

Wear

HARDFACED WEAR PLATES

Grönblom Machines Oy's CeraMetal wear plate import was transferred to Fetek Oy at the end of 2020. Previously, Fetek Oy has acted as subcontractor for Grönblom Machines providing CeraMetal wear plate cutting services as well as other services related to steel plate moulding, e.g., welding services. Besides, Fetek Oy has installed the said wear plates in their designated facilities all around Finland.

In addition to plasma cutting, Fetek is using water jet cutting, where a narrow high-pressure jet of water with added fine-grained abrasive sand is used to cut hard or thick materials. The advantage of water jet cutting is ensuring cutting precision and high quality of the surface, while the material being cut does not get heated.

Water jet cutting is used for a wide range of materials, such as metal, timber, rubber, plastic and glass, except for tempered glass.

CERAMETAL IN A NUTSHELL

CeraMetal Surfacing Engineering is located in Greece, approximately 20 km from the centre of Athens. Its modern production area exceeds 5000 m² and has excellent access to the road network, including road, railway and sea transport connections.

CeraMetal comprises three units:

WEAR PARTS

The unit manufactures wear plates, wear plate strips and partial segments. The production is carried out in three shifts, thus ensuring short leadtimes. Quality assurance and close monitoring of the manufacturing process are a priority in ensuring consistent quality.

SERVICES

The unit manufactures made-to-order wear plates according to customers' drawings. A fully-equipped wear laboratory enables performing various wear tests and assists the production unit each time in finding the best application against wear.

CONSUMABLES

The unit manufactures a big variety of cored wires intended for deposition welding. Since part of the wires is used for own wear plate production, it is possible to monitor the high quality of the wear plates as early as from the start of wire manufacturing and choose the most suitable alloying elements and their ratios.

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WEAR PLATES

Wear plates are bi-metallic plates combining an adaptable steel base (S235 or S355) with a highly alloyed wear resistant hardface. For surface coating of the plates, there is a special automatic hardfacing process in place, which provides superior hardness, toughness and wear resistance. Upon request, test results of abrasion testing (ASTM G65) and erosion testing (DIN 50332) are available.

The low carbon steel base plate allows the product to be welded, bolted or studded to existing base structures, while the surface coating provides excellent wear resistance in the most diverse installation facilities and environmental conditions.

The superior quality of CeraMetal wear plates is achieved due to rigorous scientific and metallurgical control of the production process.

The highest possible concentrations of chromium carbides (Cr_7C_3 – hardness 1730 HV) coupled to an optimised carbide orientation and unique alloy additions make CeraMetal wear plates stand out in terms of performance compared to the respective plates available in the market.

ADVANTAGES:

- Easy manufacturing of parts, e.g., pipes, ducts, cones, etc.
- Easily welded to steel structures
- Easy to cut to the desired shapes
- Excellent abrasion resistance (testing according to ASTM G65 shows that the hardface outlasts structural steel by tens of times and in certain applications by more than 60 times)
- Good metal to metal wear resistance
- Good corrosion resistance due to high chromium content
- Good heat resistance
- Very narrow zone of deformation, minimum alloying of the surface coating to the base plate
- Considerably high carbide concentration (>50% in the HCCr type plates)
- Tough austenitic matrix supporting carbides
- Hardness and alloying elements selected to suit the application to the best



PROSESSING AND MOULDING OF WEAR PLATES

- For wear plate cutting, plasma cutting is recommended. You can also use water jet cutting, but it is a more expensive option.
- Wear plates can be bent as structural steel. As a rule, hardface has to remain on the interior surface.
- When welding steel base plates to other structures, usual methods can be used, without pre-heating or other special measures. For welding, steel welding rods are used. When welding on the hardfaced side or plate edges, hardfacing welding rods or hardfacing welding wire are used.

PLASMA CUTTING

Fetek is using high-precision HyPerformance plasma jet equipment for material cutting. Plasma cutting is an extremely cost-efficient method for cutting, e.g., steel, stainless steel and aluminium. This method is also used for cutting hardfaced plates.

- We are also able to utilize both plasma and water cutters when working on the same piece of material.
- The dimensions of the cutting table we use are 6100x2100.



WATER JET CUTTING

As a method, water jet cutting is extremely flexible. It can be used for any material, including metal, glass, stone, plastic, and rubber. The trace of the cut surface is clean, and no chemical or heat-caused alterations occur in the material processed. It is easy to implement more complex shapes; and even thick plates can be cut (steel with thickness of up to even 70 mm). The quality of the cut trace can be adjusted as needed even in different parts of the same piece of material.

APPLICATIONS OF WEAR PLATES

We are ready to deliver wear protection parts based on the drawings of our customers or assist in developing reasonable solutions that are economically advantageous to address the wear-related problems of our customers. In addition to our own expertise, we can utilize years of experience CeraMetal has in producing wear plates.

CeraMetal also uses CNC plasma cutting equipment, steel plate mangle machines, square machines, welding equipment to produce high-quality wear plate parts. In order to meet prompt demands, we have built cooperation with Finnish machine shops in such a way that we are able to produce wear plates based on the drawings of our customers in Finland within extremely short leadtimes.

CeraMetal has also the capacity to produce PTA, HVOF and plasma jet surface coatings.



INSTALLATION

Fetek Oy has many years of experience in the maintenance of the industry. We have manufactured and installed wear parts based on drawings in, e.g., mills, breakers and asphalt mixing plants. Upon request, we can carry out measurements the parts, either on the spot or based on the specimens.

STOCK

We keep most common wear plates for processing or delivery in stock, but we would recommend contacting us in good time to ensure the availability of the product required. We order other hardfaced plates separately upon request of a customer.

COMMON WEAR PLATE QUALITIES

Type	Description	Properties	Hardness HRC	Application
MCCr	Austenitic steel and chromium carbides	Good impact resistance Medium abrasion resistance	50-54	Breaker parts, chutes, transporter screws
HCCr	Austenitic steel and chromium carbides	High abrasion resistance, medium impact resistance	58-62	Mixer blades and other parts, pipes, scrapers, mills
HCMo	Austenitic steel and chromium and molybdenum carbides	High abrasion resistance, medium impact resistance	58-62	Mixer blades, mills and their parts, scrapers
HcNb	Austenitic steel and chromium and niobium carbides	Excellent abrasion resistance, good impact resistance, higher working temperatures	60-64	Mixer blades, mills
H CX	Austenitic steel and composite carbides	Excellent abrasion resistance, good impact resistance, higher working temperatures	62-65	Breakers and sinter bars for sintering equipment, wear parts for hot applications

COMMON THICKNESS AND WEIGHT

Type (mm)	Base plate thickness (mm)	Hardface thickness (mm)	Overall thickness (mm)	Weight (kg/m ²)
3 + 3	3	3	6	55
5 + 3	5	3	8	67
6 + 4	6	4	10	80
8 + 4	8	4	12	96
8 + 5	8	5	13	102
10 + 5	10	5	15	118
12 + 4	12	4	16	127

COMMON PLATE DIMENSIONS / HARDFACE AREA

Base plate dimensions (mm)	Hardface area dimensions (mm)
1000 x 2000	900 x 1950
1250 x 2500	1150 x 2450
1500 x 3000	1400 x 2900
2000 x 3000	1900 x 2900

STANDARD BASE PLATE QUALITY ST37.2

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