Electrosurgery
As advanced new technologies are developed, so there is constant evolution in surgical techniques, leading to dramatic advances in every area of surgical procedure. In particular these changes apply to electrosurgery.
EMED has been present in the market since 1995. From the beginning, we have operated in the medical segment. Electrosurgery is our domain. Starting from a single model of surgical diathermy which entered into production in 1997, we gradually extended our offer. Today, we offer a whole range of electrosurgical units fully equipped with accessories and instruments. Our electrosurgical products vary from small devices for use in outpatient settings to comprehensive electrosurgical systems.

Based on our long standing experience in electrosurgical units’ production all together with our customer’s knowledge, we want to ensure constant development of surgical techniques and continuously improve the quality of work in the operating theatre.

The design and production process is based on modern technologies that ensure safety and high quality of our products. Simultaneously, in order to provide products that outpace needs of our the most demanding clients, we are always in search for new solutions.

The production process is maintained according to the highest standards, certified by the Quality Management System Certificates EN ISO 9001:2008 and EN ISO 13485:2012. All our diathermy units are CE labelled.

We offer high quality and reliable electrosurgical units.

For confidence in performance.
safety systems
confidence through safety

To get through a successful operating procedure is always a matter of both—a medical team and instruments the surgeon can relay on. The rule is to pick out instruments in the same way as surgical team, by choosing those that ensure smooth running of any procedure and back-up in case of emergency.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoTest</td>
<td>EMED systems, after being switched on, perform a comprehensive internal test, whose result is displayed in the form of a precise, legible message.</td>
</tr>
<tr>
<td>Overload Protection</td>
<td>Supervising the temperature of the most critical components of the system makes it possible to avoid damaging the system, even if it is being heavily exploited.</td>
</tr>
<tr>
<td>Automatic operation</td>
<td>Automatic regulation of the delivered power depending on the needs. A microprocessor monitors the tissue parameters on an ongoing basis to achieve the optimum cutting effect.</td>
</tr>
<tr>
<td>Spectrum Result</td>
<td></td>
</tr>
<tr>
<td>NEM System</td>
<td>The NEM system controls the quality of the contact of a return electrode with the patient's skin. Using the NEM system, as well as splitted neutral electrodes, has totally eliminated the problem of burning the patient's skin while applying a patient neutral electrode.</td>
</tr>
<tr>
<td>EndoDetect</td>
<td>Fully controlled resection process for polypectomy procedures. The system of snare fitting detection makes it impossible to activate the cutting mode when the snare does not fit tightly around the tissue. By preventing an accidental electrical current activation, Endo Detect minimizes the risk of perforation, ensuring maximum safety of the surgical procedures.</td>
</tr>
<tr>
<td>Defibrillator Proof</td>
<td>All EMED systems are resistant to the defibrillation impulse according to EN 60601-1:2006.</td>
</tr>
<tr>
<td>Constant surveillance of</td>
<td>A fast processor supervising the operation of the system provides an up-to-date assessment of the electrical parameters. Any possible disturbances are immediately reported.</td>
</tr>
<tr>
<td>electrical parameters</td>
<td></td>
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</tbody>
</table>
# electrosurgical units

## comparison of technical parameters

<table>
<thead>
<tr>
<th>Feature</th>
<th>ES120</th>
<th>ES300</th>
<th>ES350</th>
<th>ES350 Argon</th>
<th>ES350 Argon ThermoStapler®</th>
<th>Spectrum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monopolar cut</td>
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<tr>
<td>Monopolar coagulation</td>
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<tr>
<td>Bipolar coagulation</td>
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<tr>
<td>Bipolar AutoStart/ AutoStop</td>
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<tr>
<td>Bipolar cut in liquids</td>
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<tr>
<td>Argon</td>
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<tr>
<td>ThermoStapler®</td>
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<tr>
<td>Endoscopic program</td>
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<tr>
<td>Endo-Detect System</td>
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<tr>
<td>AutoTest</td>
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<tr>
<td>Neutral Electrode Monitor (NEM)</td>
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<td>SpectrumResult</td>
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<tr>
<td>MultiSwitch</td>
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<tr>
<td>LCD touch screen</td>
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<tr>
<td>LED display</td>
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<tr>
<td>Detection of connected instruments</td>
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<tr>
<td>Programmable</td>
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<tr>
<td>Monopolar output</td>
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<tr>
<td>Bipolar output</td>
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<tr>
<td>SDS universal outputs</td>
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</tbody>
</table>

* available with SDS (6-pin) sockets
Spectrum is a state-of-the-art electrosurgical system that automatically adapts to the user’s needs.

Our goal was to create an electrosurgical unit that requires no complicated set-up prior to surgery and is ready for operation immediately after instrument connection.

Owing to the solutions used in Spectrum, the user does not need to control power settings. The Spectrum system itself ensures that the output settings are maintained so as to obtain the desired result, regardless of the surgical conditions – result oriented performance.

For over 15 years we have specialised in the production of the highest quality electrosurgical diathermies. Our experience and continually evolving technology have enabled us to set new trends in electrosurgery. Through active cooperation with our Customers we have created Spectrum – the first electrosurgical system which adapts to different surgical procedures so that each surgical intervention is as effective as possible.

Spectrum of opportunities and a single goal, which is full support of the surgeon in the operating room.
To facilitate the work with an electrosurgical system to the greatest extent possible, we have equipped spectrum with a number of functions to support the surgeon during the procedure.

- the **SmartDevice System** detects and identifies the connected instrument. It automatically adjusts the appropriate operating modes and output parameters to the connected instrument,

- the **SpectrumResult** solution maintains the output settings so as to obtain the desired effect of diathermy, regardless of the surgical conditions,

- **ThermoStapler® II** new generation of vessel sealing system,

- 10-inch **InTouch Screen** has integrated brightness adjustment and a choice of graphics versions of the screen,

- **universal SDS outputs** allow the use of monopolar and bipolar instruments in the same output,

- new **specialist modes** are adapted to specific applications in urology, arthroscopy and endoscopy,

- simple **software updates** via USB,

- communication with the user in different languages, **Voice Communication** commands inform about the diathermy operating status,

- **Spectrum Trolley** provides ergonomic work in the operating room.
modes of operations

setting performance goals

Get to know our electrosurgical operating modes to select them accordingly to your performance goals.

<table>
<thead>
<tr>
<th><strong>Monopolar cutting</strong></th>
<th>Cutting with a minimum level of haemostasis. It is used to cut tissues when there is no need to control excessive bleeding. This type of cut is the safest for the tissue.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cutting with haemostasis</strong></td>
<td>It is required when there is a need to control bleeding more intensively already while cutting. It is more effective in terms of controlling bleeding, but it also affects the tissue thermally more.</td>
</tr>
<tr>
<td><strong>Precise cutting</strong></td>
<td>It is used to cut small and precise structures. Weaker current enables increased precision of the cut.</td>
</tr>
<tr>
<td><strong>Cutting with desiccation</strong></td>
<td>Alternating cutting and soft coagulation enables cutting tissues that bleed heavily and minimize the bleeding.</td>
</tr>
<tr>
<td><strong>Monopolar cutting in liquids</strong></td>
<td>This mode is used in a difficult (aqueous) environment. It is usually applied in urology and arthroscopy.</td>
</tr>
<tr>
<td><strong>Polypectomy and papillotomy</strong></td>
<td>Special cutting modes necessary to remove polyps and the procedure of sphincterotomy. Alternating cutting and coagulation enables achieving an optimal coagulation for this application and reduces the probability of bleeding.</td>
</tr>
<tr>
<td><strong>Soft coagulation</strong></td>
<td>This mode enables deep coagulation that penetrates deeper than other types. A typical application is to control bleeding during a surgical procedure, when other types of coagulation prove to be inefficient. This type of coagulation is economical for the tools and eliminates tissue carbonization.</td>
</tr>
<tr>
<td>Mode</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Spray coagulation</td>
<td>Contact-free coagulation enabling quick and effective coagulation of larger surfaces. It eliminates the effect of tissue adhering to the tool.</td>
</tr>
<tr>
<td>Hybrid coagulation</td>
<td>Combines the benefits of forced coagulation and spray coagulation. Enables quick coagulation of tissues using contact, as well as contact-free coagulation of surfaces. It eliminates the necessity of changing the operation mode during the procedure.</td>
</tr>
<tr>
<td>Forced coagulation</td>
<td>It is the traditional type of coagulation that enables quick and effective coagulation of a local haemorrhage.</td>
</tr>
<tr>
<td>Argon coagulation</td>
<td>A mode used for contact-free coagulation of surfaces. It eliminates smoke and smell, ensures very shallow and mild coagulation. Necessary when there is a risk of perforation.</td>
</tr>
<tr>
<td>Pulse coagulation</td>
<td>It is used in gastroenterology to block haemorrhaging. Pulse operation enables more precision in terms of dosage and aiming at the bleeding area.</td>
</tr>
<tr>
<td>Argon enhanced cutting</td>
<td>An argon shield reduces the quantity of smoke and smell. It also enables the reduction of thermal damage to the tissue and more effective control of the bleeding. This function is particularly desired for procedures requiring intense use of diathermy.</td>
</tr>
<tr>
<td>Bipolar cutting</td>
<td>The mode used to cut tissues with the help of bipolar current. Special bipolar tools are used for this purpose. This mode is particularly recommended for procedures performed on babies and patients with pace makers.</td>
</tr>
<tr>
<td>Bipolar cutting with haemostasis</td>
<td>An increased level of haemostasis is more effective in terms of controlling bleeding, but it also affects the tissue thermally more.</td>
</tr>
<tr>
<td>Bipolar cutting in liquids</td>
<td>It is used for bipolar resectoscopes that work in the environment of physiological salt. It is usually used in urology (TURBT, TURP) and arthroscopy.</td>
</tr>
<tr>
<td>Bipolar coagulation</td>
<td>In this mode, the current flows between the electrode tips and there is no need to apply the neutral electrode. A typical application is closing medium size blood vessels.</td>
</tr>
</tbody>
</table>
Argon

efficiency oriented performance

Argon in electrosurgery

Argon plasma coagulation ensures fast and efficient coagulation of large, heavily bleeding surfaces. Provides effectual devitalisation of tissues, e.g., neoplastic tumours. Argon plasma coagulation means less blood loss and less tissue damage. With penetration depth limited to 3 mm, it is particularly recommended for areas of high perforation risk.

Argon coagulation and cutting

EMED electrosurgical units are equipped with standard argon coagulation and pulse argon coagulation operating modes. Those modes allows to run any surgical intervention in safe and effective way. The option of adjustment of pulsation in argon coagulation enables more precision during endoscopic procedures. EMED electrosurgical units are also equipped with the option of monopolar cutting in argon shield.

Efficiency enhancing features

- immediate hemostasis helps efficiently coagulate large areas of bleeding surface
- penetration depth limited to approximately 3 mm minimizes risk of perforation
- tissue carbonization is minimal compared to standard electrocoagulation
- no tissue vaporization minimizes the risk of perforation
- no contact between the applicator and tissue means no tissue adhesion
- less surgical smoke gives good visibility of operating area
- reduced smoke eliminates unpleasant odors
- precise application of thermal energy results in reducing procedure time
The advantages of argon coagulation makes an ideal in endoscopic procedures, in gastroenterology in particularly. Argon coagulation together with dedicated endoscopic modes of operation made by EMED allow safe and effective way of running surgical intervention.

For endoscopic interventions EMED dedicates particular flexible endoscopic probes. They are designed for multiple use and are available in a variety of sizes and lengths. Detailed list of argon instruments and accessories are available from current accessories catalogue.

Argon coagulation is an excellent option for open surgery procedures, especially in case of glandular type of organs. For open surgery procedures we offer rigid argon applicators for coagulation and electrodes with needle or lancet ends for monopolar cutting in argon shield.

For more information about argon coagulation and its application see “Argon in electrosurgery” catalogue.
Due to the combination of the thermal and mechanic effects, ThermoStapler® offers a permanent alteration of collagen structure. Ensures higher resistance and closing. ThermoStapler® enables closing blood vessels with a diameter of 7 mm, however each time the user’s assessment of the closing security is needed.

- integrated system: diathermy, argon coagulation and a vessel sealing module ensures cost reduction, there is no need to purchase any additional devices
- high reliability of the system ensures maximum safety of work
- blood loss is significantly reduced
- the system allows to economize on sutures and staplers
- natural sealing of vessels
- multiple-use device, no limits on the number of uses
- no foreign body remains in the patient’s body
- regulating the intensity of the effect enables the surgeon to select the most appropriate type of operation high reliability of the system ensures maximum safety of work
Advantages of ThermoStapler®

- physical pressure onto the vessel with the use of a bipolar clamps
- a generator deliver high frequency and low voltage current which does not cause sparks during the sealing process
- constant monitoring of the tissue impedance
- microprocessor control ensuring the repeated coagulation effect
- automatic switch-off of the generator at the moment of achieving the optimal sealing of the vessel, confirmed with a sound signal
- the possibility to select the level of intensity of the effect

ThermoStapler® instruments

EMED offers wide range of instruments dedicated to open surgery and laparoscopic procedures. All ThermoStapler® system instruments are multiple use and can be sterilized in an autoclave.

Electrosurgical units with ThermoStapler®

- spectrum (ThermoStapler®)
- ES 350 Argon ThermoStapler®

Applications

- general surgery
- gynecology
- urology

For more information about vessel sealing system ThermoStapler® and its application see “ThermoStapler®” catalogue.
Atom is a compact system which easily adapts to the user. It offers possibilities which have so far been provided by large and complicated electrosurgical systems only. Since it is possible to configure in any way the available operating modes, each user can set up an electrosurgical system that accurately meets the actual needs and requirements. Atom features monopolar and bipolar techniques in a variety of cutting and coagulation modes. The generator features highly-specialized operating modes, e.g. bipolar resection, an endoscopic cutting procedure and ThermoStapler® - a system for sealing large blood vessels. An integrated argon module brings the benefits from argon plasma coagulation and cutting in open, laparoscopic and endoscopic surgical procedures. Atom is the first electrosurgical system which offers the advantages of both a compact size and a huge range of capabilities.
Atom ensures an unprecedented ease of operation for the user with its:

- colour seven-inch display with a touch screen,
- innovative user interface,
- power monitor displaying average and real power,
- real-time monitoring of the output parameters of the unit,
- detection of the connected instruments (the SDS system),
- automatic selection of modes and settings to match the connected instrument,
- integrated argon connection,
- easy configuration of available modes and functions through an USB port,
- the possibility of an easy upgrade of its software to include new functions and operating modes.
Endo is the only highly specialized electro-surgical unit for endoscopic procedures on the market. It has been attentively designed to meet all requirements of endoscopic operation room. It enables to perform all endoscopic procedures that require monopolar endoscopic cut, bipolar and monopolar coagulation. Integrated argon module allows to use all the advantages of argon coagulation in endoscopic procedures. SDS system recognizes connected instruments and automatically selects the optimal working parameters. Endo is equipped with touch screen display. Neutral electrode monitoring system [NEM] together with EMED SAFE disposable electrodes, guarantees maximum safety during procedures. Endo is supported by specially design triple button foot switch for cut, coagulation and argon coagulation activation.
- advanced endoscopic cutting modes for polypectomy, sphincterectomy, mucosectomy
- specialized monopolar coagulation modes for endoscopic procedures
- continuous and pulsed endoscopic argon coagulation
- automatic regulation of all working parameters based on measurements in real time
- monitoring real and average power in endoscopic modes. It allows the operator to control device parameters
- colour touch screen and SDS system for instruments detection
- neutral electrode monitoring system [NEM] and EMED SAFE electrodes guarantees maximum safety during procedure
- triple footswitch for independent activation of cutting, coagulation and argon plasma
- dedicated trolley with case for argon cylinder and handy basket for accessories and cables provides comfort and ergonomics in the operation room
ARTro is a highly specialized electrosurgical unit dedicated for bipolar and monopolar arthroscopic procedures. ARTro allows vaporization, cutting and bipolar coagulation in Saline solution. It also offers monopolar cutting and coagulation modes which are necessary in some arthroscopic operations. Automatic regulation of output parameters guarantees fast and effective work. SDS system recognizes connected instruments and automatically selects the optimal working parameters. The operating modes and the output settings are selected automatically to the connected instrument. ARTro is equipped with touch screen display. Neutral electrode monitoring system [NEM] together with EMED SAFE disposable electrodes, guarantees maximum safety during procedures.
- advanced bipolar cutting and vaporization modes for arthroscopic procedures in Saline solution
- versatile due to monopolar cutting and coagulation modes
- automatic regulation of all working parameters based on measurements in real time
- colour touch screen provides quick and easy regulation of parameters
- instruments detection system facilitates the preparation for procedure
- after connecting SDS instrument the unit automatically selects suggested settings
- neutral electrode monitoring system [NEM] and EMED SAFE electrodes guarantees maximum safety during procedure selects suggested settings
- dedicated trolley equipped with shelves for accessories and materials necessary for the operation
es350

with Argon module and ThermoStapler® system

ES350 with ARGON and ThermoStapler® is an electrosurgical system that meets the expectations of the most demanding medical professionals. It combines the benefits of diathermy, argon coagulation and a blood vessel closing system in one unit. It is equipped with two monopolar sockets, a bipolar socket and an independent ThermoStapler® socket. Enables operating with the use of various instruments without changing them during the procedure.

The unit follows an advanced operating modes such as bipolar resection. ES350 customizes settings for different interventions by using 9 program storage positions. ES350 with ARGON and ThermoStapler® system is equipped with SpectrumResult System for an automatic adjustment of power to maximizes the effectiveness of operation. Neutral Electrode Monitor System and Autotest ensures maximum safety during operation.
es350
with Argon module

An electrosurgical generator which meets all the requirements of a modern surgery. The unit enables monopolar operation in standard modes and in ARGON enhanced cutting and coagulation. It is excellent both for open surgery and endoscopic and laparoscopic procedures. Equipped with Spectrum-Result system for an automatic adjustment of power, it maximizes the effectiveness of operation. The safety systems: Neutral Electrode Monitor and AutoTest guarantee security of performed procedures. The option of programming settings and modes additionally increases the comfort of work with ES350 with an ARGON module. It enables remote program change via MultiSwitch.

Argon
Bipolar resection
9 programs
Endoscopic cutting mode
MultiSwitch
SpectrumResult
NEM System
Overload Protection
es350
designed for modern surgery

ES350 offers a variety of operating modes for open procedures, as well as endoscopy and laparoscopy. It enables monopolar and bipolar operation. It is also equipped with additional functions for specialized procedures in urology, arthroscopy and endoscopy. The unit is equipped with system that enhances the effectiveness of operation: automatic power adjustment Spectrum Result. The neutral electrode monitoring NEM System and AutoTest guarantee maximum safety during surgical procedure. The generator enables remote change of programs via MultiSwitch.
es300

designed for outpatient clinics

A new version of ES300 unit. It operates in monopolar cutting mode with different levels of haemostasis as well as mode of soft and forced coagulation. ES300 enables bipolar coagulation controlled with footswitch or automatically with AutoStart or AutoStop function. It is equipped with PowerStart system which facilitates the start of a procedure cutting and SURGILOGIC - automatic power adjustment. Supported by Neutral Electrode Monitor NEM, which controls the quality of neutral electrode application and AutoTest, an internal test conducted each time after power system is switched on.
es120

designed for small surgical procedures for outpatient clinics

The ES120 has separate control panel for operation in monopolar cut and coagulation, and bipolar coagulation mode. The unit is also equipped with a multiple footswitch. The generator operates in the following modes: pure cutting, cutting with haemostasis, monopolar soft and forced coagulation and bipolar coagulation. ES120 is equipped with Power Start System, neutral electrode monitoring NEM, and AutoTest an internal test conducted each time after the power is switched on. Altogether with smart appearance and user-friendly applications makes ES120 an excellent choice for gynecological, dermatological and cosmetological surgeries, as well as for small surgical procedures for outpatient clinics.
ariasmoke evacuation system

Operating smoke is always an integral part of electrosurgical operation. Smoke generated during cutting and coagulation of tissues reduces the visibility of operating field. It also decreases the comfort of work in the operation room. Electrosurgical smoke, in a longer period of time, may have also negative influence on the health of people using electrosurgery in their daily work.

To improve comfort of operations and ensure the safety of the whole operating team it is recommended to use smoke evacuation system during electrosurgery. ARIA system assures safe and comfortable work in the operating room. ARIA is totally integrated with Spectrum electrosurgical system and it is also compatible the spectrum and other devices EMED.

Advantages:

- quiet operation of the device guarantees no distractions during operation
- 35-hour filter life reduces the costs of procedures
- comprehensive three-port filter allows to connect 6mm, 9.5mm or 22mm accessories without using of additional adapters
- integration with Spectrum electrosurgical system allows automatic activation of suction while electrosurgical instrument is activated
- manual or via foot switch control available for other electrosurgical units
- three levels of air flow regulation
- easy to use
electrosurgical accessories

Select electrosurgical instruments and accessories to reach your performance goals.

We offer assortment of accessories for electrosurgery, including:

monopolar accessories · bipolar accessories · laryngology · arthroscopy · ThermoStapler®

vessel sealing clamps · neutral electrodes · monopolar and bipolar cables · argon coagulation instruments · papillotomy instruments · polypectomy instruments · other endoscopic and laparoscopic instruments

The full range of our accessories is presented in our Accessories for Electrosurgery catalogue.

We also invite to purchase our products through our official website: [www.emed.pl](http://www.emed.pl)
EMED products are available all over the world. See www.emed.pl for contact details.

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