

5TH GENERATION LINEAR EDM



Picture shows non-CE machine

AP250L

Linear Motor Drive High
Precision Wire-Cut EDM



Sodick

Nano&Solution

Oil Cutting Technology Since 1981

Sodick has developed the cutting technology in oil dielectric since 1981. Wire EDM with Oil dielectric has always been the best solution for high-accuracy and high quality surface finish because of the smaller discharge (spark) gap. On the other hand, the smaller gap always had resulted in slower cutting speed. Thanks to Sodick's know-how and experience through years, Sodick has now developed a new generator "ECO Cut O". ECO Cut O realizes further improvement on cutting speed and number of cuts with oil dielectric. To achieve the surface finish of less than $0.15\mu\text{mRa}$, it requires the same cutting time as water dielectric.

Pursuit of the Highest Accuracy and Quality



Thermally Stable Machine Construction

The AP250L benefits from a symmetrical gantry design made from high quality Meehanite casting to create a highly rigid and thermally stable structure. The power supply has been separated from the work tank so that the heat generated does not adversely effect the machine's accuracy. Furthermore, the air and dielectric are circulated through machine construction to control the thermal influences.



Ceramic Components

The AP250L is built using in-house made ceramic components for workstand, worktable, upper/lower arms etc. Ceramics has a low co-efficient of thermal expansion, light in weight, high rigidity, resistant to ageing and high electrical insulation properties, therefore an ideal material for accuracy, stability, efficiency and quality. These are the fundamentals of a class leading Wire EDM machine.



Fully Supported Table Design

The machine table has been configured so the table is fully supported over the full stroke of the axis movements, thus ensuring high accuracy and stability by the well-planned design.



Cross Roller Guide

To complement the linear motor drive performance, cross roller guides are employed on AP250L.

Advantages of cross roller guides

- Excellent weight bearing capability
- Minimal drag effect
- Pre-tensioned = Zero lost motion



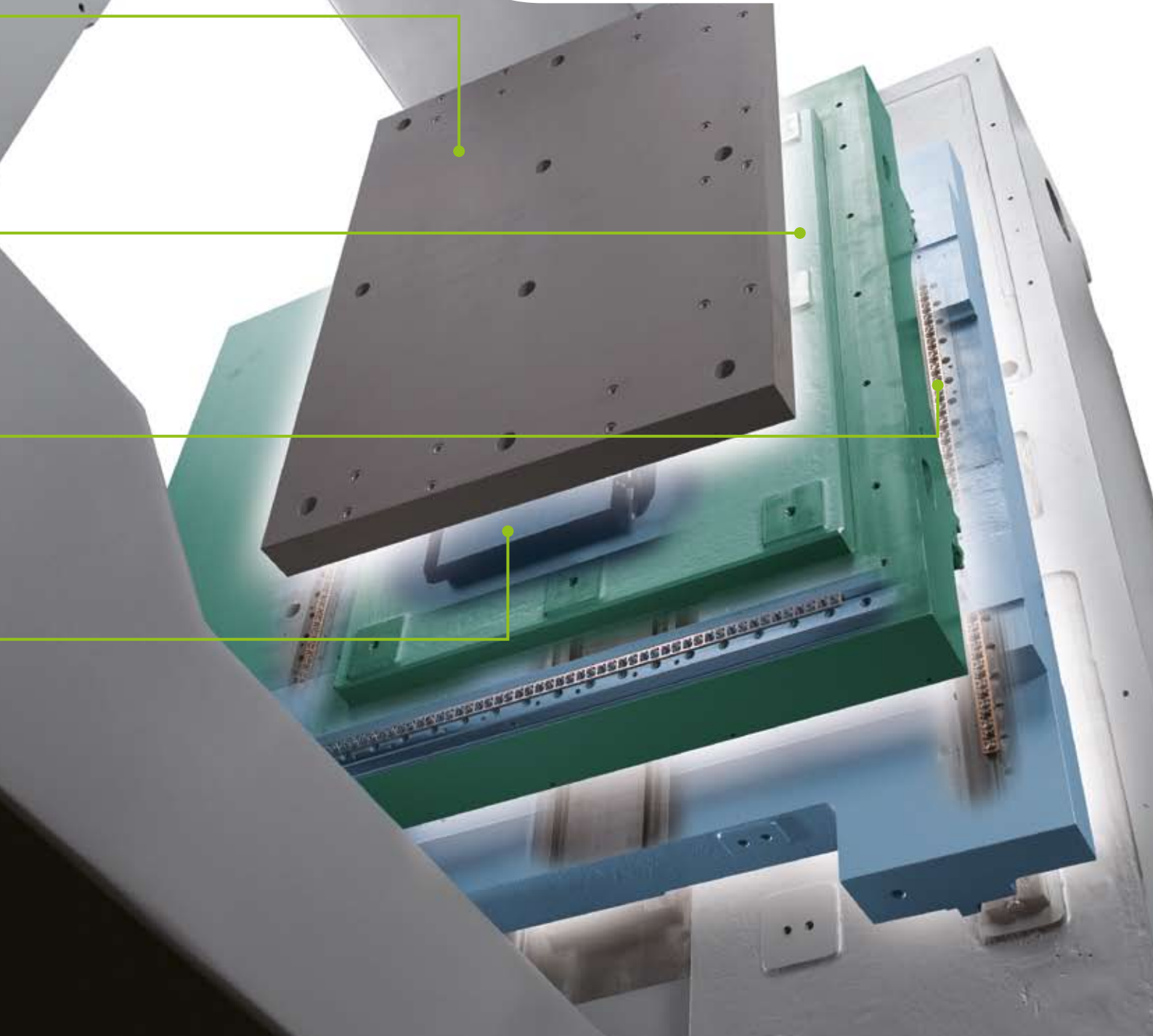
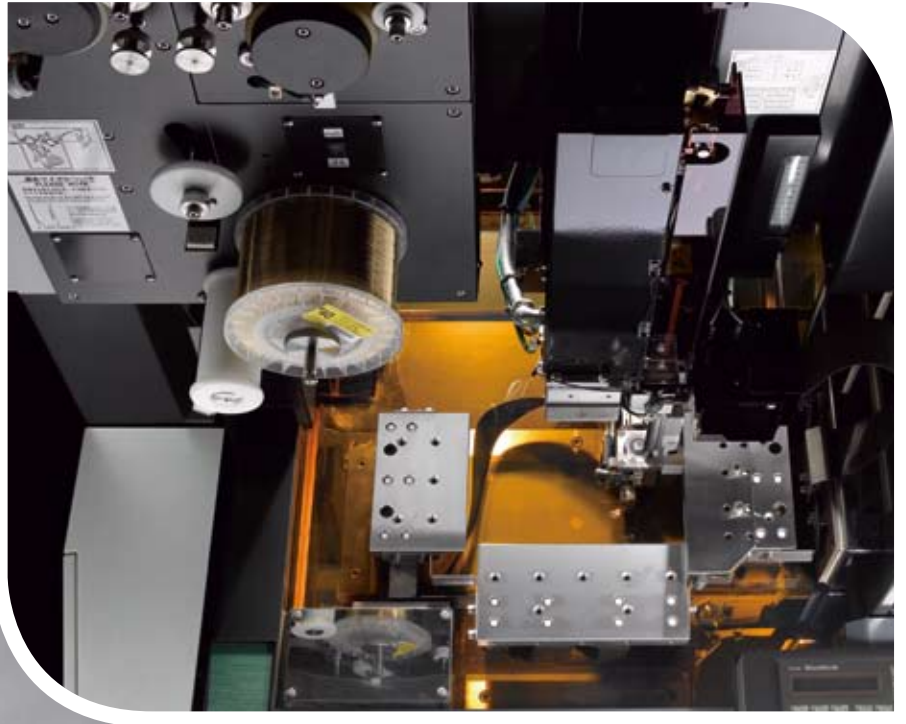
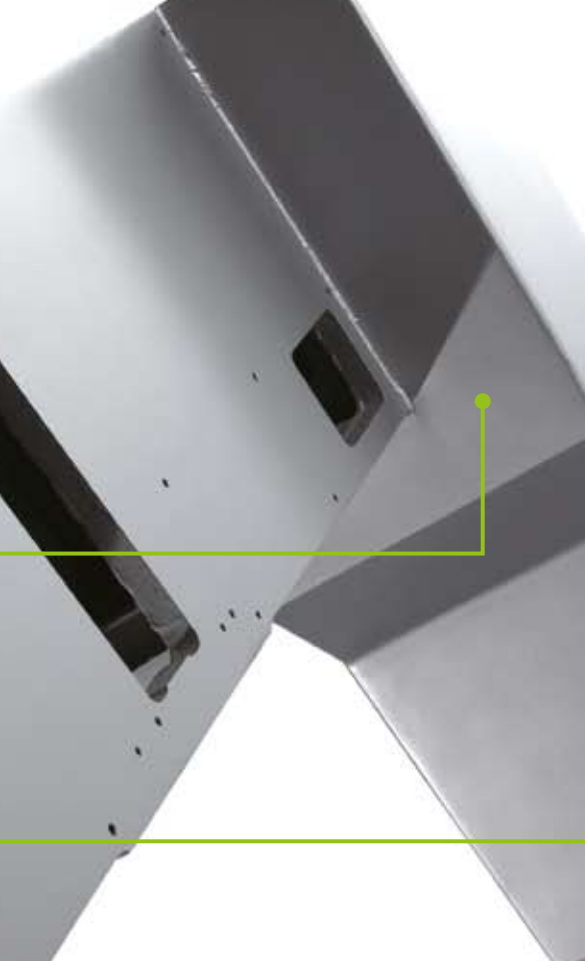
Linear Motor Drive

Linear motor is a direct, vibration free drive with unrivalled acceleration, positioning accuracy and no backlash which is an ideal device for high-precision applications. Its high dynamic responsiveness, stability for precision machining and performance do not diminish over time and remain maintenance free. The accuracy of linear motor is guaranteed for 10 years after the installation.



The new "LP2W" Controller

The 5th generation electrical discharge technology "LP2W" has adopted the "Perfect Active Control," enabling simultaneous control of highspeed electrical discharge and axis-movements by using serial communication technology of 1Gbit/sec.



Automatic Wire Threader

Sodick's high speed automatic wire threader is compatible with wire diameters from 0.05 to 0.20 mm. The used wire is ejected to the rear of the machine, which permits the lower arm to be shorter in design, further enhancing the machine's accuracy. The machine can be further tailored to meet exacting requirements with the 0.03 mm diameter wire option (Factory Option Only).



Wire Tension Control

A important mechanism in the efficient and trouble-free operation of the AP250L is the Advanced Wire Tension System which delivers smooth, reliable spooling and versatility in operation, covering a wide range of wire diameters from 0.05 to 0.20 mm. The machine can be further tailored to meet exacting requirements with the 0.03 mm diameter wire option (Factory Option Only).

3-sided Automatic Tank Door

3-sided automatic drop tank enables easier access to work-tank from both sides of the machine, ensuring ergonomically user-friendly operation. A further benefit of the 3-Sided work-tank door is the simplified installation of a Robot (Option) which can be positioned on the left hand side of work-tank.



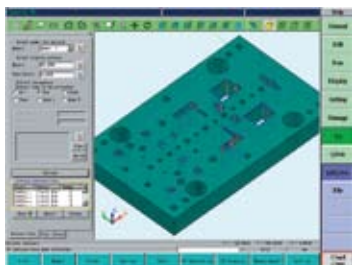
Super PIKA-O

"Super Pika-O" is the super finish circuit which Sodick has developed for Wire-cut EDM with oil dielectric. It minimises machining energy, resulting in an excellent surface finish which significantly reduces and in some cases eliminates the need for subsequent polishing and other finishing operations.



Intelligent Q³vic EDW

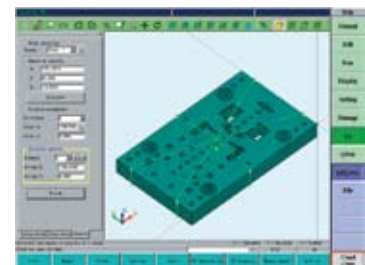
Intelligent Q³vic EDW directly imports 3D models and extracts automatically cutting contour to be machined by the Wire EDM within seconds. Even work pieces with a complicated shapes and different cutting heights can be programmed using only a single command. After the surfaces to be machined have been recognized, a NC programme is generated including all cutting parameters. A full on screen simulation is possible prior to machining. Intelligent Q³vic can also advise the operator of the best clamping positions to minimize the distortion of workpiece.



Automatic recognition of machining profile



Automatic programming of machining profile



Automatic calculation of the center of gravity to display the optimum clamping position

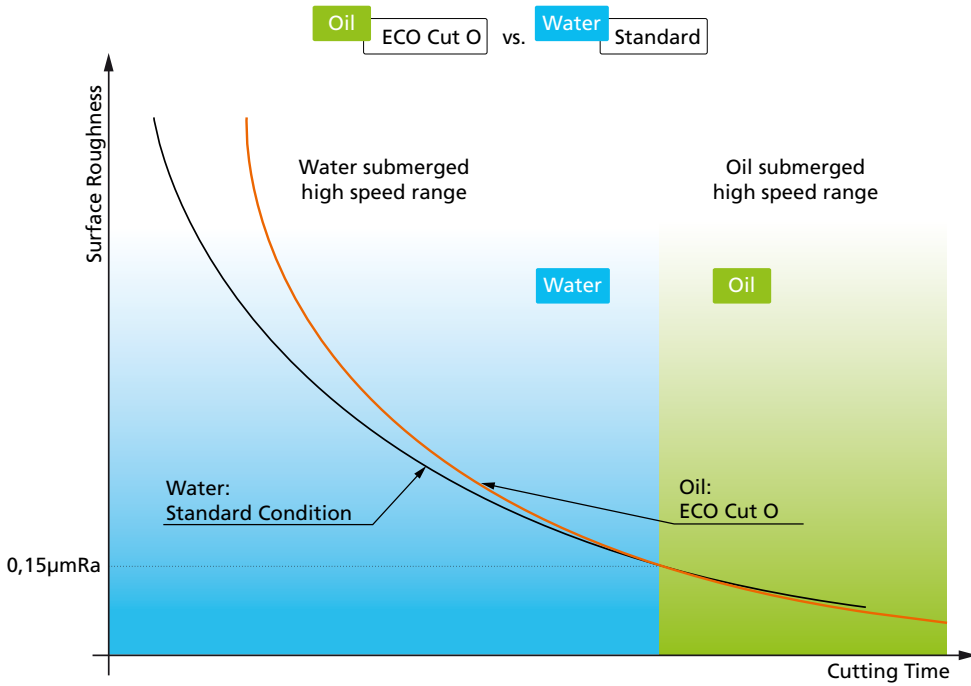
ECO Friendly Operation

ECO Cut O realizes unrivaled cutting speed in oil dielectric, resulting in short operation time and less wire consumption. Because of a smaller discharge gap in oil dielectric, consumption of filters is also minimized compared with water dielectric machines.

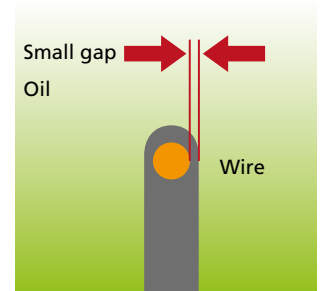


Eco Cut O: The Revolution – Oil Cutting Speed = Water Cutting Speed

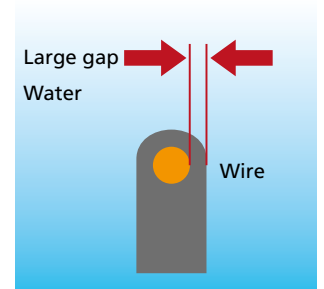
Sodick's latest innovation ECO Cut O makes it possible for Oil Dielectric to realize the same cutting speeds as Water Dielectric in achieving a surface finish of 0.15µmRa and beyond.



Advantages of Cutting in Oil

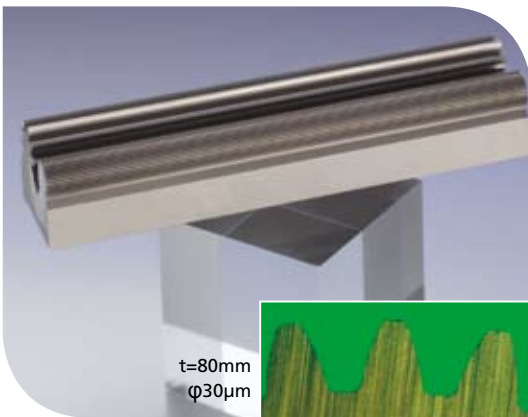


Precision machining/Fine wire



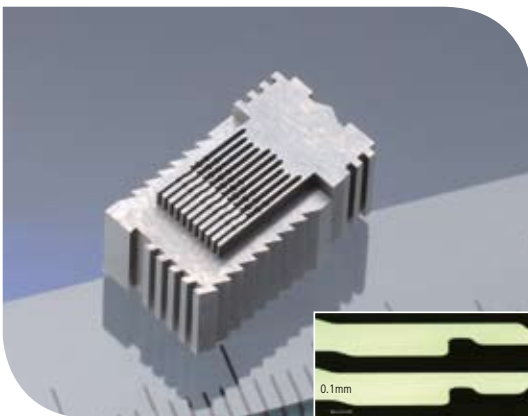
Fast machining/Regular wire

Advanced Oil-Based Wire EDM Technology



EDM is a machining method of removing material by discharge heat, by which its surface is melted and vaporized. When Tungsten Carbide (WC) materials are processed in water dielectric, the cobalt, the bonding material, is depleted. This results in lowering the hardness of the material surface. On the other hand, cobalt depletion is eliminated in oil dielectric. Thanks to the recast layer, its surface is hardened and increases the life of the tool. Furthermore, another advantage of oil dielectric is rust protection of the workpiece. It can also reduce the consumption of filters because of smaller spark gap and therefore removed material.

Material: WC (Cemented carbide)/G5 Accuracy: ±1.5 µm
Thickness: 80 mm Electrode: ø30 µm
Surface finish: 0.06µmRa



Material: WC (Cemented carbide)/G5 Accuracy: ±1.5 µm
Thickness: 5 mm Electrode: ø 50 µm
Surface finish: 0.05µmRa



Material: WC (Cemented carbide) Surface finish: 0.02µmRa
Thickness: 20 mm Electrode: ø0.2mm

The Oil based machining enables fine control of the discharge gap, achieving a surface quality of 0.02µmRa

