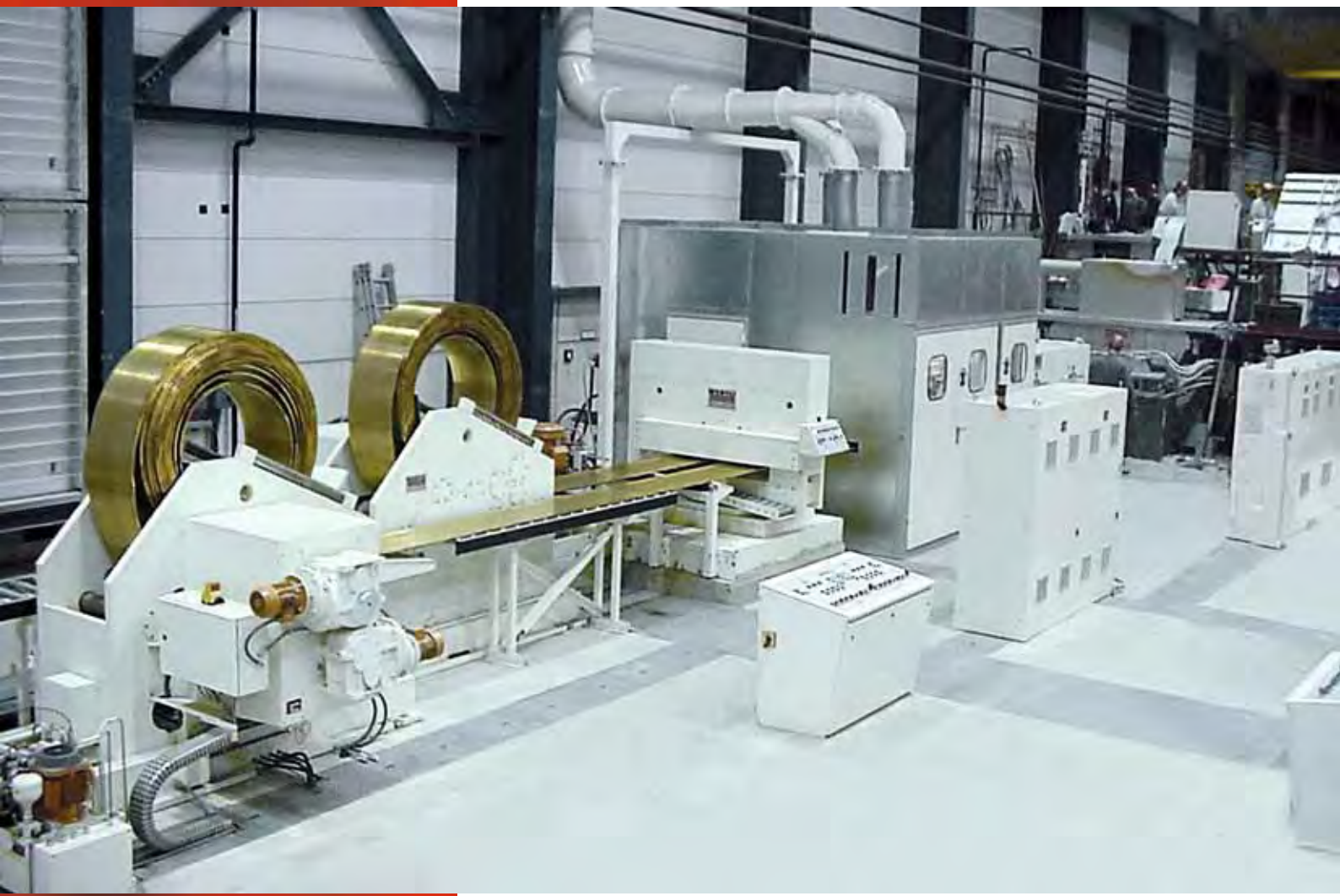
WERTLI

MELTING – HORIZONTAL
CONTINUOUS CASTING

Innovation. Know-how. Reliability.



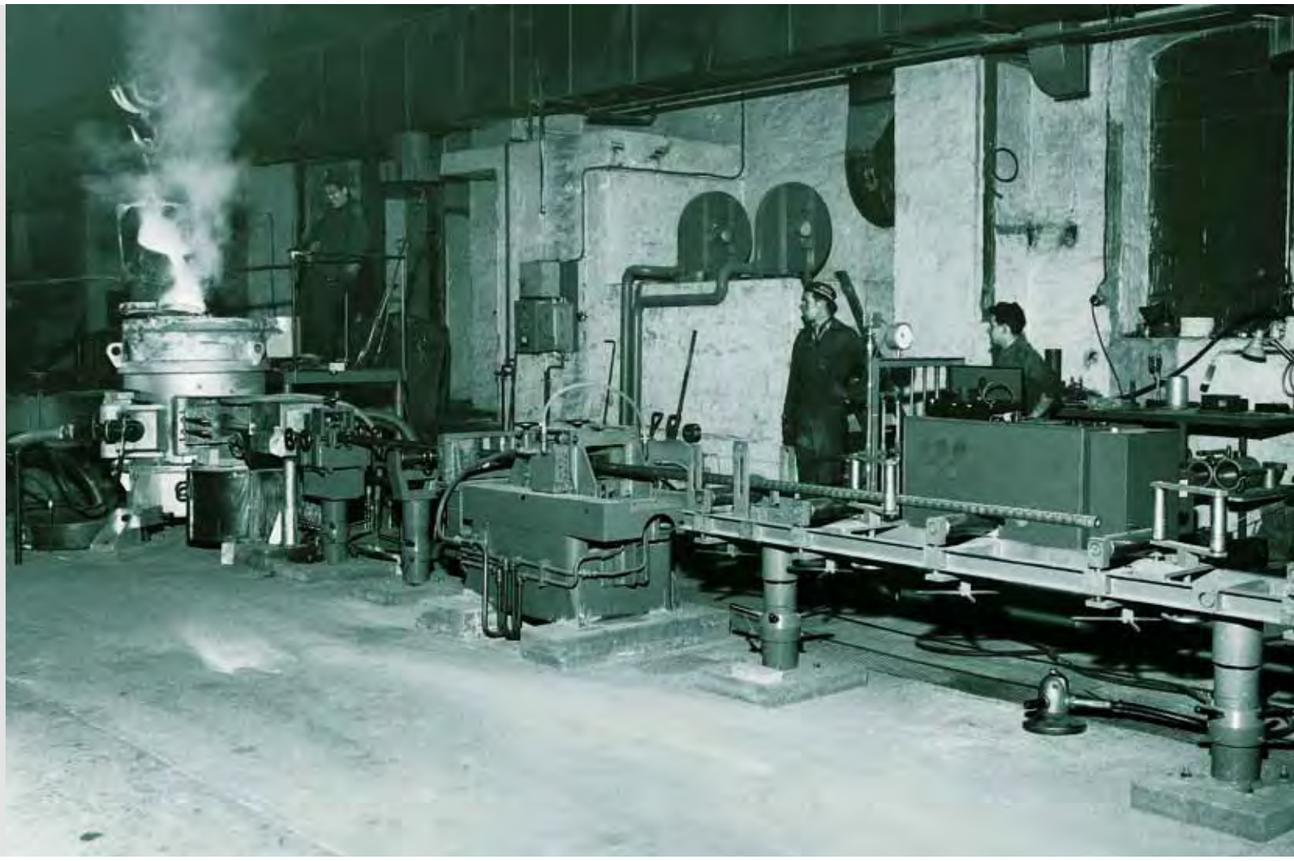
70 years leading technolo gy – best basis for your succes s

1947 and WERTLI are synonymous with the success story of Horizontal Continuous Casting! Alfred J. Wertli founded his enterprise first in Baden, Switzerland. In 1953 he transferred his company to Winterthur, 25 km northeast of Zurich and only 15 km away from Zurich International Airport. In 1971 the new works at Andelfingen was opened, 15 km north of Winterthur where ample space for manufacturing and assembling was available. In 2006 WERTLI moved to new premises in Neuhausen. It is from these works where the internationally renowned WERTLI casting lines are manufactured, assembled and delivered.

In 1957 Alfred Wertli started pioneering work on his first horizontal casters which came on stream in 1958 for non-ferrous metals and in 1959 for cast iron. WERTLI's inventions and developments of the continuous casting technology have greatly contributed to the today's world-wide success of horizontal casters with graphite moulds for cast iron, nodular iron, non-ferrous metals and precious metals. New developments and machine designs and the use of latest computer technologies are the key tools in finding further applications of this unique casting technology.

At the end of 1994 WERTLI acquired the METATHERM Technology together with the Trade mark METATHERM™ and the patents and design drawings from the liquidation. Since then, WERTLI is looking after numerous former METATHERM customers world-wide in terms of spares, modifications and new equipment.

WERTLI, with its experienced and competent employees is amongst the world leaders in supplying Horizontal Continuous Casters. Our customer's success is our topmost goal at all times!



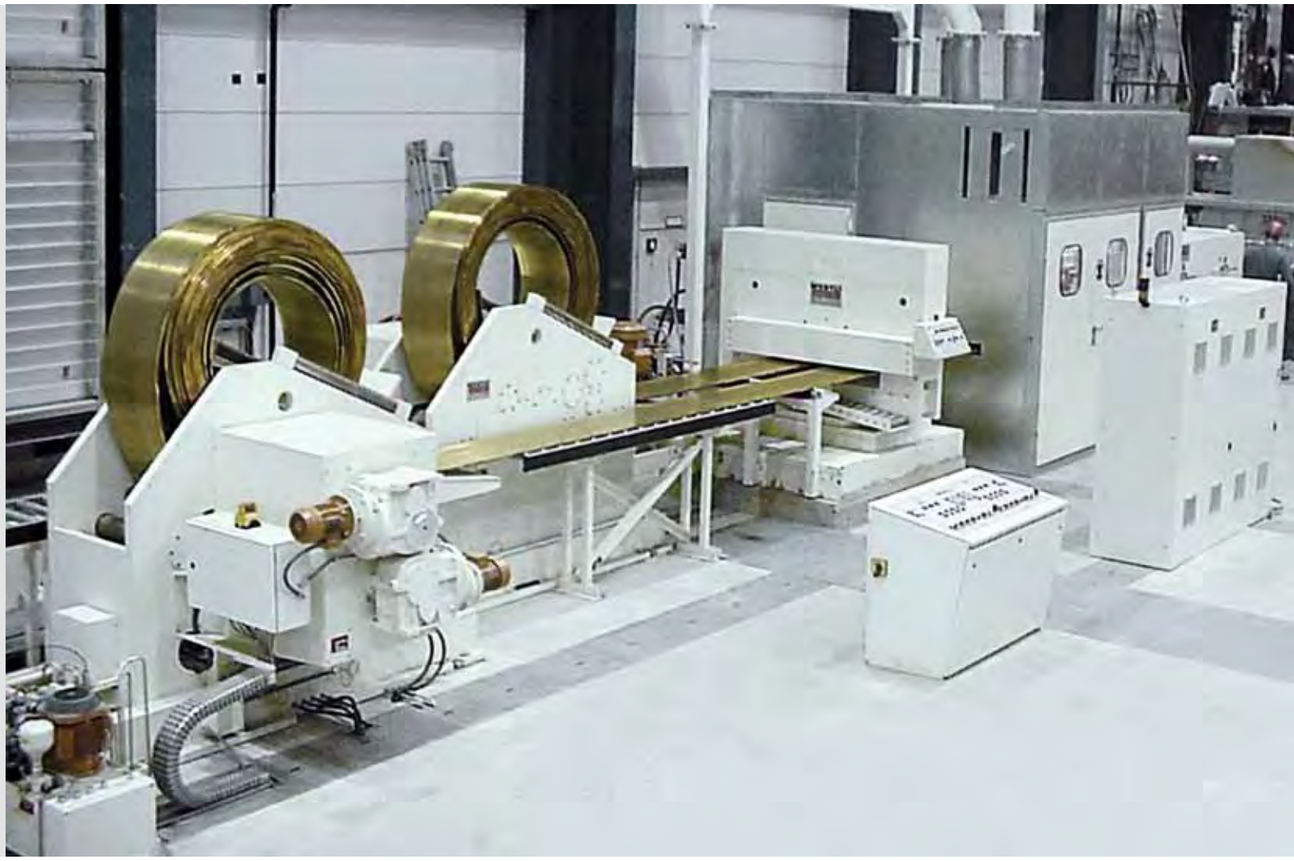
Horizontal Continuous Ca sting plants for non-ferrous metal strips f or cold rolling

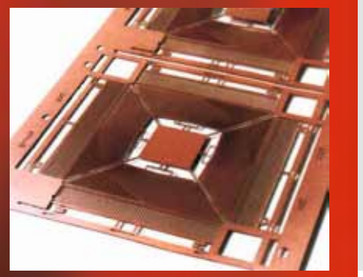
Equipment size		
Maximum width/thickness		Number of strands
Strips	150–200 mm	1–4
Thickness	12– 22 mm	
Strips	300–500 mm	1–2
Thickness	14– 22 mm	

WERTLI's Horizontal multi-strand strip casters are in world-wide use for significant tonnages of superb quality strips for cold rolling, in strip widths 150 to 500 mm, of the following metals:

- **OF copper, DHP copper**
- **Brasses CuZn5 to CuZn35**
- **Nickelsilvers CuNi12–18Zn and CuNi7–13ZnPb**
- **Tin bronzes CuSn4–10**
- **Aluminium bronzes CuAl2–6Ni**
- **Coppernickel CuNi5–25**
  and other copper alloys, as well as
- **Aluminium tin alloys AlSn6–20**

The equipment design for all types of strip casters is much standardised. Casters are typically equipped with holding furnaces, strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing, remote servicing link, in-line surface millers with swarf removal systems and sound proofing, travelling shears with angled cut and up-coilers. High performance die cooling systems together with a unique die fastening technique and the use of protective gas ensure the highest output and quality results.





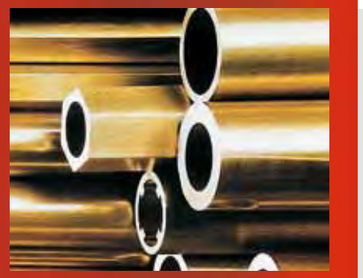
Horizontal Continuous Ca sting plants for non-ferrous metal strips f or cold rolling

Equipment size		
Maximum width/thickness		Number of strands
Strips	500–1300 mm	1
Thickness	16– 20 mm	

WERTLI's Horizontal wide strip casters are in world-wide use for significant tonnages of superb quality strips for cold rolling, in strip widths 500 to 1'300 mm, of the following metals:

- **OF copper, DHP copper**
- **Brasses CuZn5 to CuZn35**
- **Nickelsilvers CuNi12–18Zn and CuNi7–13ZnPb**
- **Tin bronzes CuSn4–10**
- **Aluminium bronzes CuAl2–6Ni**
- **Coppernickel CuNi5–25**
- **and other copper alloys**

The equipment design for all types of strip casters is much standardised. Casters are typically equipped with holding furnaces, strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing, remote servicing link, in-line surface millers with swarf removal systems and sound proofing, travelling shears with angled cut and up-coilers. High performance die cooling systems together with a unique die fastening technique and the use of protective gas ensure the highest output and quality results.



Horizontal Continuous Ca sting plants for non-ferrous extrusion bill ets

Equipment size		
Maximum diameter		Number of strands
Billets	Ø 100–130 mm	1–6
Billets	Ø 150–200 mm	1–4
Billets	Ø 250–400 mm	1–3

WERTLI's Horizontal billet casters are used worldwide to produce significant tonnages of superb quality extrusion billets in diameters 100 to 400 mm, of the following metals:

- **DHP copper**
- **Brasses CuZn30 to CuZn40**
- **Leaded brasses CuZn40Pb and others**
- **High tensile brasses CuZnAlPb and others**
- **Nickelsilvers CuNiZn and CuNiZnPb**
- **Coppernickel CuNi**
- **and other popular copper alloys**

Billet casters are equipped with holding furnaces, strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing, remote servicing link, travelling band saws or high performance circular saws combined with cut billet discharge systems. High performance die cooling systems with special die designs for billets and the use of protective gas ensure the highest output and quality results. Primary and secondary spray cooling water systems are custom designed for each line concept.

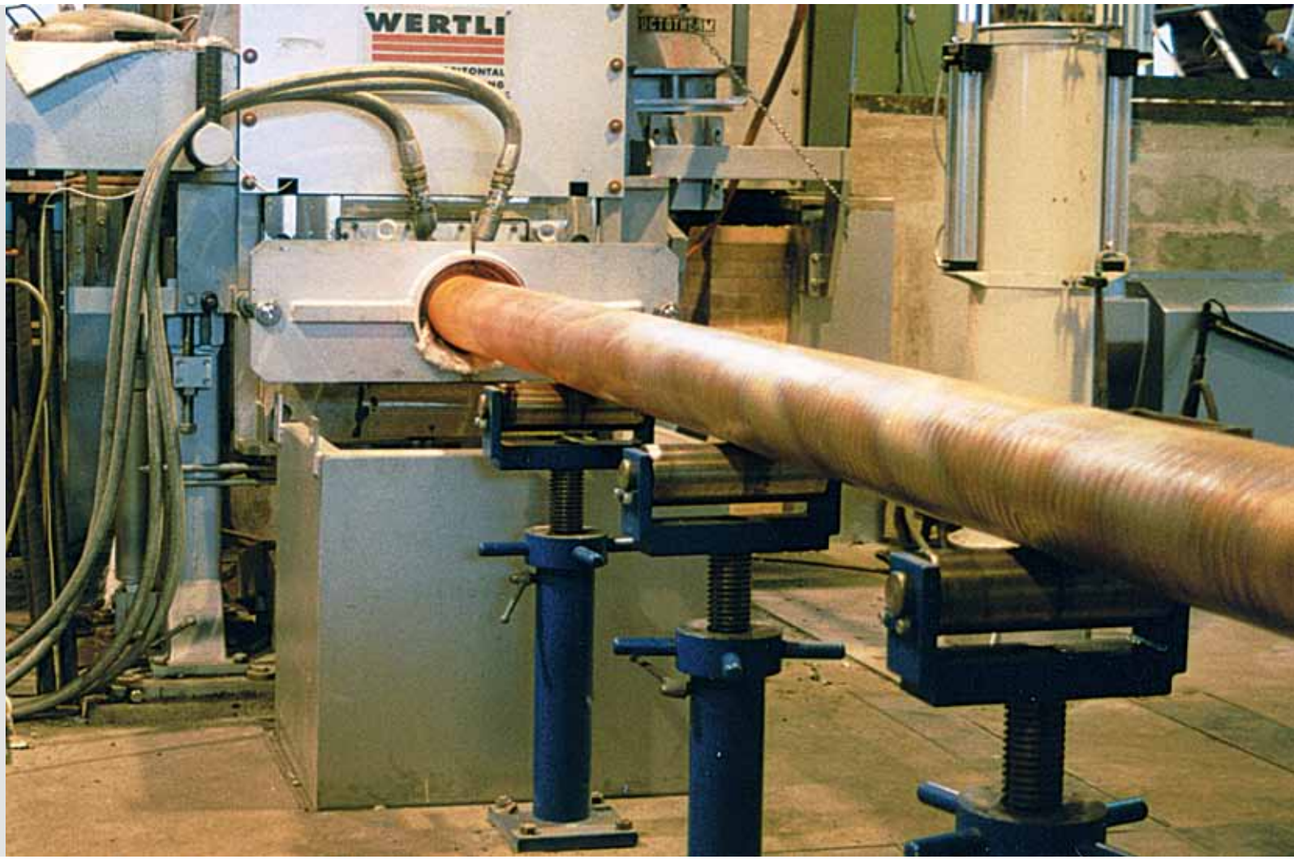
Horizontal Continuous Ca sting plants for bars, tubes and profiles in non-ferrous metals

Equipment size		
Maximum diameter	Number of strands	
	solid	hollow/profiles
Ø 25– 50 mm	3–12	3–8
Ø 60–100 mm	2– 8	2–6
Ø 110–240 mm	1– 3	1–3
Ø 250–350 mm		1–2

WERTLI's Horizontal casters for bars, tubes and profiles are used world-wide in many important applications to produce a large variety of high quality wear alloys for machining, of the following metals:

- **Brasses CuZn30 to CuZn40**
- **Leaded brasses CuZn40Pb and others**
- **High tensile brasses CuZnAlPb and others**
- **Tin bronzes CuSn and CuSnPb**
- **Red brasses CuSnZnPb**
- **Aluminium bronzes CuAlFeMnNi**
- **Brazing alloys**
- **and many other popular copper alloys**

For this type of application the equipment design must provide maximum flexibility to rapid changes of sizes and alloys. These casters are equipped with induction heated holding furnaces, strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing and remote servicing link. Travelling band saws and discharge systems for the cut-to-length strands follow in line. Devices for rapid die cooler change are essential with such casters.



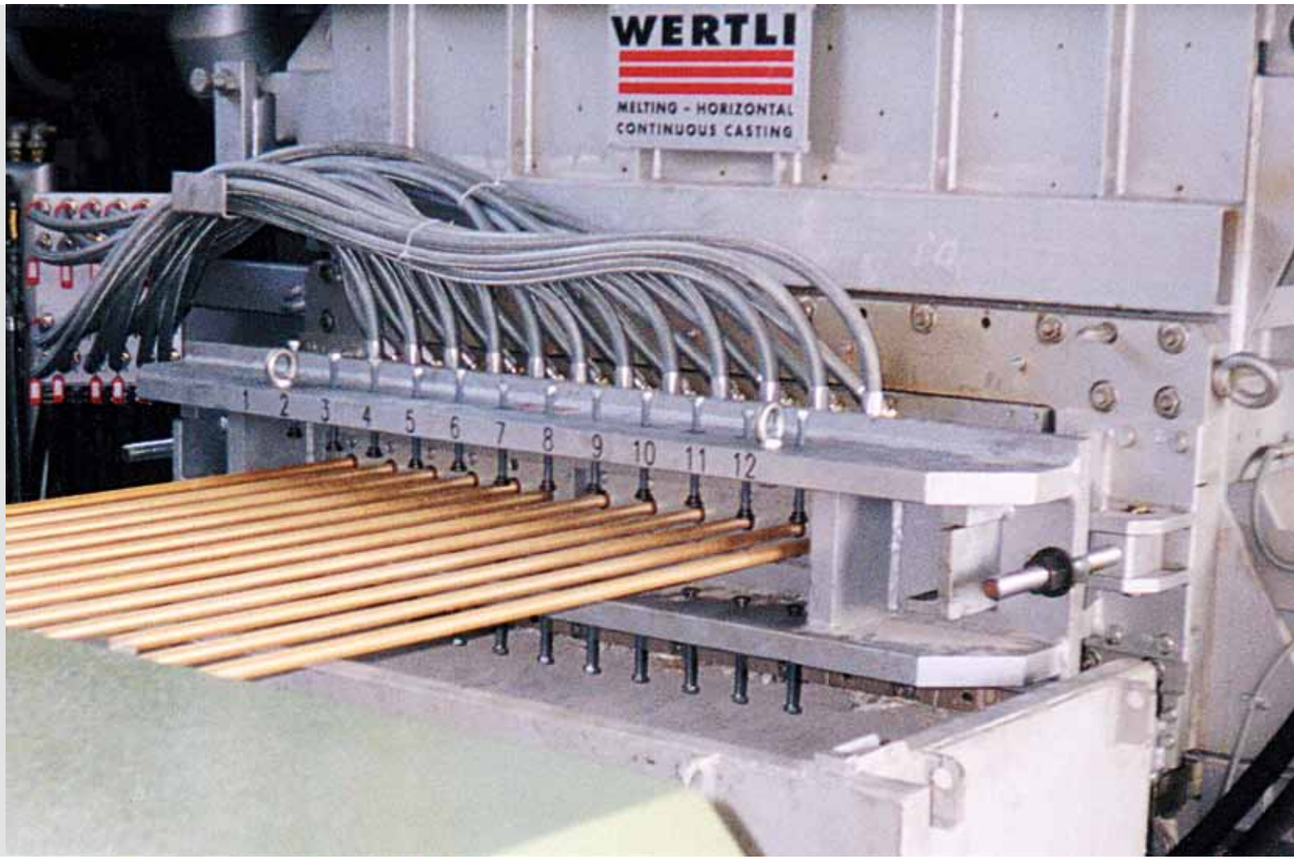
Horizontal Continuous Casting plants for wires and bars in non-ferrous metals

Equipment size		
Maximum diameter		Number of strands
Wires	Ø 12–20 mm	4–12
Wires	Ø 21–35 mm	4– 8

WERTLI's Horizontal casters for wires and bars are used world-wide in many applications to produce a large variety of wrought alloys for direct processing in cold mills or drawing machines of the following metals:

- **Brasses CuZn10 to CuZn35**
- **Nickelsilvers CuNi10–18Zn**
- **Tin bronzes CuSn0,5–8**
- **Leaded red brasses CuSnZnPb**
- **Aluminium bronzes CuAl**
- **Catenary and trolley wires CuSn, CuCd and CuMg**
- **and many other popular wire alloys**

The most outstanding feature of this type of equipment is the number of strands. Mostly 6 to 12 wires or bars are produced simultaneously. These casters are equipped with holding furnaces, strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing and remote servicing link. Hydraulic wire cutters and wire coilers follow in line. Coil weights up to 2'000 kg and over are common.



Horizontal Continuous Casting for huge amounts of silver and silver-alloys

Equipment size		
Maximum sizes/width		Number of strands
Strips	200–550 mm	2–1
Thickness	12– 20 mm	
Bars	Ø 25–150 mm	4–1
Tubes	Ø 25–100 mm	4–1
Wires	Ø 10– 20 mm	6–4

WERTLI's Horizontal caster for silver and silver-alloys is designed for precious metals such as strips, rods, tubes and wires which are used in important applications for casting materials for the silver semi-finished product industry, for the electronic industry, for the minting industry and for the jewellery trade, in:

- **Pure silver Ag999 and Ag9999**
- **Sterling silver Ag925Cu**
- **Silver alloys Ag900Cu to Ag500Cu**
- **Contact alloys AgCd and others**
- **Brazing alloys AgCu and AgZnCu and other**

The equipment design of this category of casters is very different and largely governed by your needs. The strand dimensions range up to 550 mm strip width and 150 mm bar or tube diameter. Special care is given to the furnace technology. The holding furnaces are equipped with induction heated crucibles – one of WERTLI's own special designs. Many of these plants are used to melt and cast in the same furnace. Most of these casters are equipped with strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing, remote servicing link, travelling shears or travelling band saws. Strip casters are often equipped with in-line surface milling machines, travelling shears and up-coilers.

Horizontal Continuous Casting plants Mini 150 for precious metals

Equipment size		
Maximum sizes/width		Number of strands
Strips	30– 180 mm	2–1
Thickness	5– 20 mm	
Thickness without coiling up to	40 mm	
Bars	Ø 20– 40 mm	1
Tubes	Ø 20– 40 mm	1
Wires	Ø 5– 20 mm	4–1

WERTLI's Horizontal caster, the **Mini 150**, is designed for precious metals such as strips, rods, tubes and wires which are used in important applications for casting materials for the silver semi-finished product industry, for the electronic industry, for the minting industry and for the jewellery trade, in:

- **Pure silver Ag999 and Ag9999**
- **Silver alloys Ag925Cu to Ag500Cu**
- **Brazing alloys AgCu and AgZnCu and others**
- **Pure gold Au999 and Au9999**
- **Various gold alloys AuAgCu and others**
- **Watch maker and jewellery alloys on Au basis**
- **Alloys for dental application AuPd and others**

The equipment design of this category of casters is largely governed by small furnace volumes. The strand dimensions range up to 180 mm strip width and 40 mm bar or tube diameter. The holding furnaces are equipped with induction heated crucibles – one of WERTLI's own special designs. Many of these plants are used to melt and cast in the same furnace. Most of these casters are equipped with strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing, remote servicing link, and travelling shears. Strip casters are often equipped with in-line surface milling machines, travelling shears and up-coilers.

Fully enclosed holding furnaces for vacuum application are also available.

Vertical Continuous Casting plants Mini 150 V for precious metals

Equipment size		
Maximum sizes/width		Number of strands
Strips	10– 140 mm	2–1
Thickness	2– 40 mm	
Bars	Ø 21– 60 mm	2–1
Tubes	Ø 21– 60 mm	2–1
Wires	Ø 5– 20 mm	4–1

WERTLI's Vertical caster, the **Mini 150 V**, is designed for precious metals such as strips, rods, tubes and wires which are used in important applications for casting materials for the jewellery trade, for the gold- and silver semi-finished product industry and for the electronic industry in:

- **Pure gold Au999 and Au9999**
- **Various gold alloys AuAgCu and others**
- **Watch maker and jewellery alloys on Au basis**
- **Pure silver Ag999 and Ag9999**
- **Silver alloys Ag925Cu to Ag500Cu**
- **Brazing alloys AgCu and AgZnCu and others**
- **Alloys for dental application AuPd and others**

The equipment design of this category of casters is largely governed by small furnace volumes. The strand dimensions range up to 140 mm strip width and 60 mm bar or tube diameter. The holding furnaces are equipped with induction heated crucibles – one of WERTLI's own special designs. Many of these plants are used to melt and cast in the same furnace. Most of these casters are equipped with strand extraction withdrawal machines with high precision drives with **PC CAST 3000 TS** control system with data printing, remote servicing link, and travelling shears or travelling saws. Strip casters are often equipped with up-coilers.

Fully enclosed furnaces for vacuum melting and casting under protective atmosphere for the application of special materials, such as dental alloys, are also available.

Horizontal Continuous Casting plants for cast iron and nodular cast iron

Equipment size		
Maximum sizes/width		Number of strands
Round	Ø 25– 50 mm	2–8
Round	Ø 60–150 mm	1–4
Round	Ø 160–300 mm	1–2
Profile	200–300 mm	1–2
Round	Ø 350–500 mm	1
Profile	350–500 mm	1

WERTLI's Horizontal casters for cast iron and nodular cast iron are amongst those casters designed first to go on stream worldwide. This economic casting method to produce round bars, squares, rectangles and shapes provides an extremely fine grained product which is pressure tight and easily machinable. These casters are usually producing:

- **Cast iron grades GGL20 to GGL35**
- **Nodular cast iron grades GGG40 to GGG80**

The equipment design of this category of casters is governed by the required number of strands and suitable furnace volumes. The furnace design was developed from the former flame-heated furnaces to coreless induction heated vessels – a unique WERTLI special design feature. Most of these casters are equipped with strand extraction withdrawal machines with **PC CAST 3000 TS** control system with data printing, remote servicing link followed by travelling abrasive bar notchers and cutters and bar breakers.

Equipment design – fabrication – consulting

WERTLI – always caring for ***your*** success – is amongst the world leaders to supply horizontal continuous casters. Today more than 405 plants delivered to 46 countries are a sign of WERTLI's success. New concepts for plants, engineering, CAD design for manufacturing drawings and plant fabrication are all concentrated under one roof. All equipment and lines ready to leave our works will be factory tested prior to shipment. Advantages of this integrated company concept are clearly visible.

Erection and commissioning of equipment at site is taken care of by our own experts and services of this kind are usually part of any supply contract. Our customers are never left without support from our end, particularly when rapid response is needed for spares supplies.

Advisory services for the benefit of our customers – prior to placing an order – during project execution – or after delivery of the equipment and during start-up – have always top priority with us.

Satisfied customers are our best references!

WERTLI

MELTING – HORIZONTAL CONTINUOUS CASTING

Seit / since / depuis / da
November 1994
mit / including / avec / con
METATHERM - Technology

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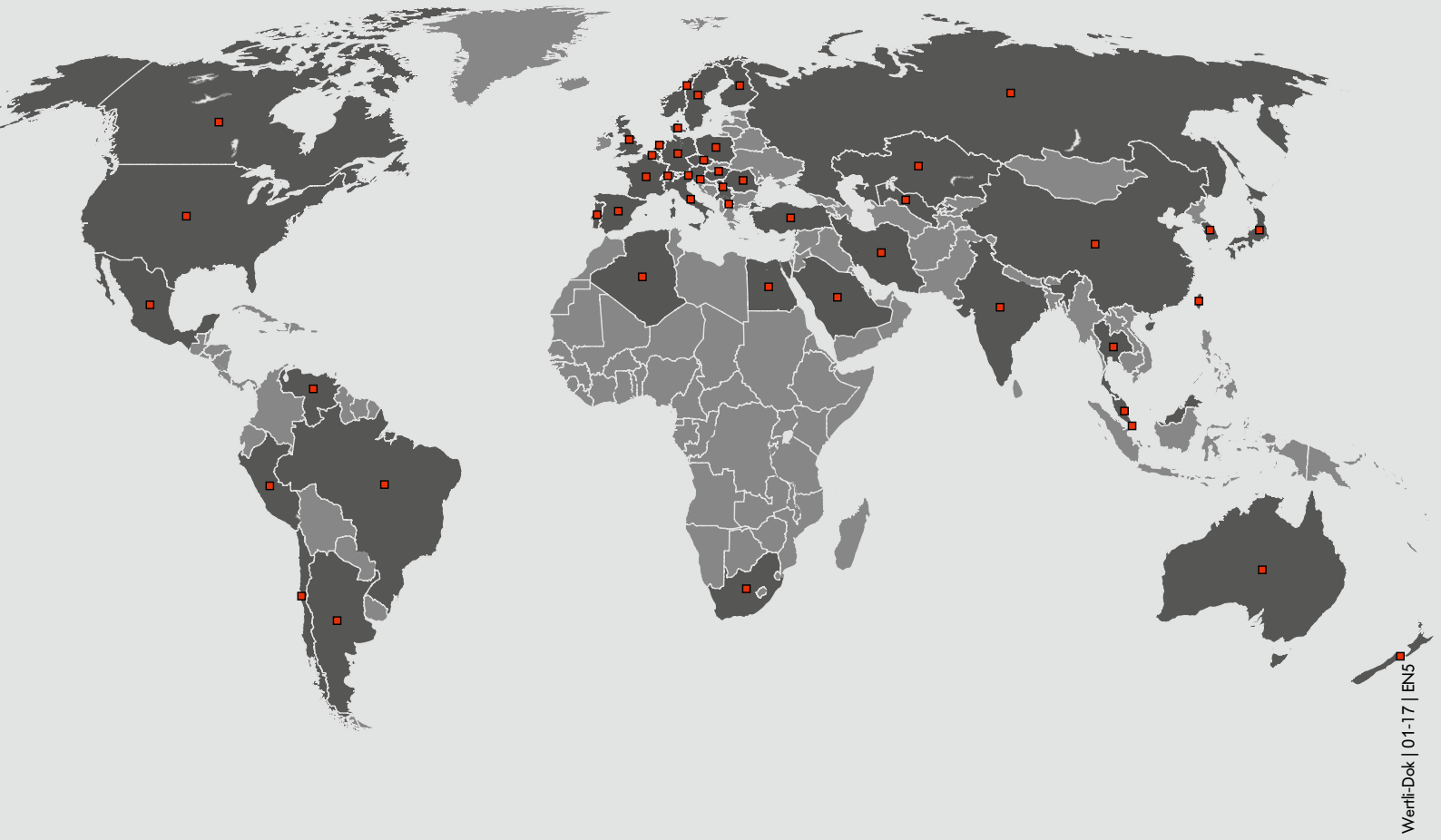

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