

# DELTA WIRE 3



[Hedel.ind.br](http://Hedel.ind.br)





## Our History

Hedel was founded in 1991 by two German descendant immigrant brothers. Driven by the passion of developing solutions even more efficient and innovative.

With great knowledge in welding and machining they started the fabrication of rock cutting machines. In 2002 the first triangular multiwire device was developed. Now known as Hedel Delta Wire.

In 2010 the company was transferred to Diego Hedel, the second family generation. A new management model guided Hedel to focus on the development of multiwire devices and to perfect the applied technologies so that in 2012 Hedel became the main multiwire supplier and manufacturer in Brazil. Attending the most demanding clients with quality, yield and best value, key points which opened the doors to the international market.

With multiwires installed in more than 10 countries, Hedel currently has commercial partners and customers in America, Africa, Europe and Asia. With its strength and innovation, it is the largest manufacturer of multiwires in the world.



## Triangular geometry

### Why choosing Hedel and investing on Delta Wire?

- Best production value on the market;
- Highest production with the same set of wires;
- Best quality of cutting;
- Lower maintenance cost;
- We prioritize the safety in our equipment.

### Important Features:

Delta Wire is equipped with inspection doors positioned in strategic places allowing an easy and fast wire replacement.

The replacement of all gaskets and rubber components can be performed by the operator of the machine on field because all rubber parts are attached to all the wheels of the machine.

Hydraulic cylinders on the two towers assist the up and down movement system, reducing the load over the nut, spindle and the activation of the machine. They allow the lifting of the machine in under or up to 5 minutes;

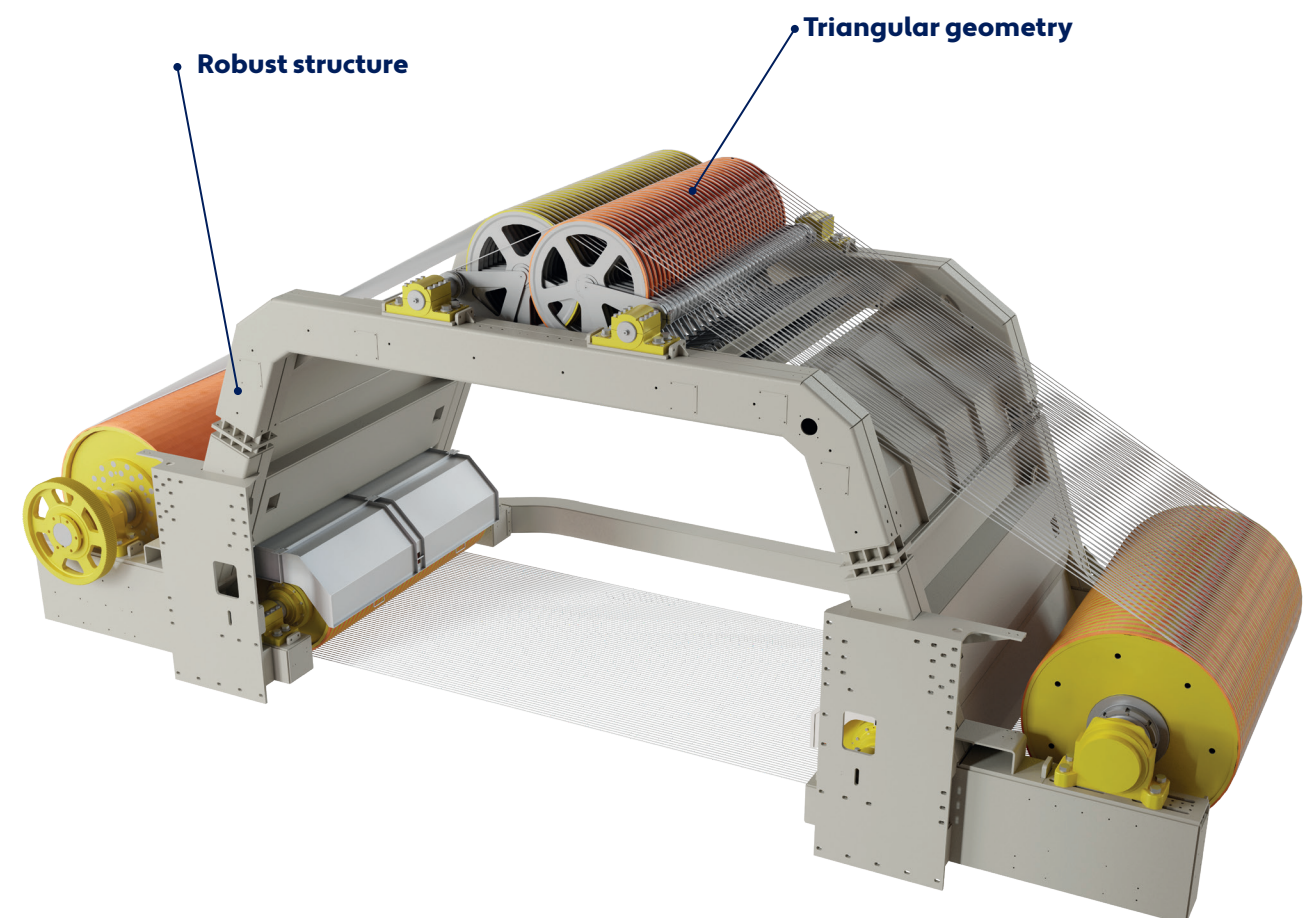
Stainless steel protection and anti-corrosion painting, making Delta Wire a long lasting product.

Delta Wire is built on a robust and steady structure. Assembled on two columns this manufacturing concept reduces maintenance cost and assists on the assembly and disassembly of the wire gears.

The cutting head has a triangular geometry which allow that the wires twist less in the circuit, work close to each other supported by conducting wheels generating less vibration and way more precision.

With the Delta Wire System developed by Hedel there is a meaningful increase in durability of the diamond coated wires, cutting speed and quality of cut sheets was conquered.

**The triangular geometry defines the concept of economic multiwires.**



## Up and down motion



The two columns are made of steel sheet on a welded frame box-shaped welded, slide guides are coated by special, interchangeable steels on which the sliders slide.

The movement is obtained through the trapezoid nut-spindle and spindle-nut. In machines with over 44 wires the up and down loads are assisted by 2 hydraulic cylinders.

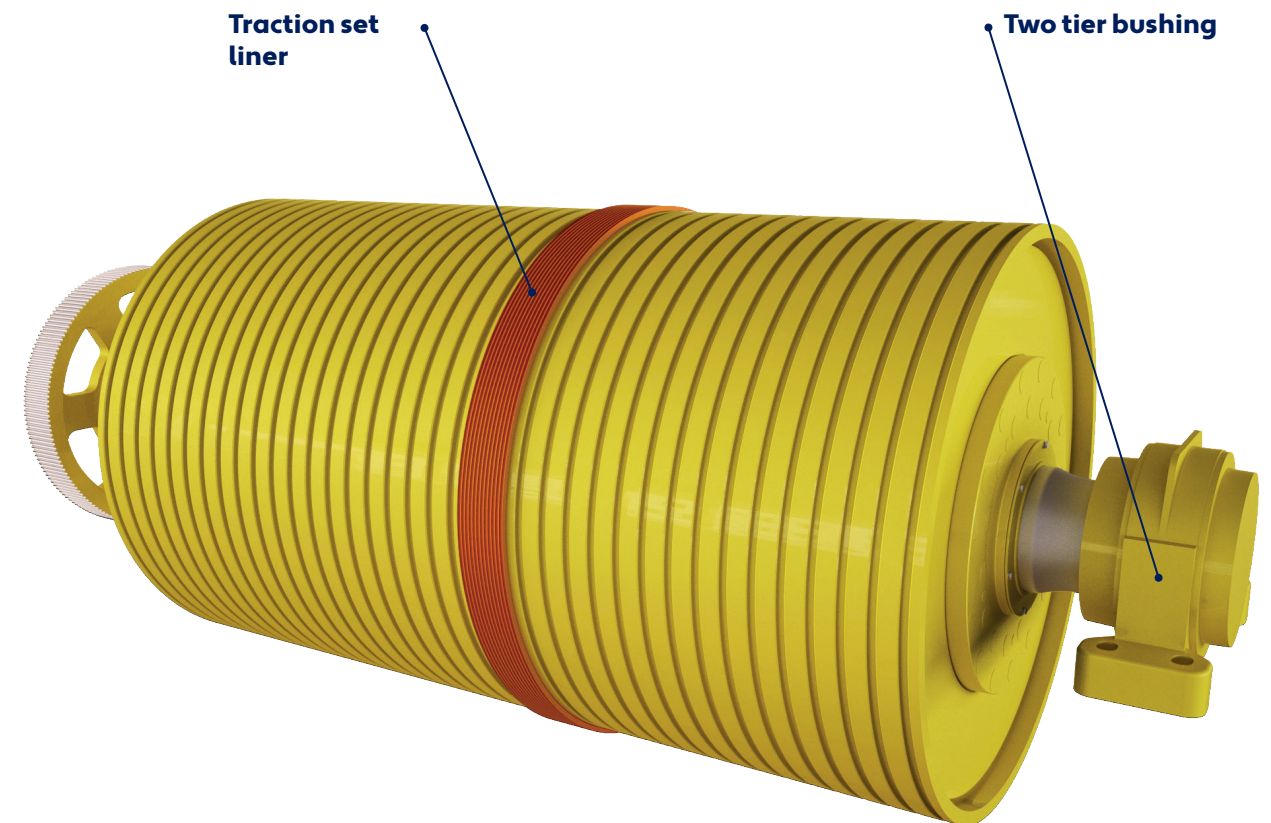
The entire guide system, nut-thread and trapezoidal thread-spindle are lubricated with a grease system and protected from contamination of the environment by double bellows.

We developed a fast lifting system for machine models over 44 wires, with a special servicer motor to lift the machine structure in under or up to 5 minutes increasing the productivity and reducing the idle time between the changes from one load to the next.



## Traction set, moved set, guides and axles

The **traction set** is composed by a drum with a diameter of 1.260 mm activated by a motor responsible to start the movement of translation of the diamond coated wires. The drum is made in carbon steel and in it the traction set liners are attached. The liners are independent parts and can be easily replaced in case of wear and tear.



The **moved set** assembled on the opposite side of the traction set consists of individual wheels set with the diameter of 1.260mm with the freedom of movement between them important to compensate the length difference within the cables. This compensation reduces the wearing effect on the polyurethane liners on the whole system. The wheels of the moved set are made of aluminum alloy, machined and balanced individually.

**This set can be provided in two configurations:**

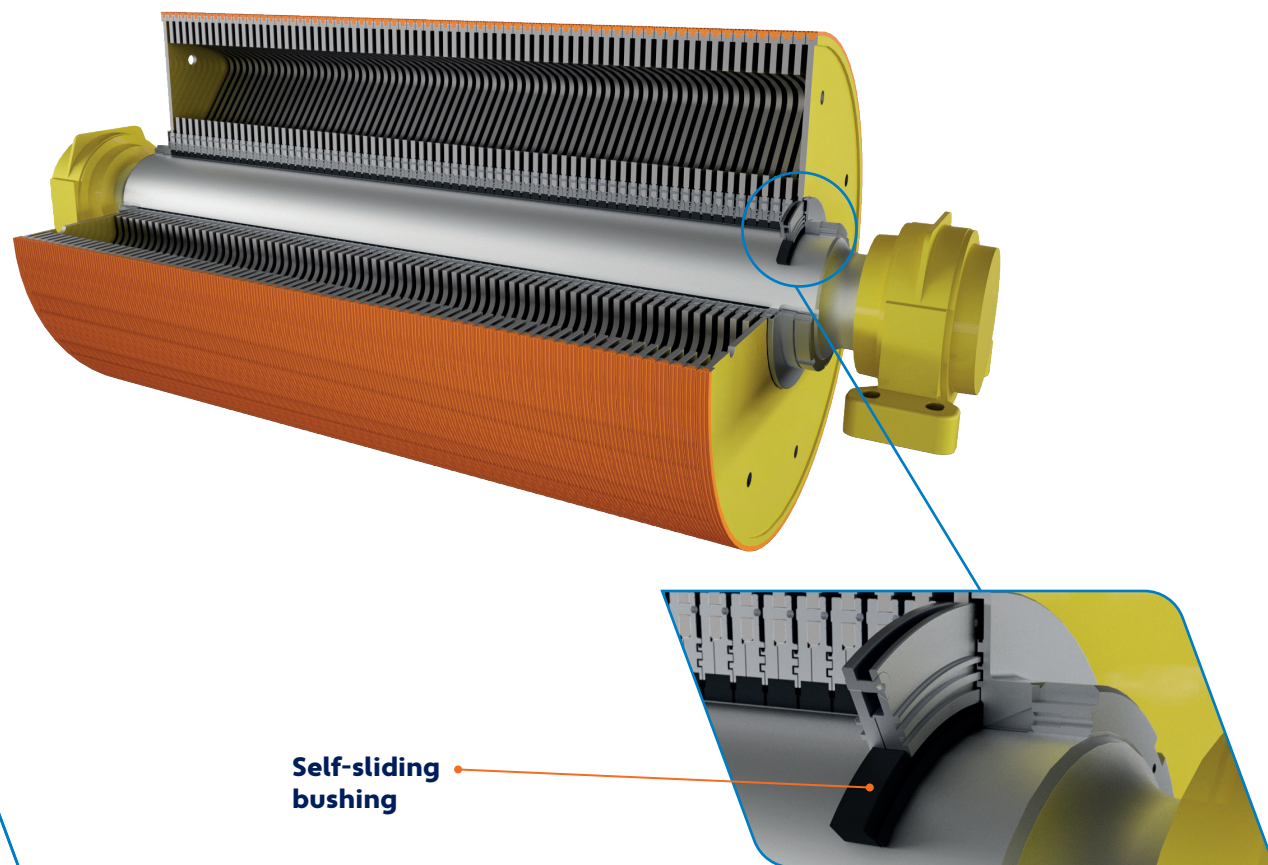
**Bearing system:** Utilizing a special bearing technologically developed for this application.



**Self-sliding bushing:** Maximum resistance to compression, operational temperature up to 200 °C. It operates dry or submersed. It absorbs chocks and misalignment. Excellent resistance to wearing, abrasion and corrosion in a hostile environment with the presence of water mixed with rock dust, it becomes an extremely effective solution.

The cutting **guides wheels** are made in the diameter of 780 mm in carbon steel and are responsible for the quality and precision of the rock sheets cutting. They are the drum closer to the block consequently the ones that are most affected by attrition among diamond coated wires, polyurethane liner and rock residue. The liner of these drums can be replaced individually in a fast and easy manner. It is an ideal system to reduce the time the machine remains idle.

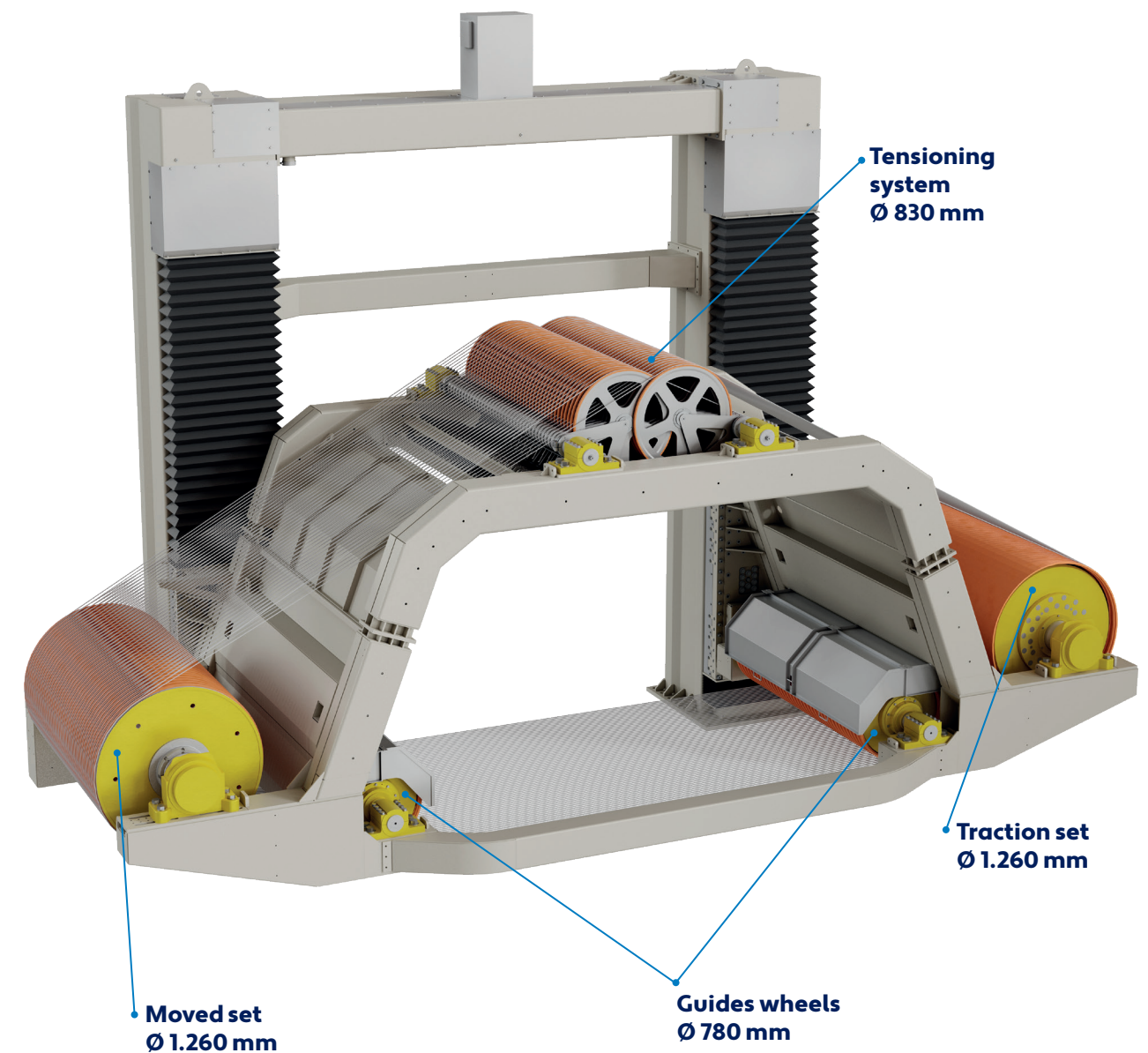
The **axles** are made from carbon steel and are heat treated up to a temperature of 980 °C going through a sudden controlled temperature drop to stabilize the material after this process : machining, finishing and zinc coating.



## Tensioning

The secret of a fast and precise cut is in the correct tensioning of the wire. The Delta Wire system delivers what the market asks for and need: productivity and quality.

Hedel's solution is an individual tensioning system utilizing special forged rolling wheels over robust rocker forks activated by sensitive and precise pneumatic cylinders. The great advantage of the pneumatic system is the sensitiveness of a low load that each diamond coted wire needs never surpassing the tensioning max limit.





A pneumatic central the several stages of operation and cylinder pressure. Every wire needs the same tensioning load individually. This way the adjustment is done by a single sensor.

Delta Wire has the best tensioning system which allows meticulous recoil of the wires when they are not operating correctly or when in contact with harder parts of the rock. It doesn't force the wire and balances its tensioning weight until its stabilized again avoiding breakage of the wire. This factor is only possible with the pneumatic system which when the normal work load surpasses the normal load it compresses and recoil the wire until the end.

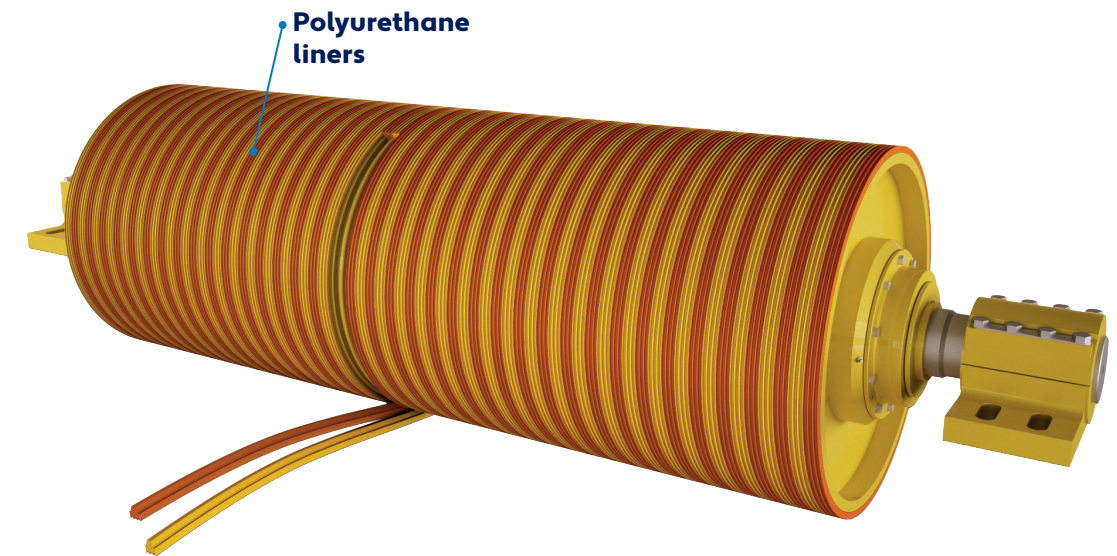
Another advantage is that the pneumatic cylinder are made from aluminum and do not oxidize as hydraulic pistons which are made of steel and due to an aggressive environment do generating tensioning errors and damage to metal sheets contaminated by oil leakage.

## Rubber parts interchangeability

One of the features of a winning machine is certainly the easiness of maintenance and one of the main advantages of Delta Wire is the easy exchange of the polyurethane liners on the pulleys.

We developed an efficient solution where the polyurethane liners are fitted and prepared to resist working rotations. This way the replacement is fast and can be done one by one by the operator of the equipment.

The solution is through a series of polyurethane bands over the ones which the grooves to let the diamond have coated wires run. Every spool has an exterior cover with a series of slots in which will be attached elastically the inferior polyurethane liners. With this solution, once the grooves are wore it becomes very simple the replacement of the bands, since its enough to remove the used ones and replace them without the need to dismantle the machine drums.



### Water spots

Delta Wirer is equipped with lubrication, cooling and cutting area cleaning system that guarantees the best operation conditions of the diamond coated wires within every slot and the complete removal of residues. The system consists in 9 wire washing points which the advantages are: Less machine incrustation, reduction of wearing on the polyurethane cover of the wheels, longer service life and higher efficiency of the diamond coated wire.

### Cowling (armor) and protection

The cowling and covers are made of stainless steel providing a longer service life to the equipment, reducing the corrosion effects and tearing of the multiwire system.

The frontal part has closing cover increasing the operational safety which also protects the machine and the working environment, reduces the dust cloud and water generated by the cutting operation.

The protections and footbridge were developed to provide comfort and safety to the operator.

To change the cutting wires Delta Wire is equipped with inspection points positioned in a strategic way allowing a fast and easy replacement of wires and avoiding that they get exposed on the outer side which would give the chance of an eminent accident.



Industrial electric board 4.0

The management and control software is really impressive due to the facility in which the parameters can be altered and the intuitive fast graphics while logically changing from one function to the next.

The electric panel has a human-machine interface with all the commands, visualizations and available parameter on a 10.4 inch touchscreen display. It is very easy to be operated and furthermore present important information in an instantaneous way during the cutting process. It is possible to follow the peripheral speed of the wire, speed and direction of the up and down lift of the machine, motor amperage, worked hours and possible errors detected by the sensors.

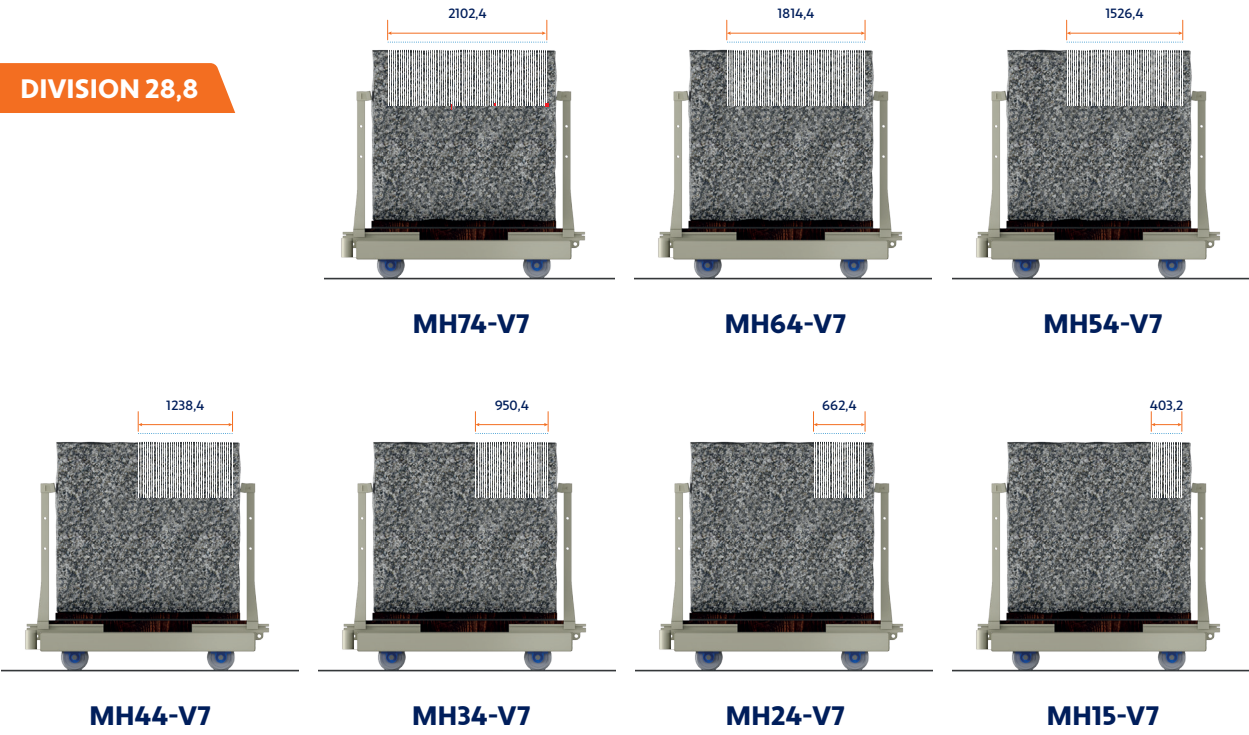


**IOT SYSTEM:** Developed following the Industry 4.0 concept; using your mobile phone it is possible to check indicators of the machine in real time from anywhere. Information such as: Machine lifting, amperage, cutting time, time to complete the cutting among other information. Feeding information to the panel the system informs service life of the wires, pearl wearing, provides a complete database allowing this way to create strategies to cut costs, increase production and improve the cutting.

Wire 7,3 mm

MODEL	UNIT OF MEASUREMENT	MH15-V7	MH24-V7	MH34-V7	MH44-V7	MH54-V7	MH64-V7	MH74-V7
Cutting width	Meters	3,5	3,5	3,5	3,5	3,5	3,5	3,5
Cutting height	Meters	2,2	2,2	2,2	2,2	2,2	2,2	2,2
2 cm cuts	Cuts	15	24	34	44	54	64	74
3 cm cuts	Cuts	11	18	25	33	41	48	55
Drum width	mm	432	691	979	1267	1555	1843	2131
Wire tensioning	Kilos	200 a 215	200 a 215	200 a 215	200 a 215	200 a 215	200 a 215	200 a 215
Peripheral wire	m/s	23/33	23/33	23/33	23/33	23/33	23/33	23/33
Wire length	Meters	20	20	20	20	20	20	20
Motor	CV	75	100	150	200/300	250	250/400	300/500
Power	KVA	81,3	102,9	143,0	187/273	232,7	233/304	278/449
Machine length	Meters	3,4	3,8	4	4,5	5	6,3	6,5
Width	Meters	10	10	10	10	10	10	10
Height	Meters	7,1	7,1	7,1	7,1	7,1	7,1	7,1
Weight	Tons	19	28	30	36	43	49	57
Water	Liters per minute	225	360	510	660	810	960	1110

DIVISION 28,8





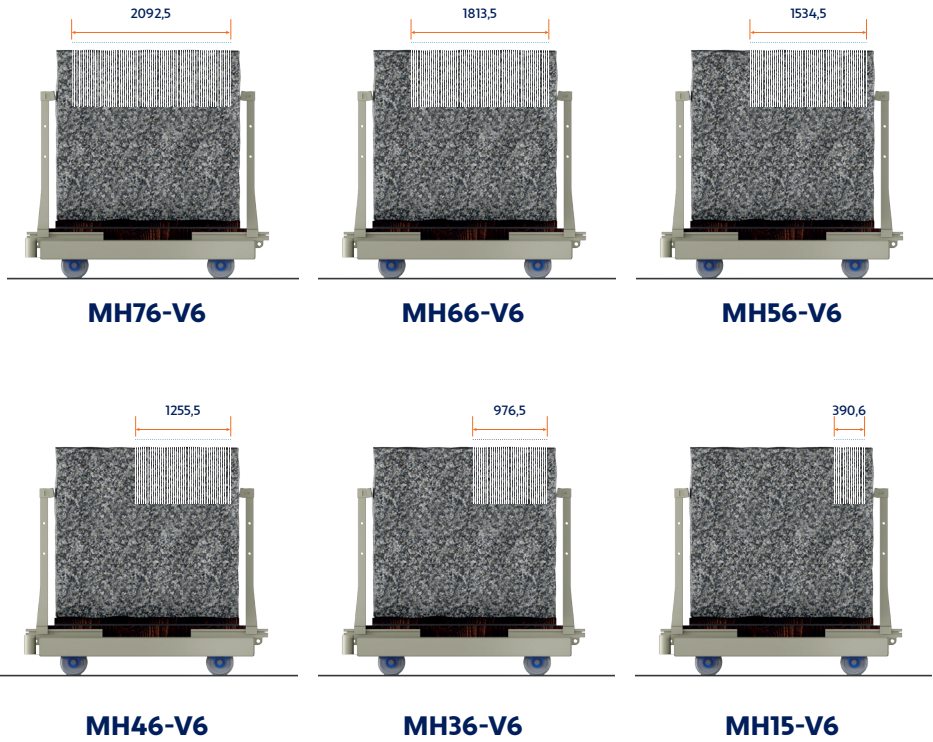
Wire 6,3 mm

MODEL	UNIT OF MEASUREMENT	MH15-V6	MH36-V6	MH46-V6	MH56-V6	MH66-V6	MH76-V6
Cutting width	Meters	3,5	3,5	3,5	3,5	3,5	3,5
Cutting height	Meters	2,2	2,2	2,2	2,2	2,2	2,2
2 cm cuts	Cuts	15	36	46	56	66	76
3 cm cuts	Cuts	11	27	35	42	49	57
Drum width	mm	418	1004	1283	1563	1841	2120
Wire tensioning	Kilos	180	180	180	180	180	180
Peripheral wire	m/s	23/35	23/35	23/35	23/33	23/35	23/35
Wire length	Meters	20	20	20	20	20	20
Motor	CV	75	150	200/300	250	250/400	300/500
Power	KVA	81,3	143,0	187/273	232,7	233/304	278/449
Machine length	Meters	3,4	4	4,5	5	6,3	6,5
Width	Meters	10	10	10	10	10	10
Height	Meters	7,1	7,1	7,1	7,1	7,1	7,1
Weight	Tons	19	30	36	43,2	49	57
Water	Liters per minute	225	540	690	840	990	1140

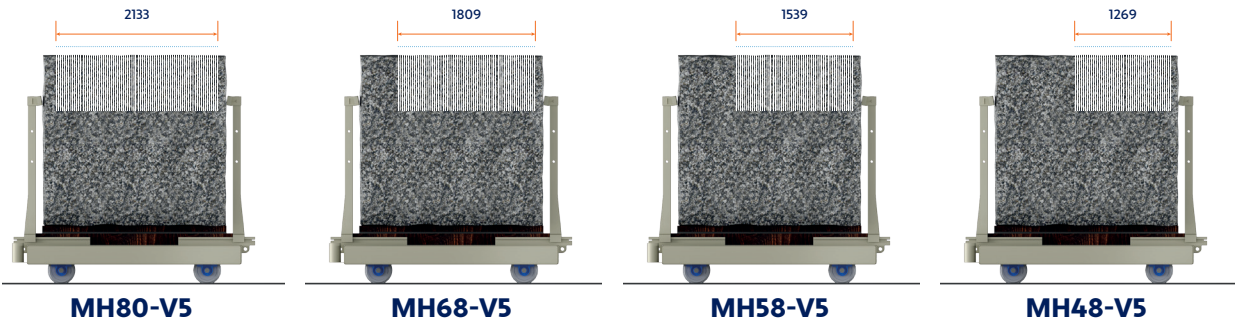
Wire 5,3 mm

MODEL	UNIT OF MEASUREMENT	MH48-V5	MH58-V5	MH68-V5	MH80-V5
Cutting width	Meters	3,5	3,5	3,5	3,5
Cutting height	Meters	2,2	2,2	2,2	2,2
2 cm cuts	Cuts	48	58	68	80
3 cm cuts	Cuts	36	43	51	60
Drum width	mm	1296	1567	1836	2160
Wire tensioning	Kilos	170	170	170	170
Peripheral wire	m/s	23/33	23/33	23/33	23/33
Wire length	Meters	20	20	20	20
Motor	CV	200/300	250	250/400	300/500
Power	KVA	187/273	232,7	234/304	278/449
Machine length	Meters	4,5	5	6,3	6,5
Width	Meters	10	10	10	10
Height	Meters	7,1	7,1	7,1	7,1
Weight	Tons	37	43,4	49	57
Water	Liters per minute	720	870	1020	1200

DIVISION 27,9



DIVISION 27

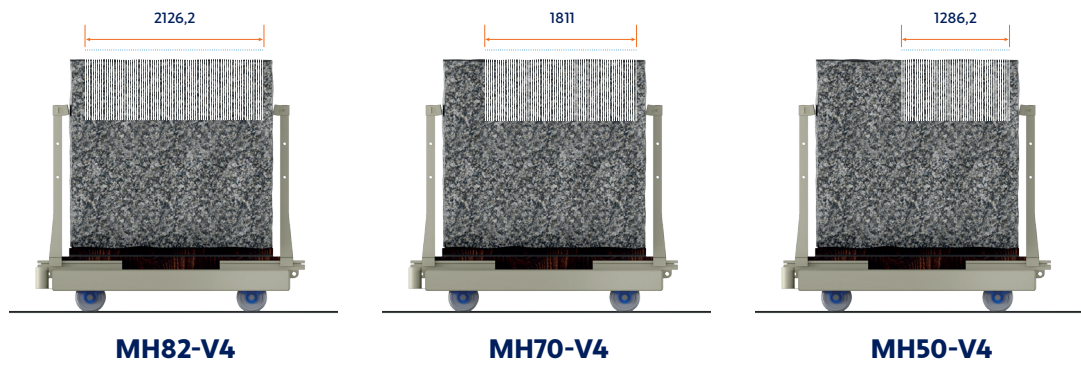




Wire 4,3 mm

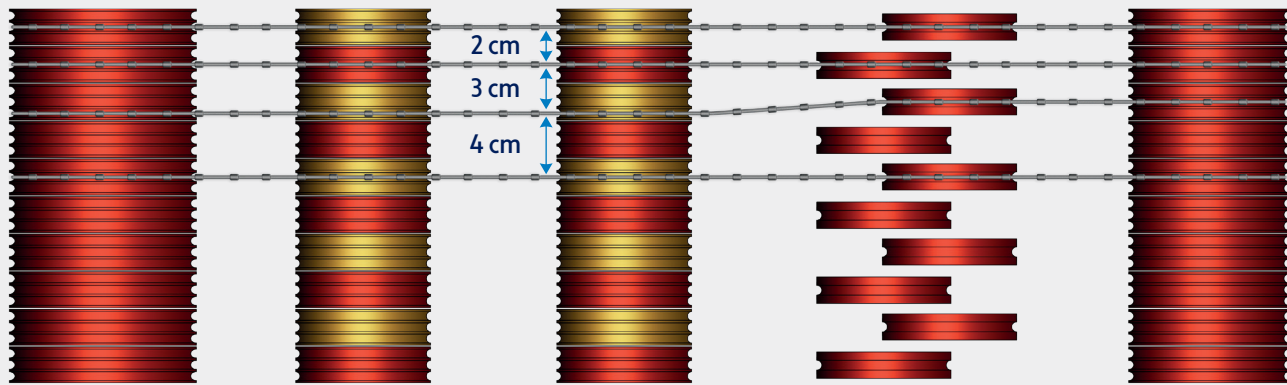
MODEL	UNIT OF MEASUREMENT	MH50-V4	MH70-V4	MH82-V4
Cutting width	Meters	3,5	3,5	3,5
Cutting height	Meters	2,2	2,2	2,2
2 cm cuts	Cuts	50	70	82
3 cm cuts	Cuts	37	52	61
Drum width	mm	1313	1837	2152
Wire tensioning	Kilos	160	160	160
Peripheral wire	m/s	23/33	23/33	23/33
Wire length	Meters	20	20	20
Motor	CV	200/300	250/400	300/500
Power	KVA	187/273	234/304	278/449
Machine length	Meters	4,5	6,3	6,5
Width	Meters	10	10	10
Height	Meters	7,1	7,1	7,1
Weight	Tons	36	49	57
Water	Liters per minute	750	1050	1230

DIVISION 26, 25



Thick cutting machine

It's very fast to change the cutting thickness. The solution is fulfilled through a series of wheels which over them there is a groove to run the diamond coated wires. To change the cut thickness simply change the positioning of the wires on the grooves of the polyurethane liners which are multicolored to facilitate the alignment.



MODEL	UNIT OF MEASUREMENT	MH05 Móvel	MH15-42	MH16-99	MH24-12
Cutting width	Meters	3,5	3,5	3,5	3,5
Cutting height	Meters	2,3	2,2	2,2	2,2
Wire thickness	mm	6,3 e 7,3	6,3	6,3	6,3
Number of wires	Quantity	5	15	16	24
Slabs	Quantity	1 até 4	1 até 14	1 até 15	1 até 23
Drum width	mm	228	427	998	1226
Wire tensioning	Kilos	180	180	180	180
Peripheral wire	m/s	25/38	25/38	25/38	25/38
Motor	CV	25	75	75	100
Power	KVA	32,5	81,3	81,3	102,9
Machine length	Meters	2,8	3,4	4	4,5
Width	Meters	9,2	10	10	10
Height	Meters	7	7,4	7,4	7,4
Weight	Tons	11	19	30	32
Water	Liters per minute	75	225	240	360



# Thin cutting machine

When the marked needs, Hedel innovates. Multiwire to cut thin sheets is already a reality. Hedel innovated and launched a machine able to cut on the thickness of #1.1 cm.

MODELO	UNIT OF MEASUREMENT	MH27-E7	MH54-E7	MH94-E7	MH97-E5	MH110-E5
Cutting width	Meters	3,5	3,5	3,5	3,5	3,5
Cutting height	Meters	2,1	2,1	2,1	2,1	2,1
Wire thickness	mm	7,3	7,3	7,3	5,3	5,3
Number of wires	Quantity	27	54	94	97	110
Slabs	Quantity	26 (1,5)	53 (1,5)	93 (1,1)	96 (1,2)	109 (1,2)
				47 (3,0)	49 (3,0)	54 (3,0)
Drum width	mm	621	1242	1833,3	1813	2046
Wire tensioning	Kilos	200 a 215	200 a 215	200 a 215	170	170
Peripheral wire	m/s	23/33	23/33	23/33	23/33	23/33
Wire length	Meters	20	20	20	20	20
Motor	CV	125	250	400	300/500	400/500
Power	KVA	120	232,7	365	278/449	365/449
Machine length	Meters	3,8	4,5	6,5	6,5	6,5
Width	Meters	10	10	10	10	10
Height	Meters	7,1	7,1	7,1	7,1	7,1
Weight	Tons	28	49	57	59	62
Water	Liters per minute	420	810	1410	1455	1650

# Versions for installation

Multiwire with side entry

Multiwire with front entry

Multiwire with side entry and transfer trolley





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