



**Arplas Welding** BVBA

# **DRUM WELDING IN THE 21<sup>ste</sup> CENTURY**

**Do not go for second best.**

Erik Verhoeven, managing director of Arplas Welding bvba



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**Erik Verhoeven**







- Worked for Newcor Bay City since 1979**
- Worked for Arplas since 1986**
- In charge for development of a new type welder in 1996**
- Founded Arplas Welding BVBA in 2003**
- Part of machine building group since 2013**
- General manager of Arplas Welding bvba**
- In charge of technical development and sales**





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## History

-  **Newcor started building drum welders in 1933**
-  **Newcor builds the first ever trough feed drum welding machine, copied by others**
-  **Arplas takes over activities of Newcor in Europe.**
-  **Arplas closes down plant in 2003, for financial reasons.**
-  **Arplas Welding is grounded in Belgium.**
-  **Arplas Welding becomes daughter company from Perdaen d'Hooghe, a renowned Belgian machine builder, with full in-house manufacturing capabilities**



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## New offices in Belgium












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## Side seam drum welding machines

-  **High / Medium speed drum welder  
HSP 800H and HSP 800M**
-  **Low speed drum welder LSP 300**
-  **Hand fed drum welder LSP 125**
-  **Pail welder PSP 900**
-  **Boiler welding machine BMS 240**



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## HSP 800 High speed drum welder







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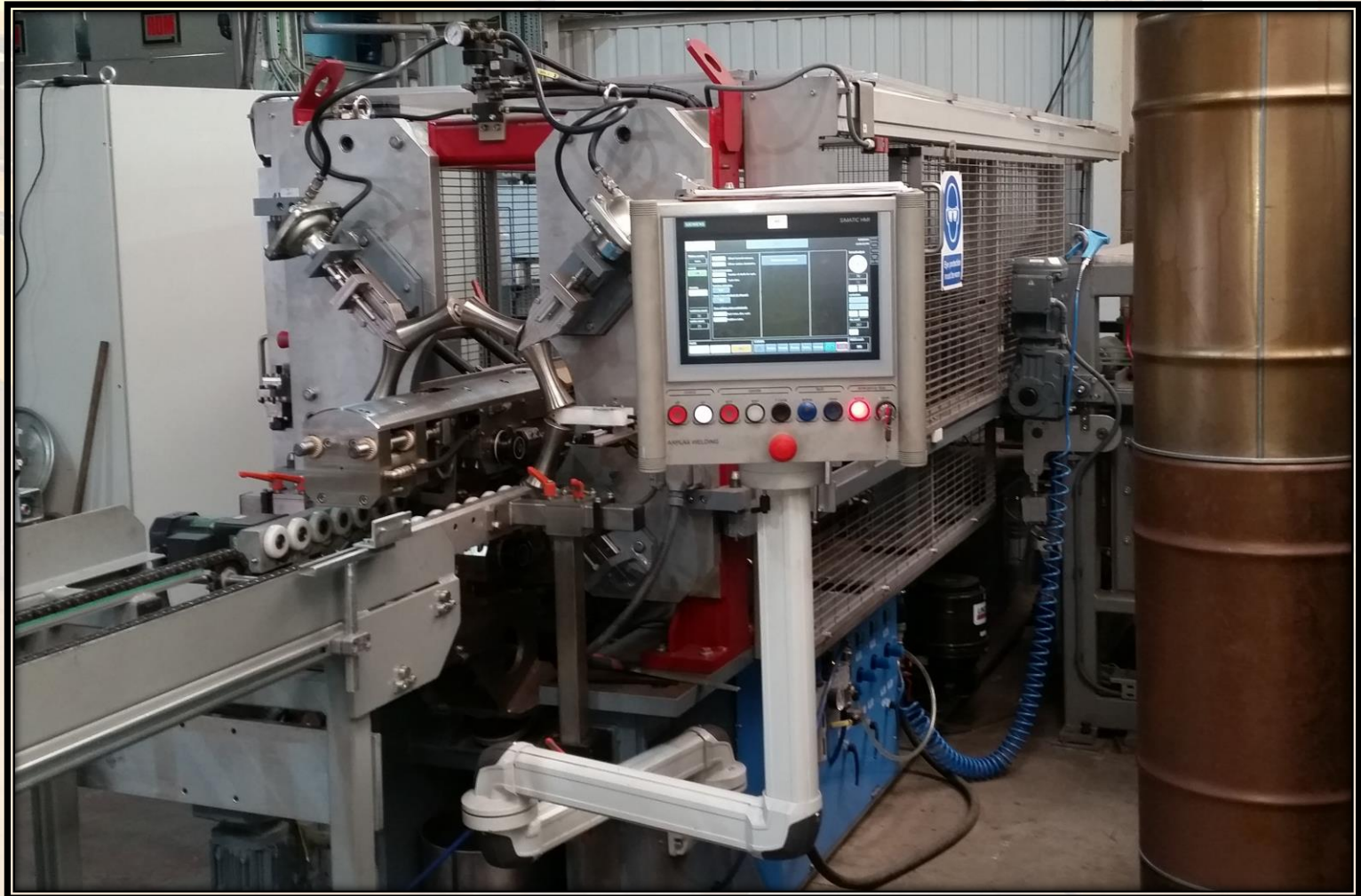
## LSP 300 Medium speed drum welder





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# PSP 900 Medium size drum welder (Pailwelder)







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# **LSP 150** **Semi automatic** **drum welder**





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## Developments of Arplas in recent years:

- **New weld control SynchronAC**
- **New type welder developed for low speed; our LSP 300.**
- **Redesigned HSP drum welder for higher speeds and lower maintenance in 2017.**
- **Touch screen computer integrated in welder.**
- **New medium size drum welder developed in 2015**
- **New type protective cover around the machine to comply with new safety rules worldwide.**
- **Continuous adapting of welders to customers specifications and needs.**



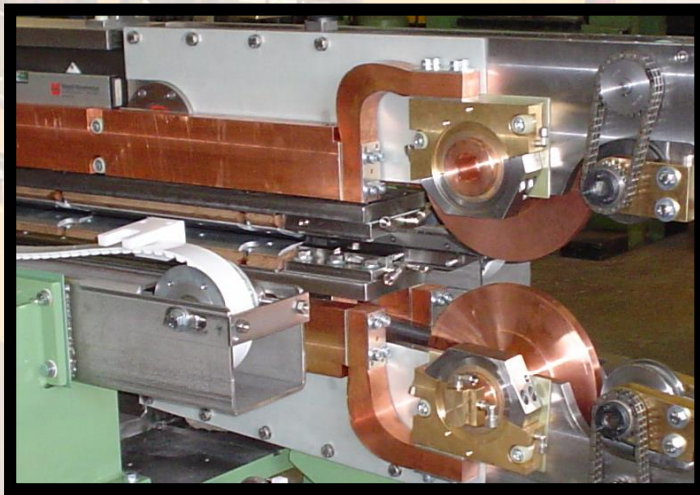


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# Technological advantages of modern welders

## Weld heads and conductors

NEW



Drawn copper conductors  
Stainless steel heads

OLD



Cast copper conductors  
Copper heads

Cast copper has a 20 to 30% Higher electrical resistance.  
Drawn copper guarantees a power saving of up to 15%

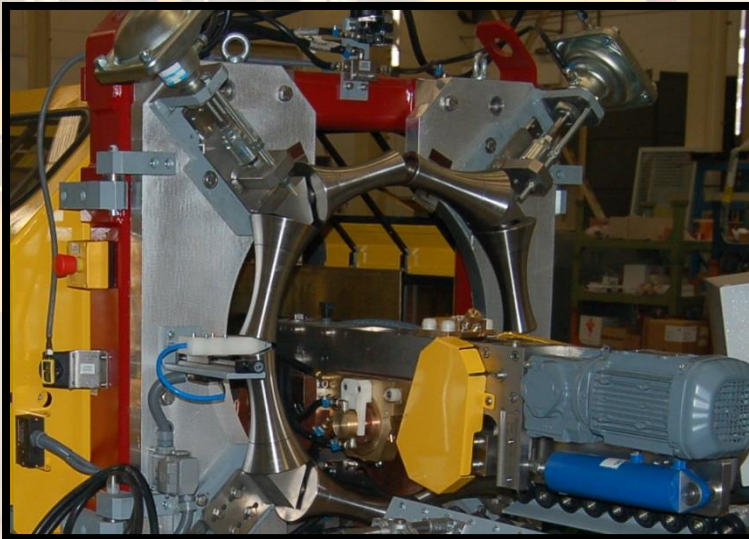


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# Technological advantages of modern welders

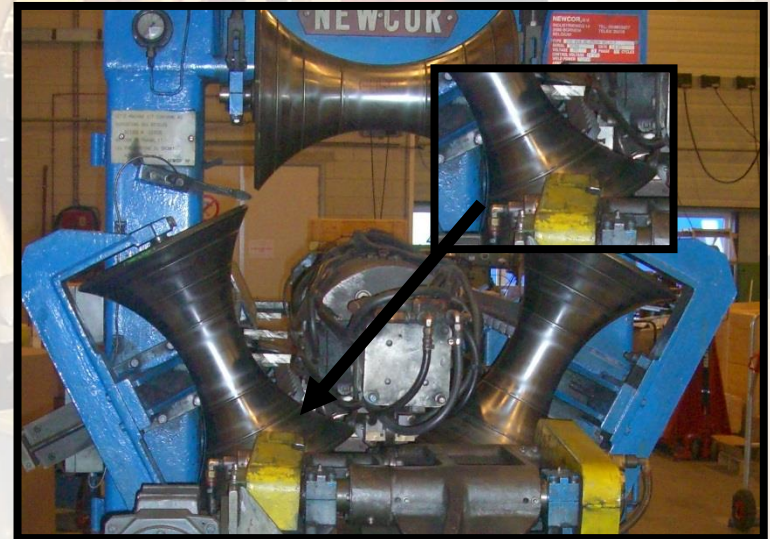
## Hour glass rolls

NEW



Hour glass roll necklace  
16 Massive stainless steel  
Less skidding  
No wear

OLD



3 Bronze cast chrome plated HGR  
Expensive manufacturing  
Skidding  
High wear and chipping



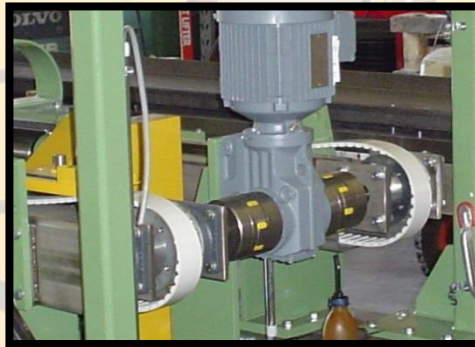


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# Technological advantages of modern welders

## Belt drives

### NEW

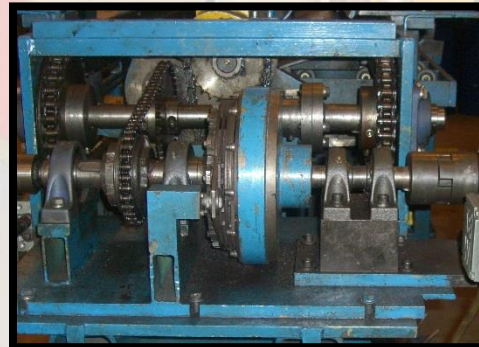


All drives by timing belts

- Less wear
- Full insulated
- Less maintenance

### OLD

- Complicated mech. Systems
- Pollution of welder
- High maintenance

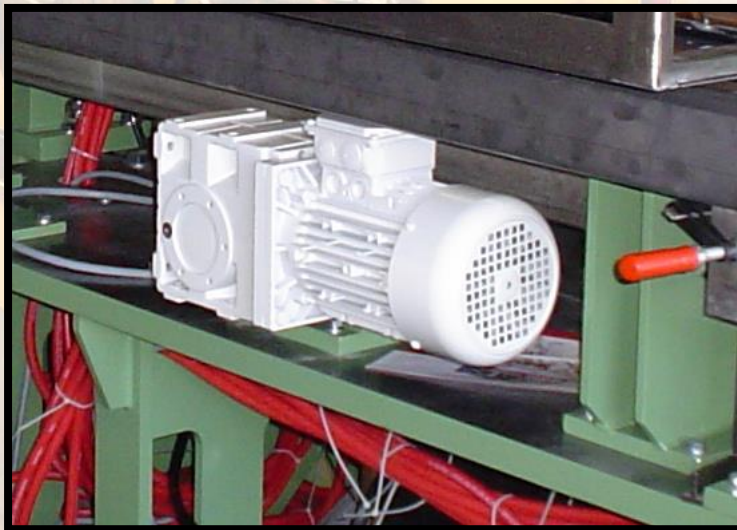




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# Technological advantages of modern welders

NEW



Electronic driven pusher

- Auto speed setting
- Auto length setting
- More controlled speed

Pusher system

OLD



Pneumatic pusher

- Manual settings
- Poor speed control





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# Technological advantages of modern welders

## Weld head drives

NEW



OLD



### Weld head drive

- 2 electronic coupled motors
- Standard gear boxes
- No touch feature for smooth welds

- Single motor.
- Many shafts and couplings
- Custom made gearboxes



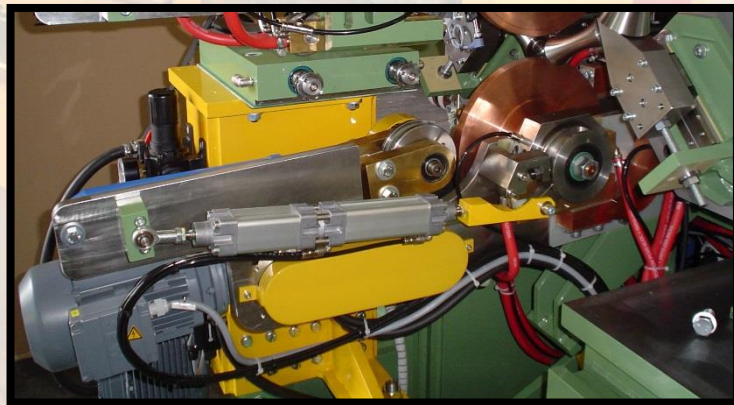
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# Technological advantages of modern welders

## Weld head angle

NEW

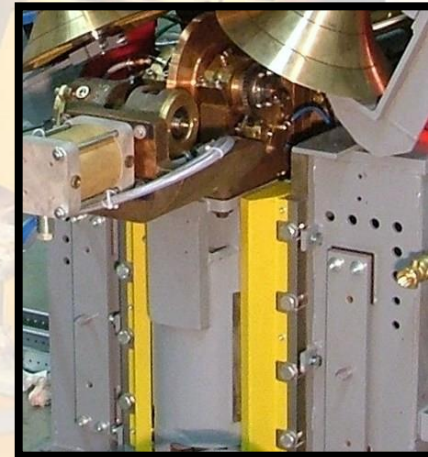
Weldhead under 45 degrees angel



- Smoother introduction of drum
- Less bumping of lower head
- Higher weld speed possible

OLD

Weldhead under 90 degrees angel



- Less control on weld start.
- Lower weld speed





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# Technological advantages of modern welders

## New electrode copper

NEW

Electrode in CuCoNiBe

- Harder copper quality
- Lower electric resistance
- Longer lifetime

OLD

Electrode in CuCrZr

- Softer than CuCoNiBe
- Lower electric resistance
- Shorter lifetime.

Type electrode	Number drums	Price electrode (2 pieces)	Price replacement	Cost per 1000 drums
CuCrZr 280 mm	106 000	510 Euro	540 Euro	9,90 Euro
CuCrZr 300 mm	229 000	610 Euro	540 Euro	4,90 Euro
CuCoNiBe 280mm	238 000	824 Euro	540 Euro	5,73 Euro
CuCoNiBe 300mm	514 000	994 Euro	690 Euro	3,27 Euro



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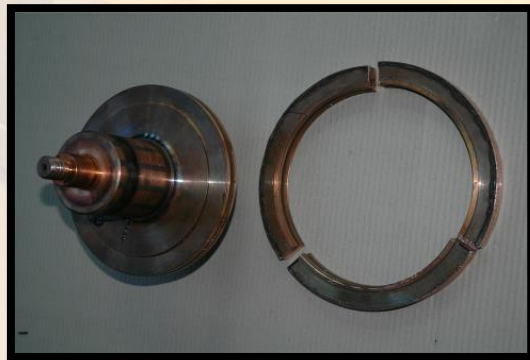
# Technological advantages of modern welders

## Thermal shrunk electrodes

NEW

Thermal shrunk electrode

- Only outer ring replaced (Cheaper)
- Better electrical connection
- No O rings or water leaks
- Very easy to do.



OLD

Bolted electrodes

- Complete electrode replaced
- Electrical connection by bolts
- O rings for water tightness.





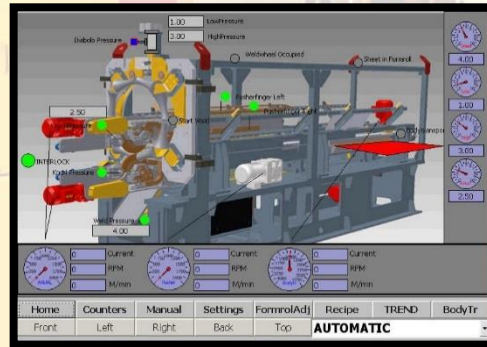


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# Technological advantages of modern welders

## Operators communication

NEW



Touch screen computer

- Menu system for all settings
- Trouble shoot menu
- Fast identification of quality issues
- Main company computer communication

OLD



Push button operator panel

- All manual settings
- No trouble shooting



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# Technological advantages of modern welders

## Weld controller

NEW



SynchronAC weld controller

- Major power savings
- 3 phase connection
- Cos phi of up to .99

OLD



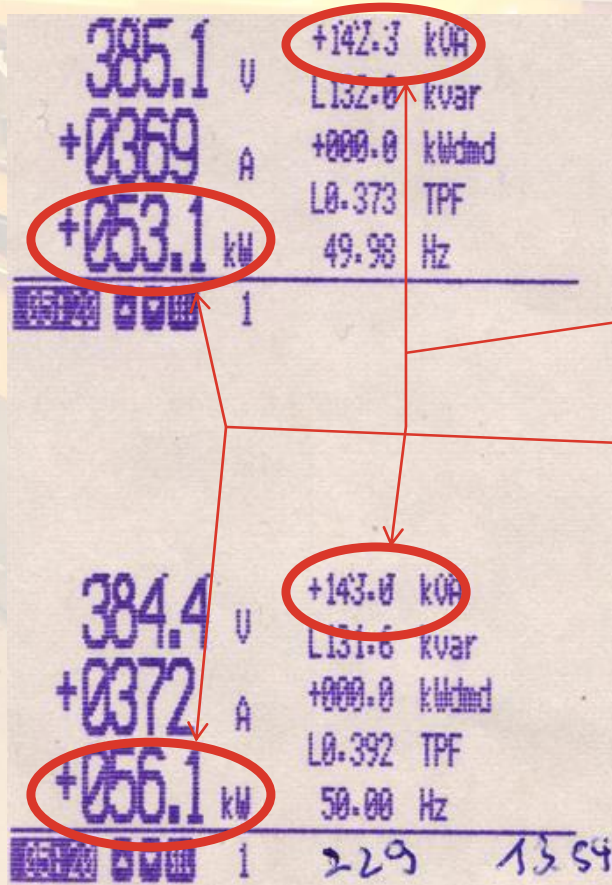
Thyristor controller

- 2 phase connection
- Cos phi of .50 or less



## 250 kVA single phase AC welding transformer

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Power absorbed by welder  
(power taken from source)  
143 kVA

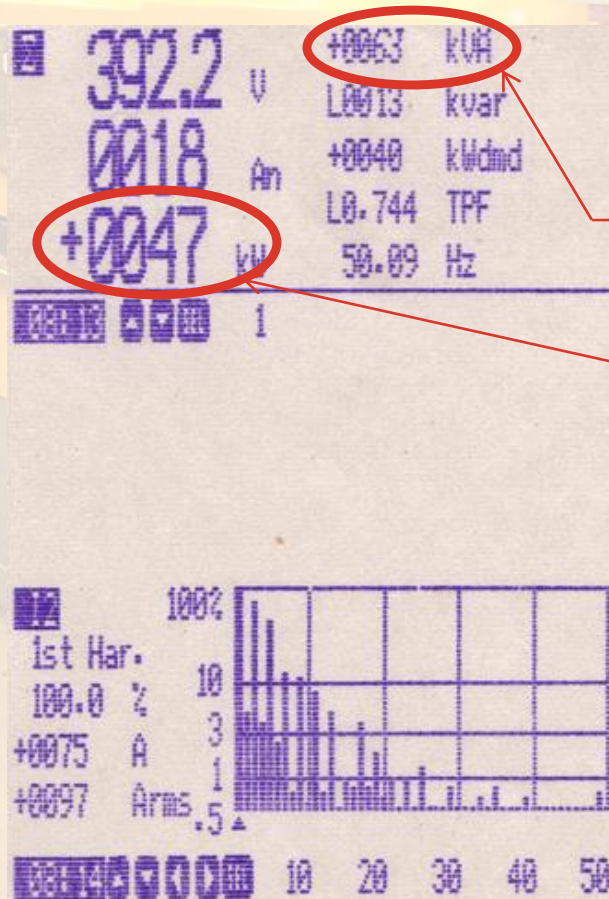
Power consumed by welder itself  
±53 kW

$$\text{Efficiency is } \frac{53 \times 100}{143} = 37\%$$



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## 250 kVA single phase AC welding transformer, equipped with 3 phase Arplas SynchronAC Welding Control



Power absorbed by welder  
(power taken from source)  
63 kVA

Power consumed by welder itself  
47 kW

Efficiency is  $\frac{47 \times 100}{63} = 74\%$

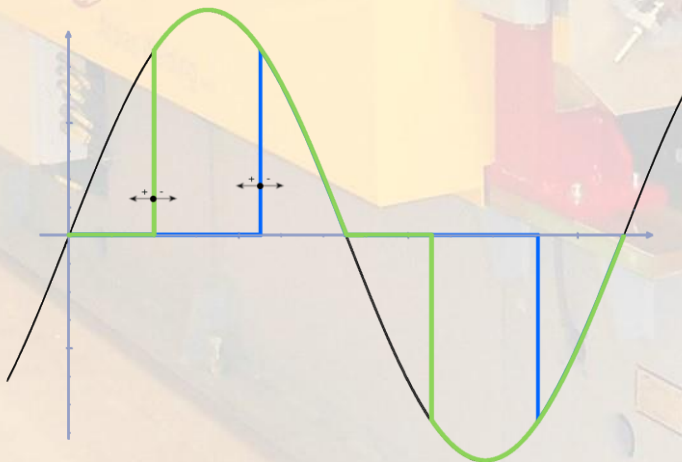




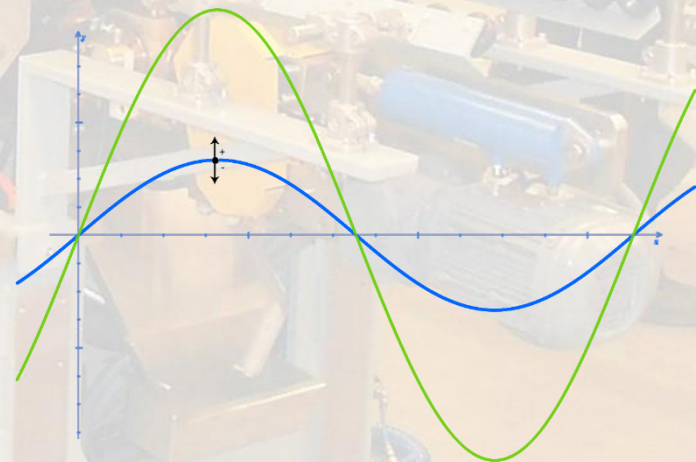
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More advantages of the SynchronAC system:

- 3 phase load of the power net. Some electrical companies charge a fine for loading only 2 phases of the net.
- Better weld quality due to the use of full sinus during welding (no phase shift).



Thyristor



SynchronAC



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More advantages of the SynchronAC system:

- Higher weld speeds possible. If used with the new concept Arplas welder, speeds up to 23 meters per minute can be achieved. With old welders up to 18 meter per minute.
- Improved  $\cos \varphi$  for the whole plant's power consumption.
- Thinner (cheaper) cables can be installed.
- No special power transformer for welding machine needed.
- Normal AC welding transformer can be used if existing machine is converted.

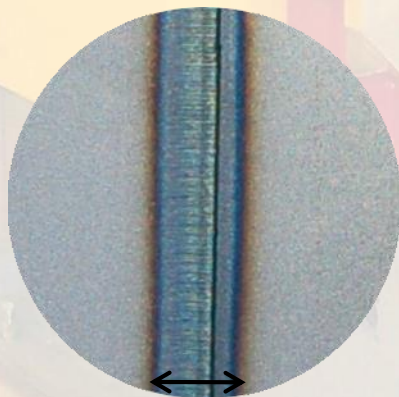




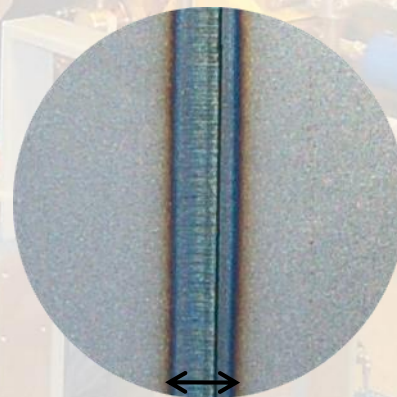
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More advantages of the SynchronAC system:

- Better weld quality by more determined start of weld, as no synchronizing time is needed.
- Less wear of electrodes as lower current peaks.
- Smaller heat affected (blue) zone as more efficient heating is used.



Thyristor



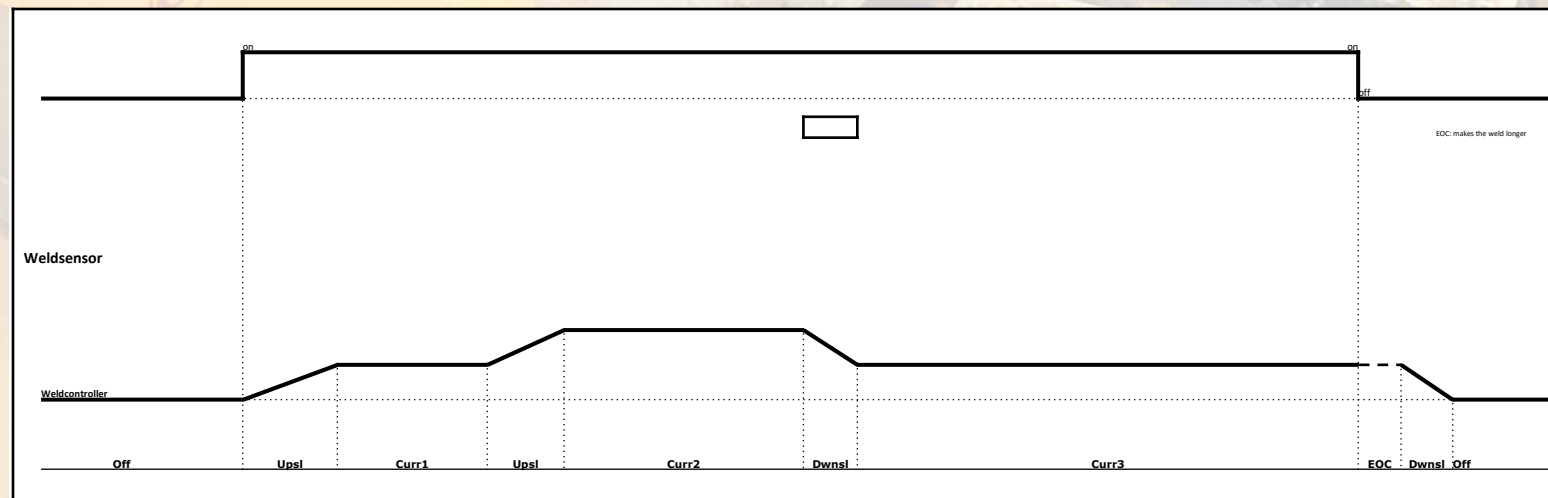
SynchronAC



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More advantages of the SynchronAC system:

- Current adjustment without delay.
- 4 welding zones are included in the control system.
- Simple setting of the controls.







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Development of the system:

- » Invented in 2003 – adapted for large drums.
- » Arplas developed the first generation with a Swiss electronics company.
- » Because of the high price and the reduced reliability, the complete system was redesigned in 2005.





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Development of the system:

... resulting in 4 versions:

SyncronAC 250

SyncronAC 500

SyncronAC 700

and SyncronAC 1000







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Development of the equipment in order to:

- Reduce cost of operation of the welder:
  - Less electricity, air and cooling water
  - Less maintenance
  - Less consumables
  - Less maintenance time.
  - Work operator free.
- Make the equipment more reliable:
  - Less down time.
  - More commercial and local purchased spare parts.
  - Less scrap production
- Improve the quality of the produced part.
- Improve production speed of the equipment.

**More than 140 Units operational all over the world.**



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Further ongoing development:

- Weld quality insurance system:
  - Continuous monitoring of actual weld current.
  - Continuous monitoring of secondary voltage.
  - Continuous monitoring of weld thickness with teach in system.
- This system will trace more than 90% of the weld defects during production.
- Production defects will be reduced to 0.01 % or less.
- System is operational in some welders in Europe.





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## **Some references:**

We have build or rebuild 85 welders in the last 20 Years, from which 20 in the last 5 years. We also installed 120 SynchronAC on drum welders.

- Greif World Wide, including China, Singapore, Malaysia
- Raft Brazil
- Elsa Mexico
- That Drums South Africa
- Rheem Chile
- Schutz Holland
- Hua I Taiwan
- Hemeyer Germany
- Rafael Trejo Cuba
- Balmer Lawry UAE
- Balmer Lawry India
- Insung Korea
- Metadrum Syria
- Engy USA
- Rheem South Africa
- Sumbisa Spain
- O Bryan USA

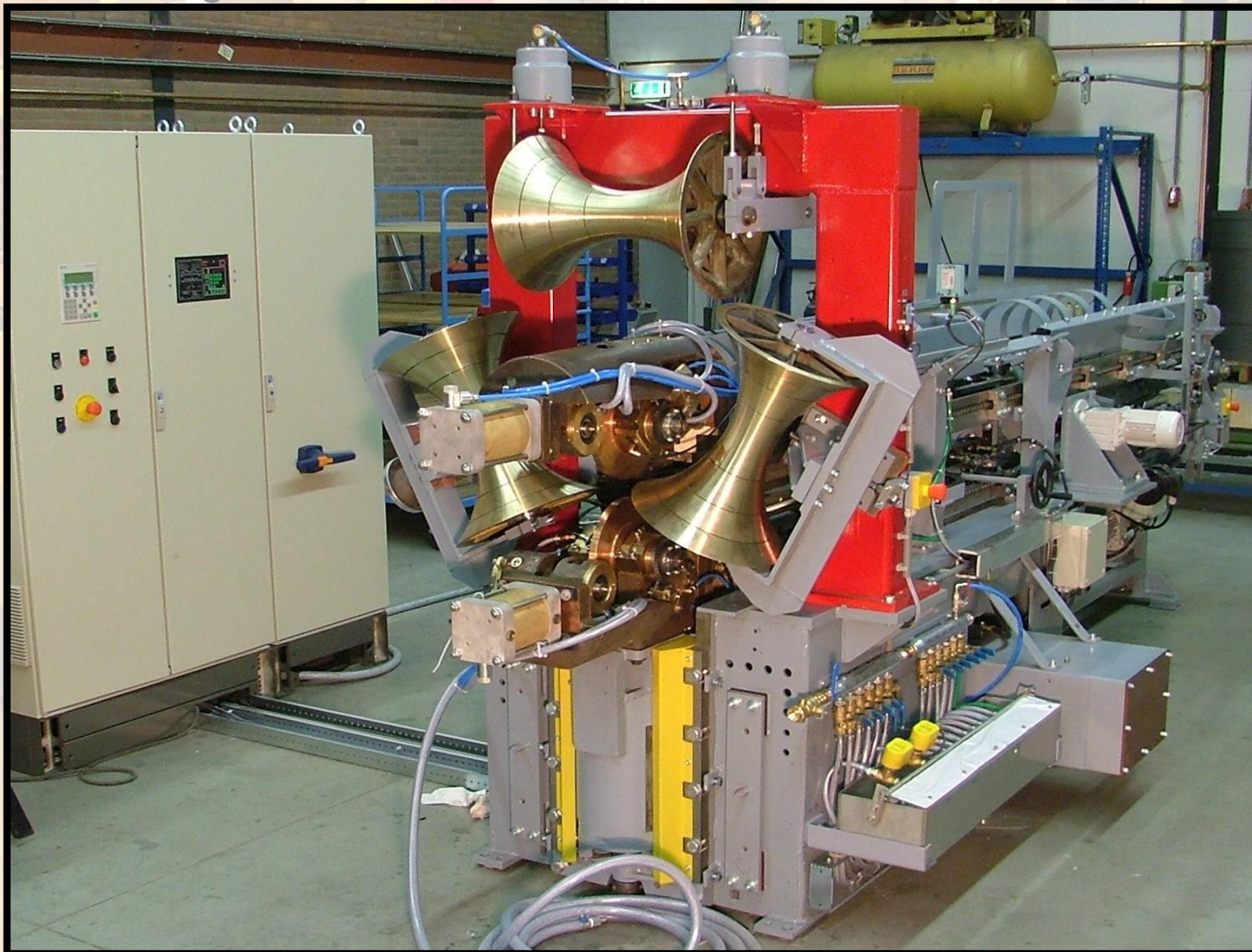
**And many many many others.**





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## Rebuild Newcor NB720 drum welder







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## MSP 600 drum welder Brazil

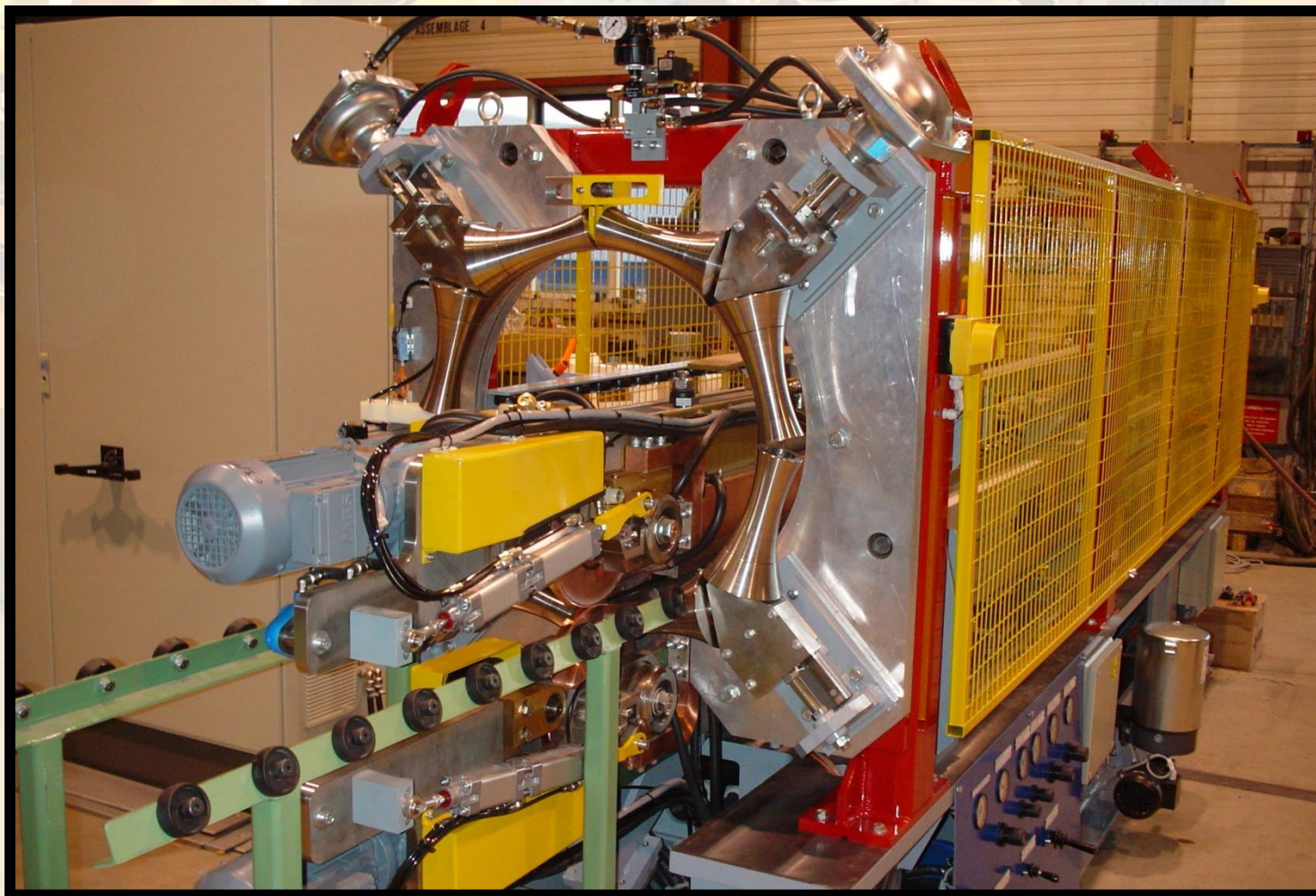






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## HSP 900 drum welder Taiwan

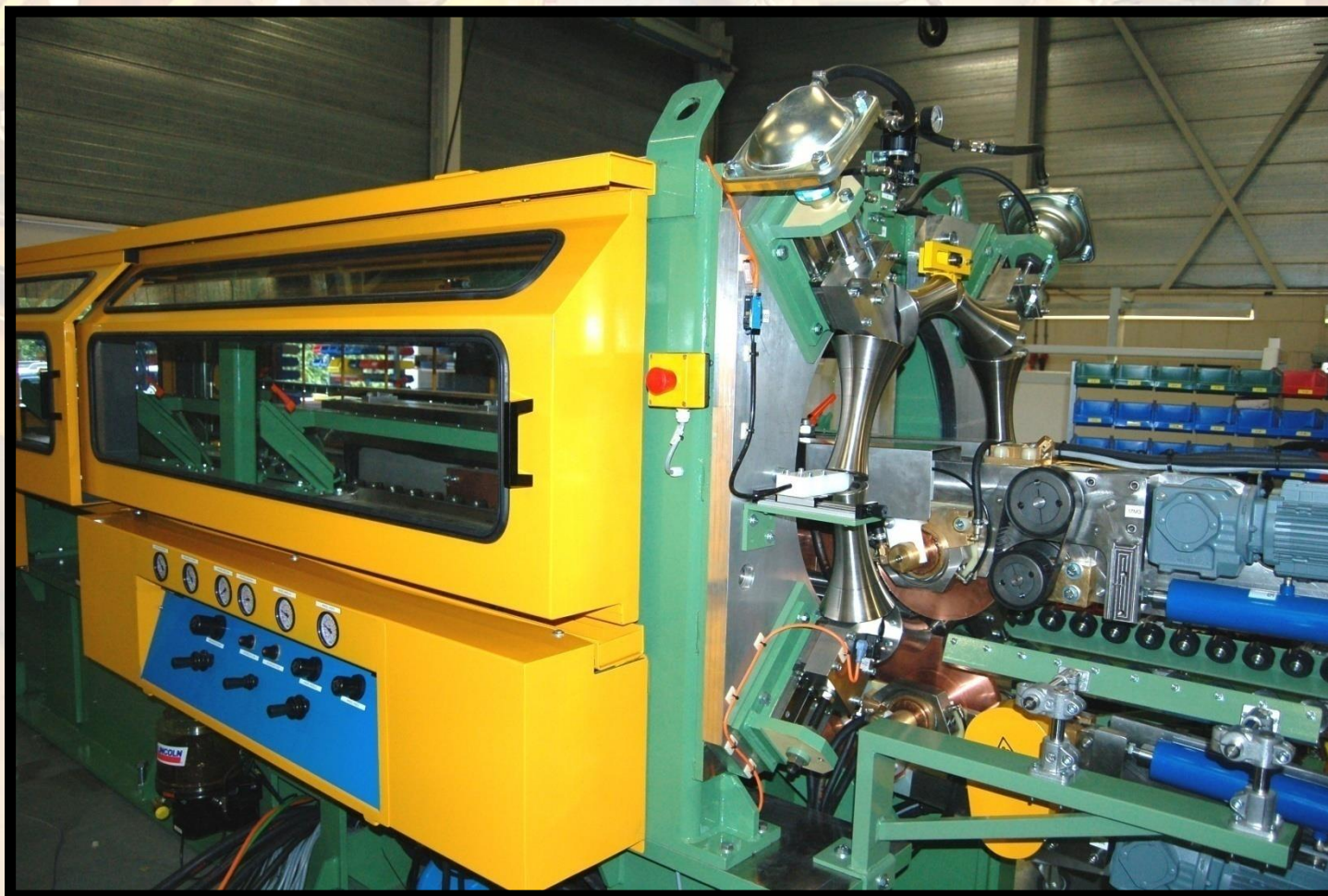






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## HSP 800 drum welder China







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## HSP 800 drum welder Mexico

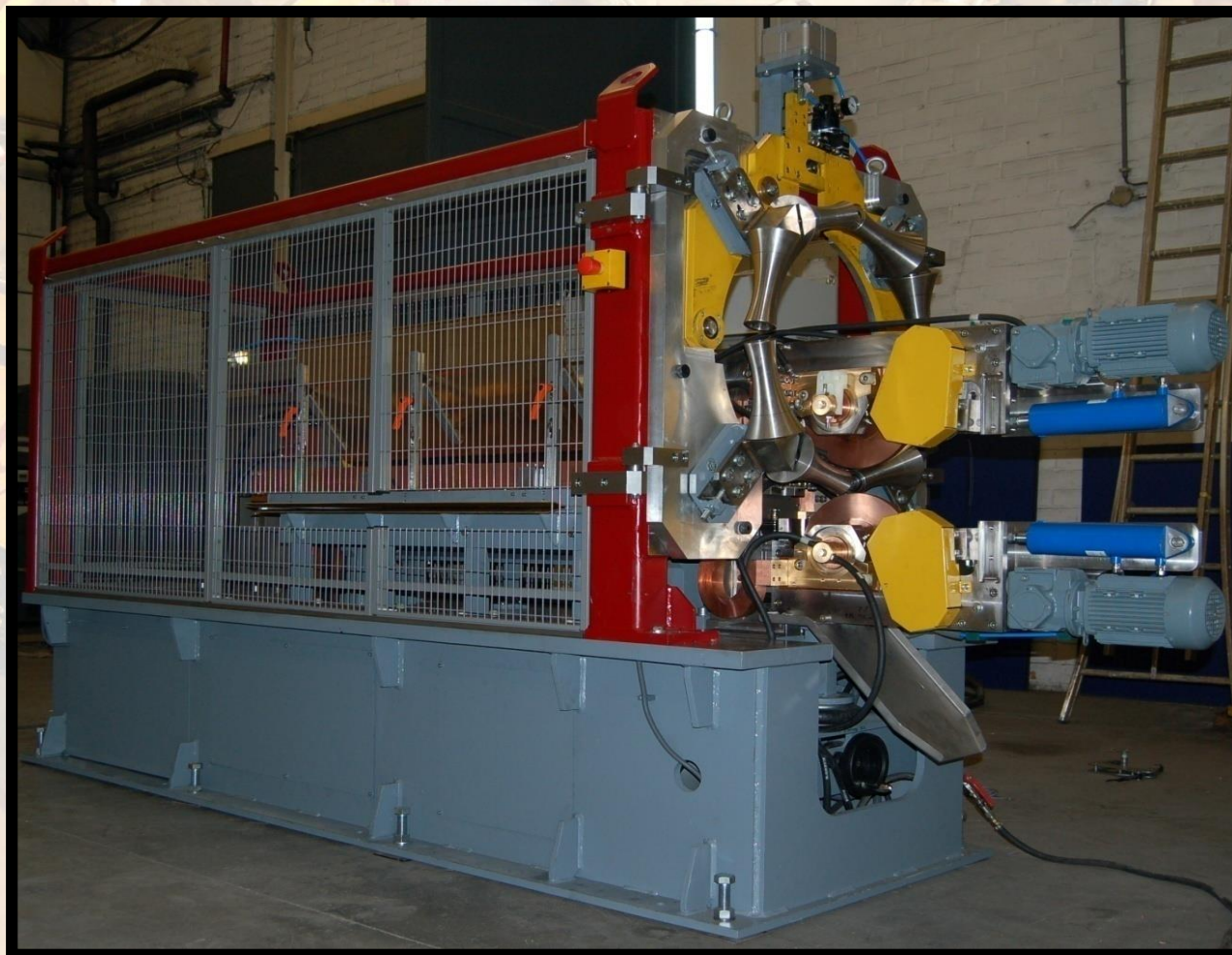






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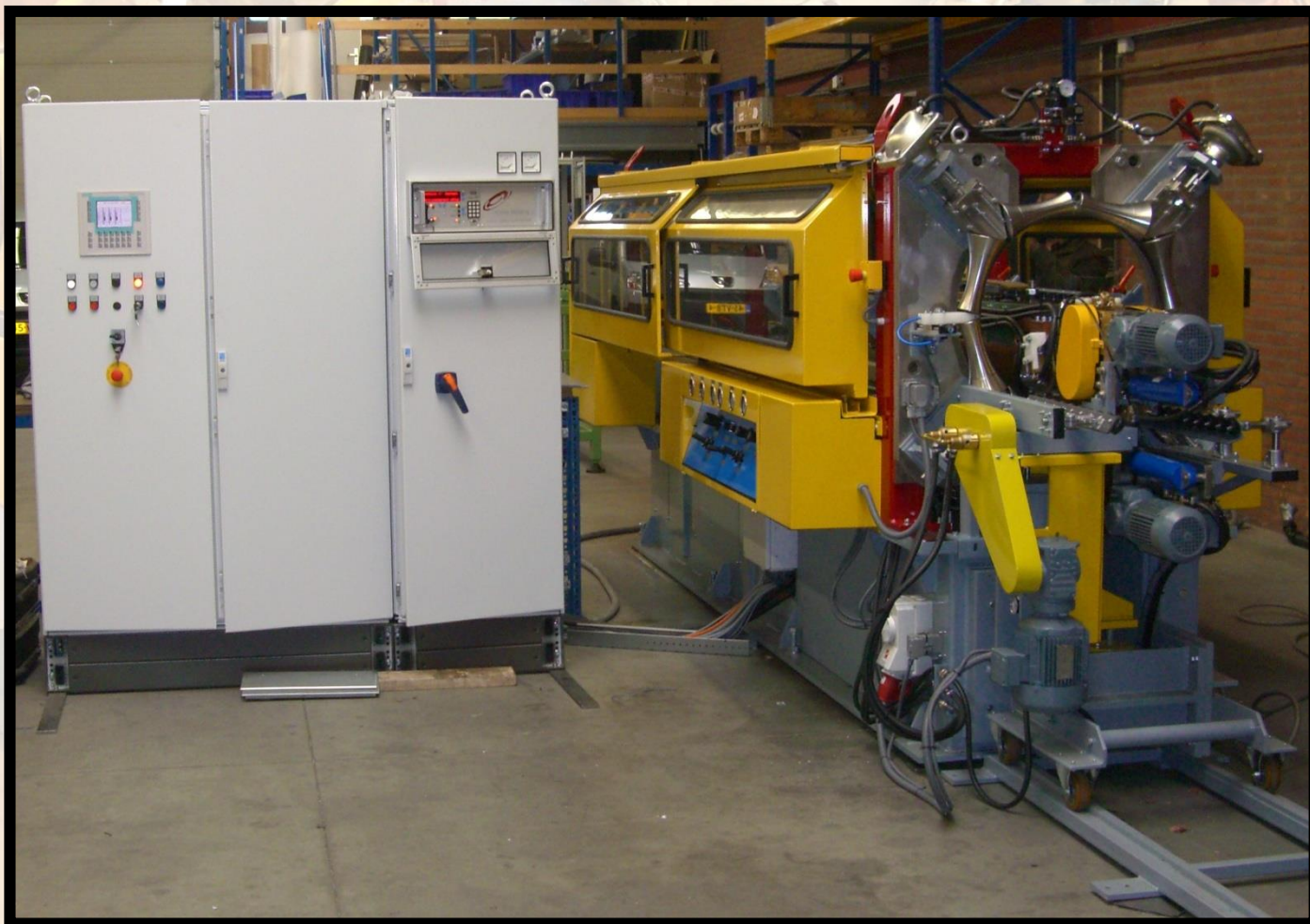
## LSP 300 Drum welder Brazil





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## HSP 800 m Drum Welder India

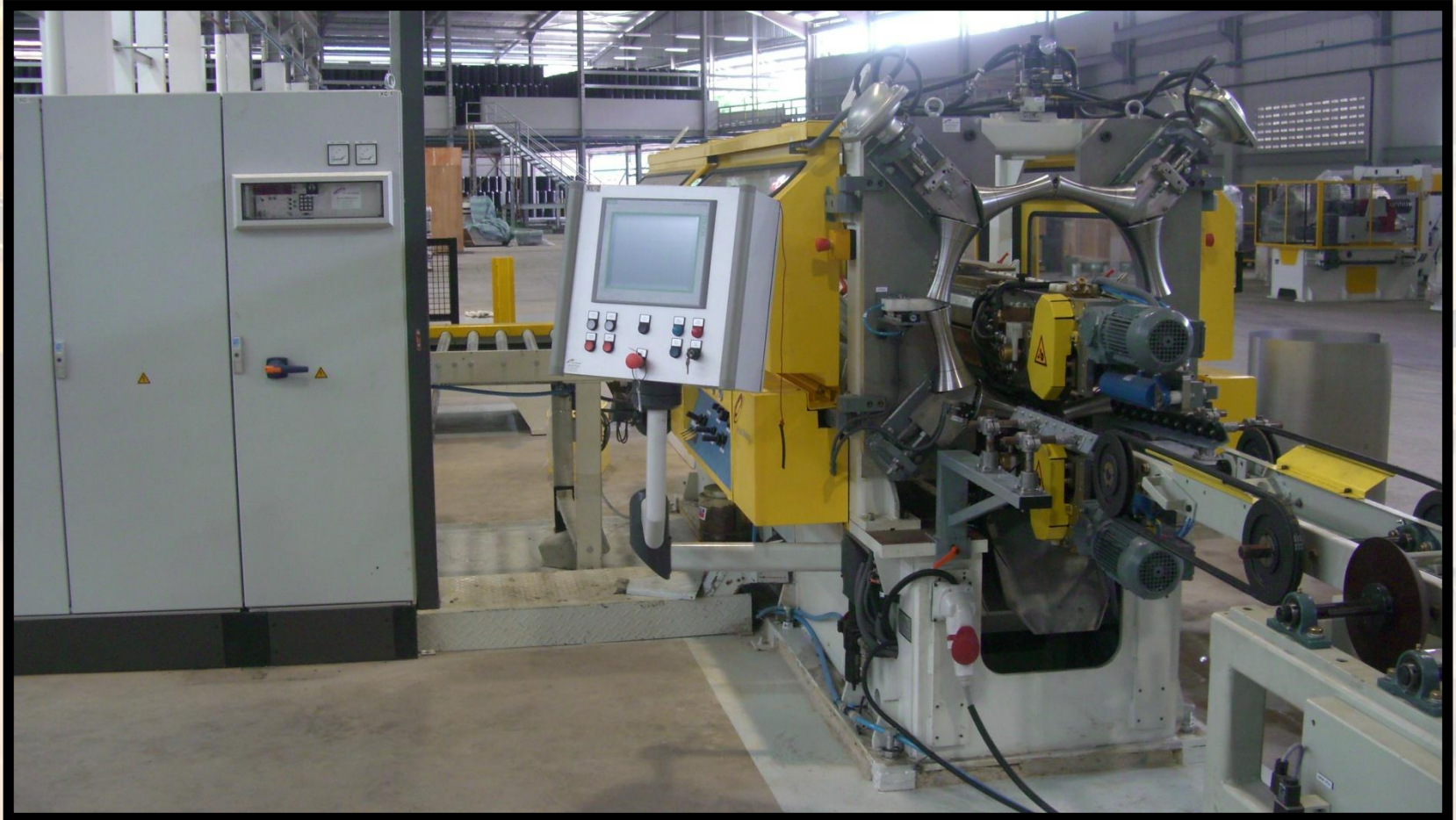






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## HSP 800 H drum welder Singapore







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## SSP 800 H Skew roll welder Canada







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## HSP 800 Drum Welder USA

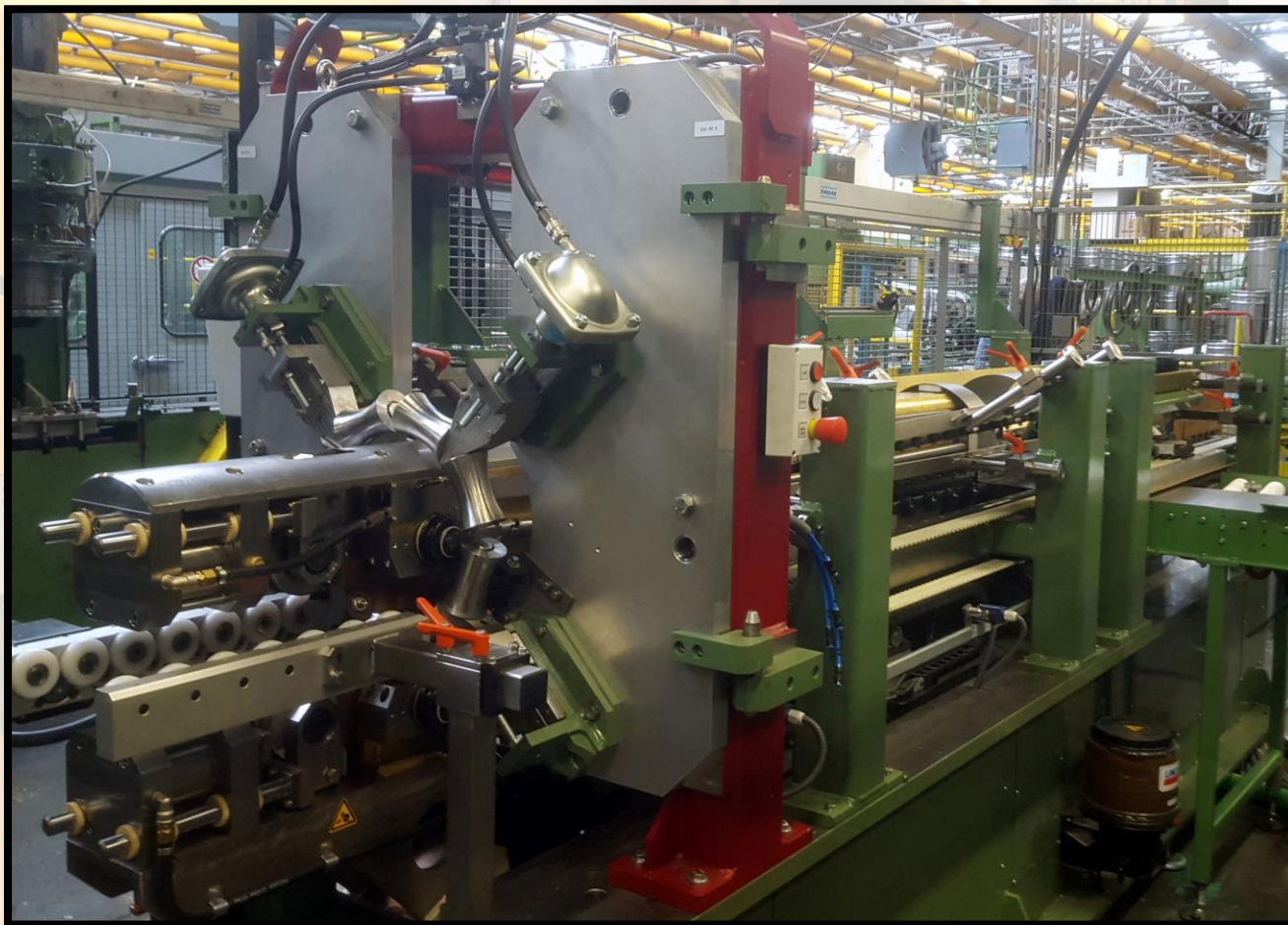






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## PSP 900 Drum Welder (2018) Holland







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## HSP 800 Drum Welder (2019) USA





If you want to discuss welding, please meet me after the sessions ore anytime this week.

It is also possible to download this presentation trough our web site.  
Find the line as follows on our first page of our web site:

Please [click here](#) to download a copy of our [AOSD 2019 presentation](#).

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**Hall 1 Stand 1B25**



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- ⊕ May we thank you for your kind attention.
- ⊕ Any questions.....?

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