors. The information and data contained in the recommended settings cannot be used to justify any claims against ERBE Elektromedizin GmbH. In the event of compelling legal justification for a claim, liability shall be limited to intent and gross negligence.

The information on recommended settings, application sites, duration of application and the use of instruments is all based on clinical experience, although individual centers and physicians may prefer settings other than those recommended here. These settings are merely intended as guidelines that the surgeon is free to assess for applicability. Depending on individual circumstances, surgeons may need to depart from the information provided in this brochure.

Medicine is constantly subject to new developments arising from research and clinical experience.

This can represent yet another reason for departing from the information provided here.

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