

The healthcare challenge:

To design, engineer and manufacture an electro-surgical instrument that delivers the following results . . .

Highly accurate and controllable in laparoscopic (key hole) and open surgery

Multi-specialist surgical uses

Cost-effective

Safe

Simple

The design and engineering solution:

Trials under actual surgical conditions and controlled tests clearly show that these results are delivered. . .

Using a combination of Helium gas and very low electrical power (2–8 Watts), the Helica TC soft tissue coagulator delivers an inert plasma of gas to the precise area of tissue, and careful control of power levels allows extremely fine levels of cauterisation.

Laparoscopically, the probe is directed to the affected area through a 5mm canula and has no physical contact with the tissue when activated. The fulguration process only activates when the tip of the probe moves close to the tissue and as the interaction between electrons and tissue takes place in Helium, no smoke is generated.

Because the Helica TC is highly accurate and eliminates the problems of arcing and puncturing which can cause serious damage to surrounding healthy tissue, it is being effectively used in operations involving fallopian tubes, colon, bladder, uterus and bowel.

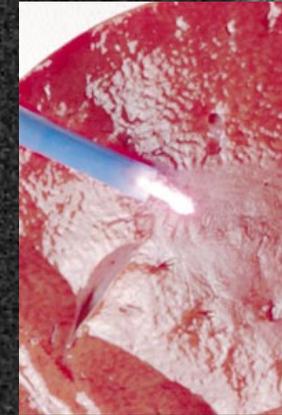
As well as continuing development work, the equipment is also being used in operations involving the cauterisation of oozing tissue, sectioning, ENT and removal of organs and in transplants.

Apart from the relatively low cost of the equipment and consumables in comparison to drugs and other electro-surgical instruments, one of the main areas of economy is the ability to treat conditions such as endometriosis simultaneously with a laparoscopic diagnosis.

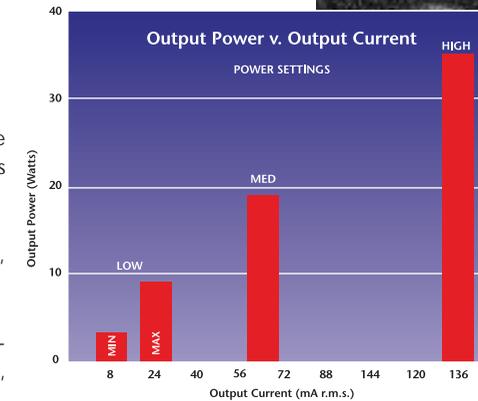
Using this example, overall treatment time is decreased and the use of drugs in women with subfertility secondary to their condition is reduced.

Accuracy, the use of very low levels of power and the elimination of the problems of arcing and puncturing that can cause serious damage to surrounding tissue all add up to unprecedented levels of safety in electro-surgery and have opened up new dimensions in this kind of treatment.

There is really only one way to find out how simple and impressive the Helica TC is. ***Try it!***



The Helica TC soft tissue coagulator accurately delivers a hot stream of gas to a precise area of tissue, and with the graduated power settings it allows extremely fine levels of cauterisation. Problems of arcing and puncturing are eliminated.



Indicative of the powers delivered by the Helica TC, the chart shows the low range at which the instrument works making it safer in comparison to other electro-surgical devices.



Careful design and engineering ensure that the Helica TC is simple to use, highly controllable and effective.

One of the unique features of the Helica TC is its ability to safely treat endometriosis which forms on sensitive organs electrosurgically.

Areas such as bowel, colon and cul-de-sac can be cauterised, preventing spread of endometriosis and reducing pain.



Maurice Howieson
Chief Executive, Helica Instruments Ltd

The key reasoning behind the Helica Thermal Coagulator was to develop an instrument that overcame the problems associated with electrosurgical devices in laparoscopic surgery. In many instances investigation and treatment can take place at the same time.

After a lot of thought and a great deal of discussion with experts from various disciplines, objectives were set and a plan of action was agreed. The instrument must be able to cauterise in a highly controllable, non-contact mode using low electrical power and low volumes of gas that delivers heat in an inert atmosphere and avoids oxidation and carbonisation. It would also have to fit many other criteria to be a serious surgical tool that might be used with ease in various specialist areas such as Neurosurgery, ENT, Cardiothoracic, Hepatic Surgery and gynaecology including the highly effective treatment of endometriosis.

The challenge was set.

By the time engineering and medical colleagues and friends had convinced me that the Helica TC was a worthwhile project it had already taken on its own life and will to succeed, despite the numerous design and engineering problems that always accompany innovative technology.

Working with the Department of Electrical Engineering at the University of Strathclyde in Glasgow, these problems were overcome and our solution, the Helica TC, was put to the test by standards authorities and medical specialists alike.

The innovative thinking and hard work was rewarded by a John Logie Baird Award for innovation.

Having achieved and surpassed the original and subsequent objectives and criteria, the Helica TC soft tissue coagulator is now in production and we are currently developing the equipment for use in other specialist areas of surgery.

TECHNICAL SPECIFICATION PROBES

Model T: PTFE, 4mm x 310mm. Laparoscopic, Hel cons: 2.2 litres/min
Model S: PTFE, 4mm x 65mm. Open surgery, Hel cons: 2.2 litres/min
Model N: PTFE, 2.5mm x 75mm. ENT, angled 45%, Hel cons: 1.4 litres/min
Model EL: PTFE 4mm x 370mm. Laparoscope extra long, Hel cons: 2.0 litres/min

ELECTRICAL SPECIFICATION

Line supply: 220 – 24W r.m.s. / 50 – 60Hz / 100VA Max
Fuse rating: 2A Extra slow blow

PROBE OUTPUT

Power setting	Power	Current
Low (minimum)	<2W	8mA r.m.s
Low (maximum)	<6W	25mA r.m.s
Medium	12W	50mA r.m.s
High	33W	130mA r.m.s

NOTES

1.5mm discharge gap (-250V r.m.s.)
Amplifier fusing rating: 3A quick blow

DIMENSIONS OF INSTRUMENT

150mm high x 250mm wide x 380mm deep. Weight 7.7kgs.

DIMENSIONS OF COMPLETE WHEELED UNIT

1350mm high x 440mm wide x 530 deep. Weight 55kgs.

Patent applied for.

ABOUT THE COMPANY

Helica Instruments was formed by Maurice Howieson in 1993 with the specific task of solving the problems associated with soft tissue coagulation in the medical theatre's surgical procedures. The company is currently situated in the Research & Development Park at Heriot Watt University, Edinburgh.



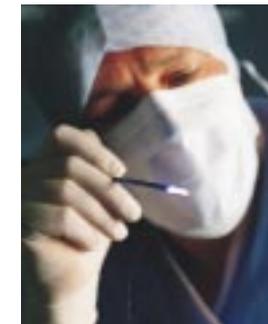
Advancing solutions in electrosurgery

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An introduction to the Helica TC Thermal Coagulator



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