ADVANCED ENERGY SOLUTIONS FOR SPINE SURGERY

Medtronic

LESS EQUIPMENT
ONE SYSTEM

As your partner in spine surgery, your challenges are our challenges. We understand that today's spine surgeons are expected to deliver quality outcomes, efficiency, and value. With your needs in mind, we now offer one versatile solution for powering multiple devices – enabling you to do more with less.

AEX™ generator
Now you can achieve precise dissection and hemostatic control using a single generator. Our AEX™ generator powers all Aquamantys™ bipolar sealers and PlasmaBlade™ X dissection devices, and provides simultaneous activation of both technologies. Let's partner to expand your breadth of care for more positive outcomes at lower costs.

Features and benefits
- Three modes of radiofrequency (RF) power delivery:
  - Bipolar Transcollation™ technology for hemostatic sealing
  - Monopolar cut
  - Monopolar coagulation
- Touchscreen interface
- Four memory settings for user preferences
- Lightweight
- Rapid startup and priming
- Patient return electrode safety features

MORE VERSATILITY
TWO TECHNOLOGIES

One generator. Eight electrosurgical devices. Various procedures.

You can now achieve precise soft tissue dissection and hemostasis in multiple spine procedures — with one generator solution.

Aquamantys™ bipolar sealers

Aquamantys™ bipolar sealers allow you to achieve high-integrity hemostatic sealing of soft tissue and bone – with minimal sticking, char, or smoke.[1,8] Harnessing the improved bleeding control of Aquamantys™ bipolar sealers in spine procedures can enable you to reduce total blood loss, as well as transfusions and associated costs.[3,5]

PlasmaBlade™ X dissection device

PlasmaBlade™ X technology allows for precise dissection around sensitive areas, empowering you to move through procedures more quickly and confidently than ever before.[10] The device's locking mechanism also allows for deeper dissection in hard-to-reach areas.

Key spine procedures

- Posterior lumbar interbody fusion (PLIF)
- Transforaminal lumbar interbody fusion (TLIF)
- Anterior lumbar interbody fusion (ALIF)
- Minimally invasive TLIF
- Scoliosis surgery
- Posterior cervical discectomy and fusion
- Laminotomy, discectomy, decompression

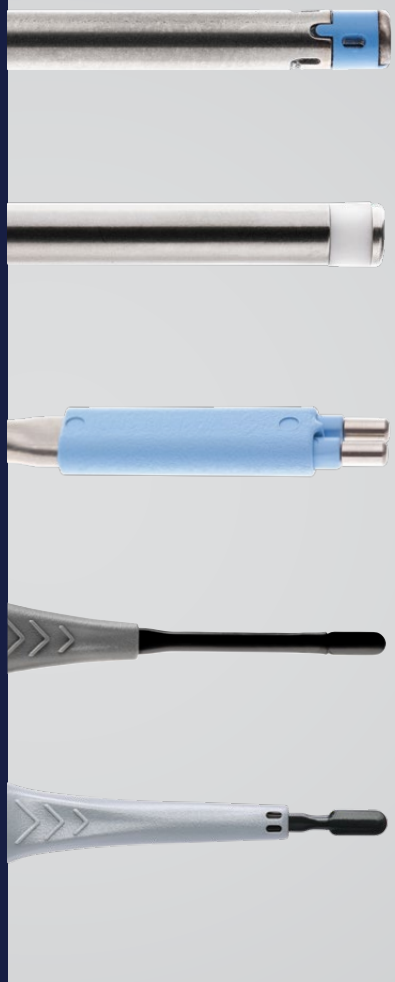
Aquamantys™ 2.3 Bipolar Sealer

Aquamantys™ 6.0 Bipolar Sealer

Aquamantys™ MBS Malleable Bipolar Sealer with Light

PlasmaBlade™ X 3.0S Dissection Device

PlasmaBlade™ X 3.0S LIGHT Dissection Device



Aquamantys™ Mini EVS 3.4 Epidural Vein Sealer

Aquamantys™ EVS Epidural Vein Sealer

Aquamantys™ SBS 5.0 Sheathed Bipolar Sealer

PlasmaBlade™ X 4.0 Dissection Device

PlasmaBlade™ X 4.0S Dissection Device

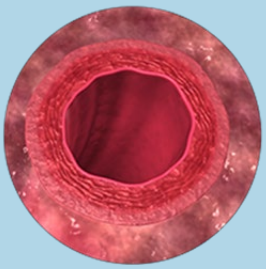
AQUAMANTYS™ BIPOLAR SEALERS
MORE CONTROL

Aquamantys™ bipolar sealers use proprietary Transcollation™ technology, a combination of radiofrequency (RF) energy and saline, to provide hemostatic sealing of soft tissue and bone during surgery. Powered by the AEX™ generator, the devices operate at approximately 100°C — nearly 200°C less than traditional electrosurgical devices.[1] Lower operating temperature allows for the desired tissue effect without the smoke and char found in other methods.

Aquamantys™ MBS Malleable Bipolar Sealer with Light

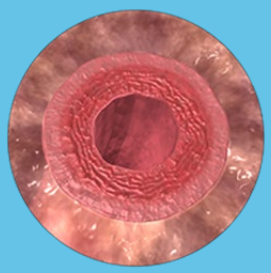
STEP 1

RF energy and saline are applied to tissue



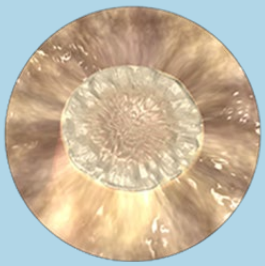
STEP 2

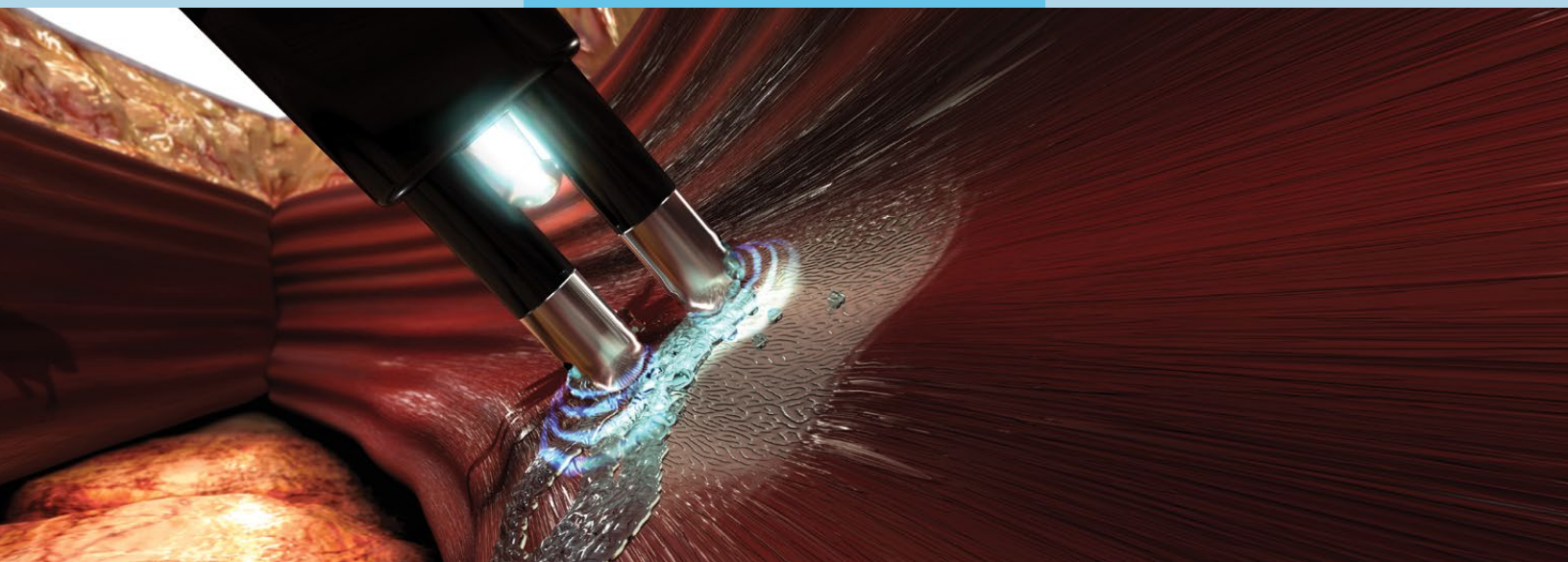
Heat-induced collagen shrinkage occurs



STEP 3

Vessels <1 mm may be occluded

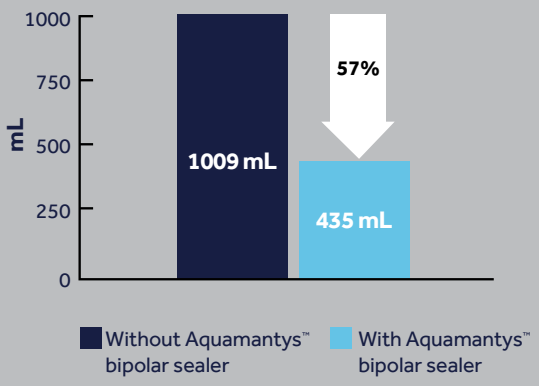




REDUCED BLOOD LOSS

57% less blood loss in multi-level spinal fusions

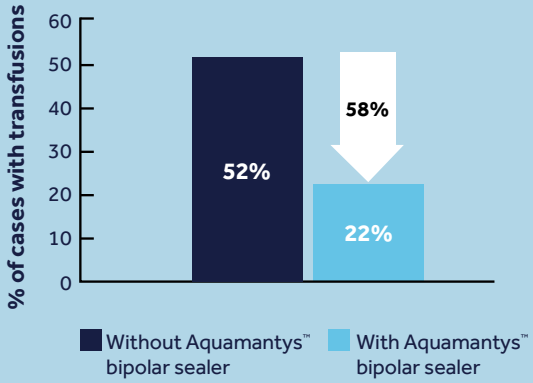
Blood loss in multi-level spinal fusion[2]



LESS RISK OF TRANSFUSION

58% fewer transfusions in multi-level spinal fusions

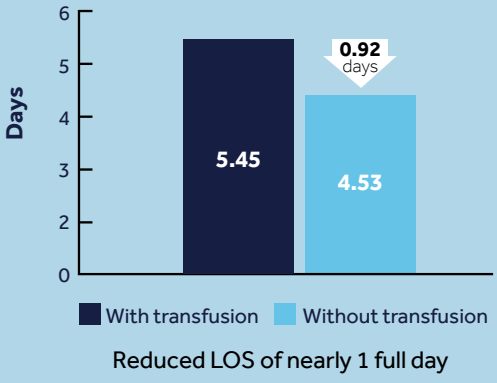
Transfusion rates in multi-level spinal fusion[3]



SHORTER LENGTH OF STAY

Reduced transfusion rates may contribute to reduced length of hospital stay (LOS)

Mean LOS for spine surgery with and without a transfusion[4,*]



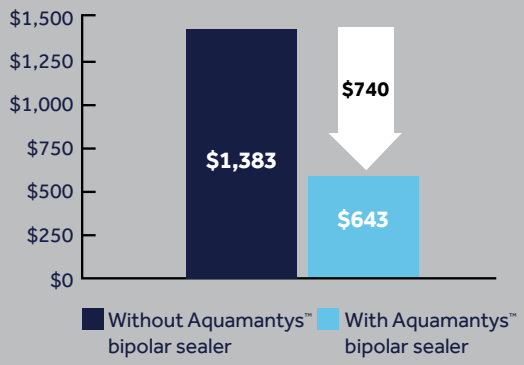
Reduced LOS of nearly 1 full day

*Performance has not been specifically established with Aquamantys™ bipolar sealers.

LOWER COST

$740 per case savings of blood product costs due to lower transfusions

Blood product acquisition costs[5]

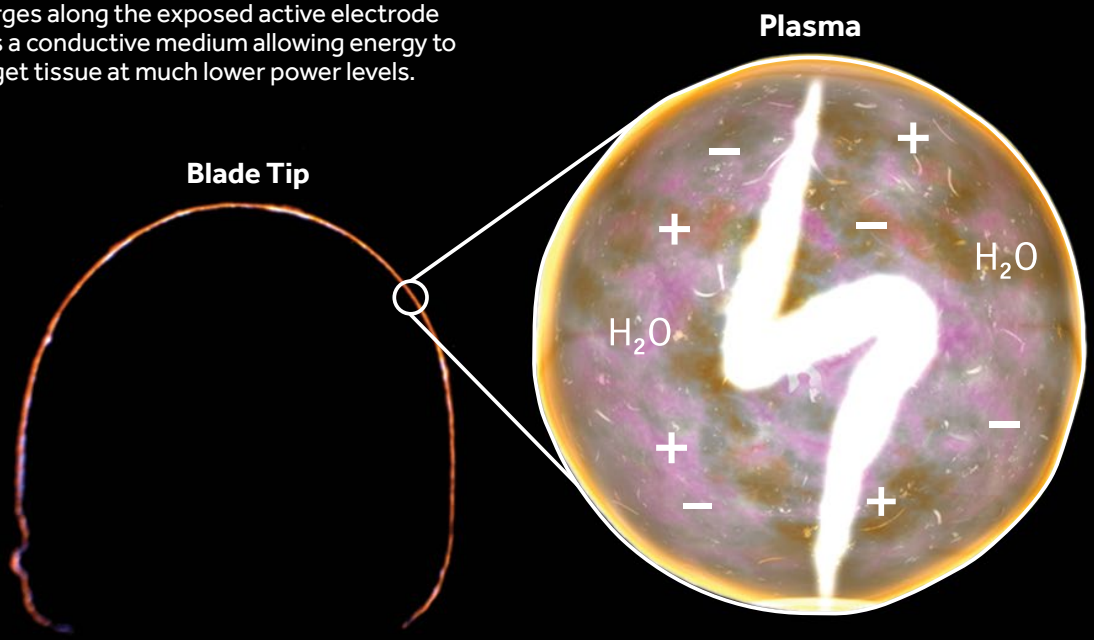


PLASMABLADE™ X DISSECTION DEVICE
MORE PRECISION

The PlasmaBlade™ X dissection device delivers brief, high-frequency pulses of radiofrequency (RF) energy to induce electrical plasma along the edge of a thin (12.5 µm), 99.5% insulated electrode. PlasmaBlade™ X technology is more energy efficient and operates at significantly lower temperatures than traditional electrosurgical technology (40-170˚C vs. 200-350˚C).[6] Lower operating temperature leads to less thermal damage and less temperature change compared to traditional electrosurgery — resulting in less risk of thermal injury when used near adjacent structures.[7,9]

PlasmaBlade™ X 3.0S
Dissection Device

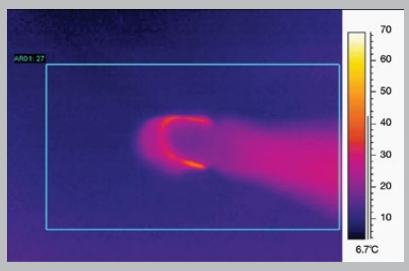
Plasma discharges along the exposed active electrode edge, acting as a conductive medium allowing energy to transfer to target tissue at much lower power levels.



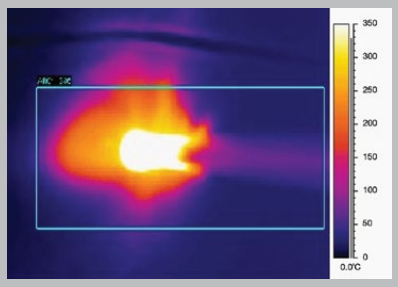
LESS HEAT

64% lower temperature versus traditional electrosurgery

Operating temperature profile[6,**]



PlasmaBlade™ X technology: 40–170°C

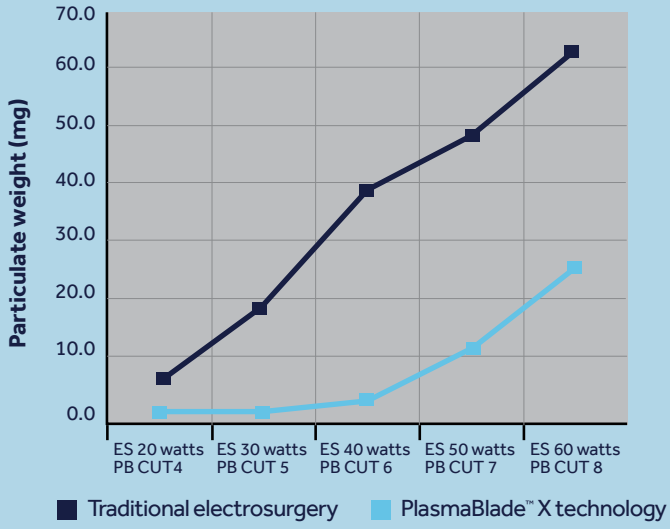


Traditional electrosurgery: 200–350°C

REDUCED SMOKE

95% less electrosurgical smoke in CUT mode[***]

Average weight of CUT mode surgical smoke particulate from traditional electrosurgical pencil vs. PlasmaBlade™ X technology

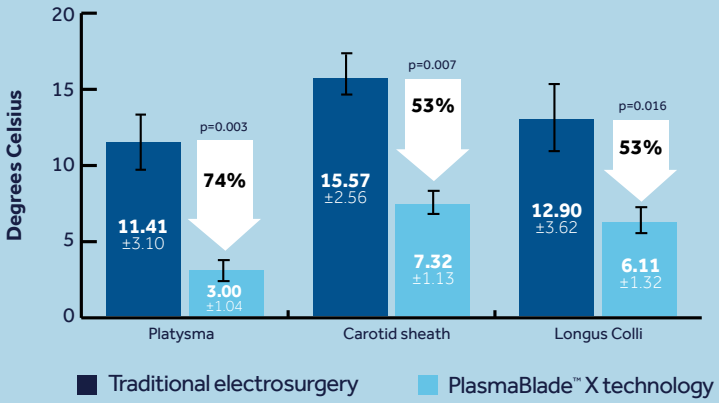


[***]Similar amount of smoke particulate in COAG mode.

LOWER RISE IN TEMPERATURE

PlasmaBlade™ X technology generated significantly less temperature change at platysma, carotid sheath, and longus colli compared to traditional electrosurgery. Temperature in the trachea was not different in the two groups.[†]

Temperature change near critical structures[7]

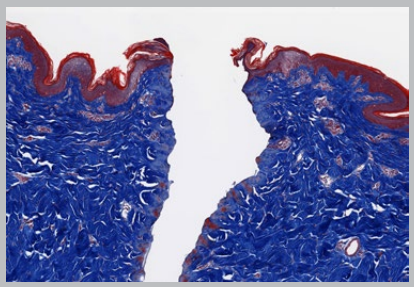


[†] In this pilot study, an ACDF procedure was performed using traditional electrosurgery or PlasmaBlade™ X technology on two human cadavers. Fiber optic temperature probes were placed 8–10mm away from the spinal canal, carotid sheath, trachea, and esophagus to measure changes in temperature during ACDF dissection.

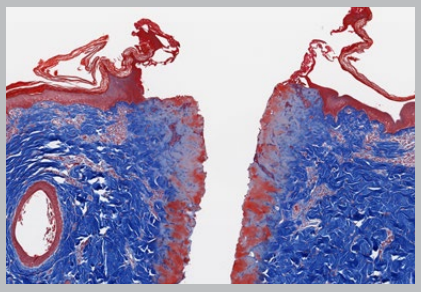
LESS THERMAL INJURY

74% less thermal injury following skin incision

Thermal injury profile[9]



PlasmaBlade™ X technology CUT 6



Traditional electrosurgery CUT 35W

Rx only. Refer to product instruction manual/package insert for instructions, warnings, precautions and contraindications.

References

1. Geller DA, Tsung A, Maheshwari V, et al. Hepatic resection in 170 patients using saline-cooled radiofrequency coagulation. *HPB* 2005;7:208-213.
2. Mankin KP, Moore CA, Miller LE, Block JE. Hemostasis with a bipolar sealer during surgical correction of adolescent idiopathic scoliosis. *J Spinal Disord Tech*. 2012;25(5):259-263.
3. Gordon ZL, Son-Hing JP, Poe-Kochert C, Thompson GH. Bipolar sealer device reduces blood loss and transfusion requirements in posterior spinal fusion for adolescent idiopathic scoliosis. *J Pediatr Orthop*. 2013;33(7):700-706.
4. Covance report; 2008 MedPAR database based on IDC-9-CM Codes for 100% of Medicare beneficiaries.
5. Frank S, Dackiw E, Kebaish K. Radiofrequency bipolar hemostatic sealer reduces blood loss, transfusion requirements, and cost for patients undergoing multilevel spinal fusion surgery. *J Orthop Surg Res*. 2014 Jul 5;9:50-56.
6. Data on file. Report 71-10-2475.
7. Data on file. Report 74-82-2335.
8. Data on file. Report 81-10-5683.
9. Ruidiaz ME, Messmer D, Atmodjo DY, et al. Comparative healing of human cutaneous surgical incisions created by the PEAK PlasmaBlade, conventional electrosurgery and a standard scalpel. *Plast Reconstr Surg* 2011; Jul 28(1): 104-111.
10. Data on file. Report 71-10-2454.

* Performance has not been specifically established with Aquamantys bipolar sealers.
** Operating temperature is a function of device settings, electrode configuration and treatment time. Operating temperatures outside this range may be observed.
*** Similar amount of smoke particulate in COAG mode.
† In this pilot study, an ACDF procedure was performed using traditional electrosurgery or PlasmaBlade on two human cadavers. Fiber optic temperature was placed 8–10mm away from the spinal canal, carotid sheath, trachea, and esophagus to measure changes in temperature during ACDF dissection.

Medtronic

Medtronic
826 Coal Creek Circle
Louisville, CO 80027
USA

For further information, please call 866-777-9400.

medtronicadvancedenergy.com

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