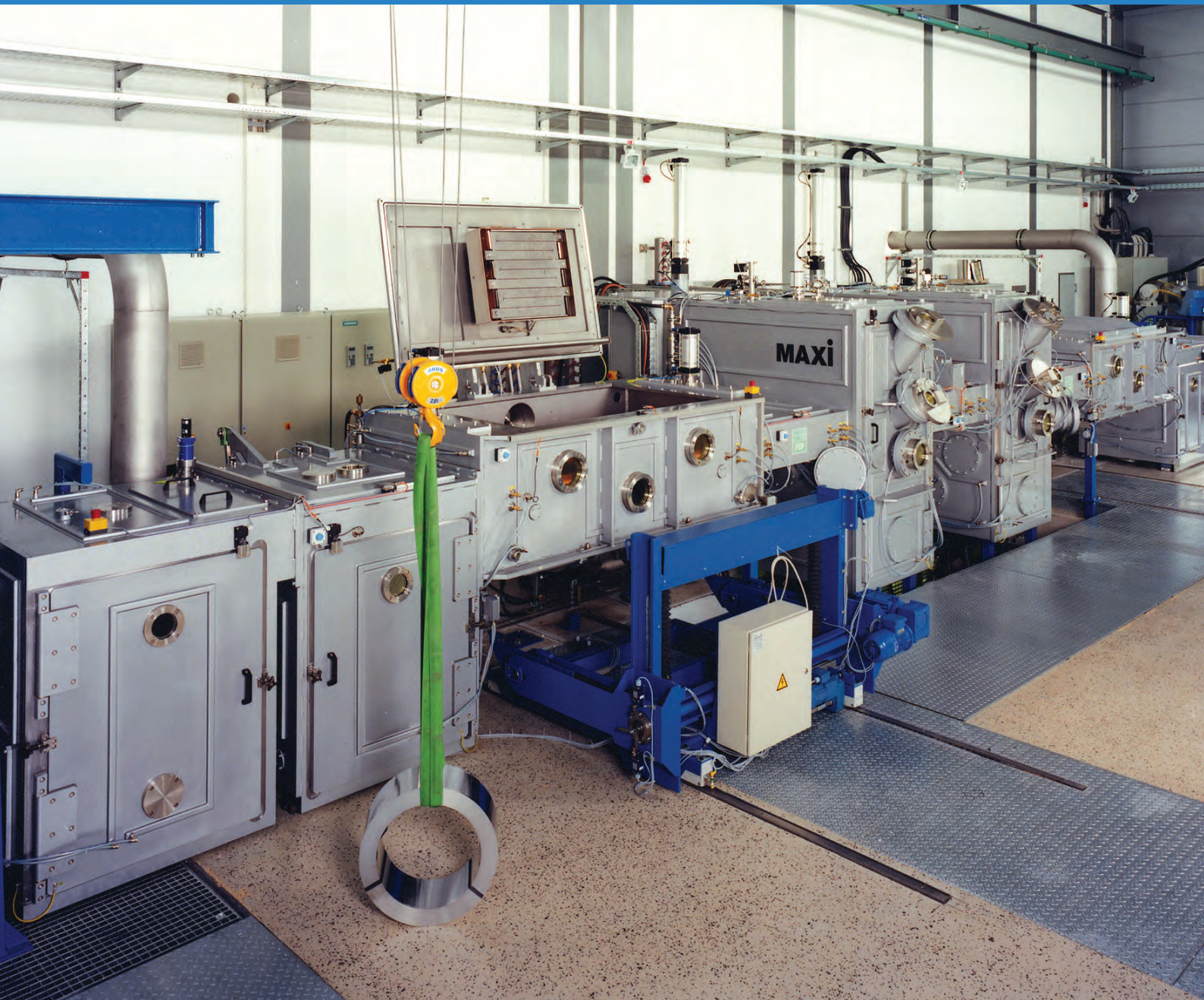


MAXI

IN-LINE VACUUM COATING EQUIPMENT FOR SHEETS AND METAL STRIPS





Applications

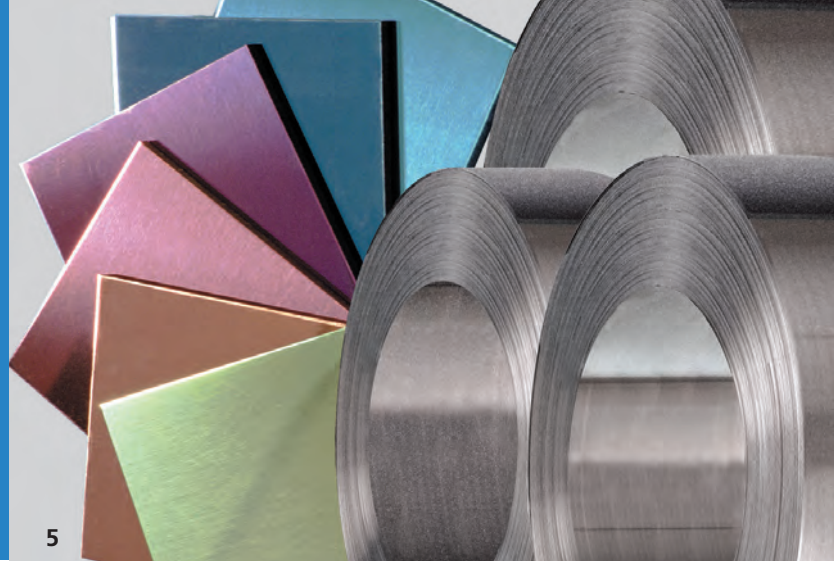
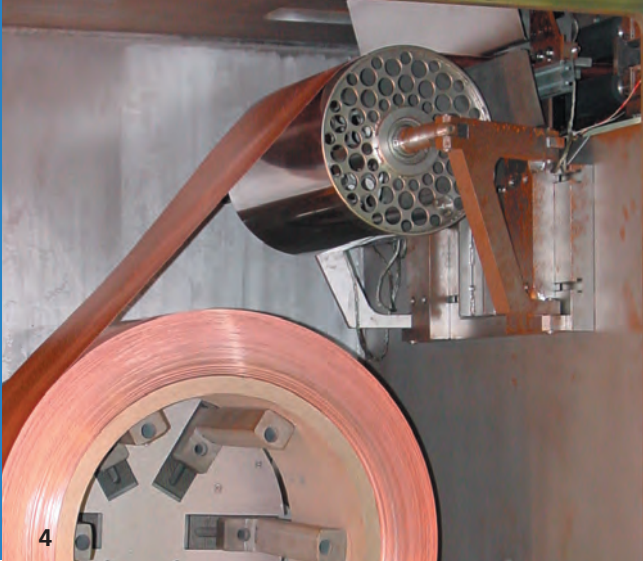
| | |
|---|--|
| corrosion-resistant coatings | ZnMg, Ti, Al, Cr, Cu, Sn, Zn |
| decorative coatings | TiN, Cr, Ti, TiO ₂ |
| transparent abrasion-resistant coatings | SiO _x , Al ₂ O ₃ |
| hard coatings | TiN, TiC, a-C, WC, Al ₂ O ₃ , a-C(:H)(:Ti/W) |
| insulating coatings | SiO _x , Al ₂ O ₃ |
| conductive coatings | Al, Cu, Sn, Mo |
| brazing and welding layers | Cu, Sn, Si |
| photo catalytic layers | TiO ₂ |
| solar absorption layers | Ti or Cr based cermets |
| conversion layers | SiO _x |
| high-reflective layers | SiO ₂ , TiO ₂ |
| special functional layers | Al, Cu, Sn |

Coating processes

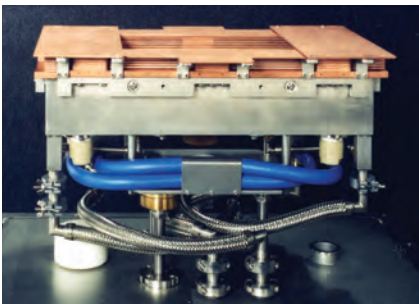
- high-rate electron beam evaporation
- evaporation of metals, compounds, alloys
- plasma-activated deposition processes (SAD and HAD)
- reactive deposition processes
- pulse magnetron sputtering
- other PVD processes (e.g. jet evaporation)
- PECVD processes

Equipment

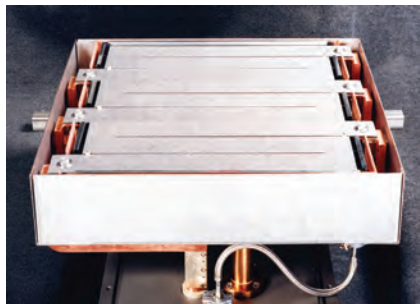
| | |
|-----------------------------------|---|
| general | modularly built 8-chamber equipment |
| general dimensions | length / width / height: 14 m / 2.5 m / 4 m |
| coating width | up to 500 mm |
| substrate speed | 0.001 ... 1.0 m/s |
| strip dimensions | <ul style="list-style-type: none"> ▪ width up to 300 mm ▪ thickness 0.015 mm – 1.5 mm ▪ weight of coil up to 1000 kg |
| sheet dimensions | <ul style="list-style-type: none"> ▪ size up to 500 mm × 500 mm ▪ weight up to 15 kg |
| 1 st electron beam gun | power maximum 160 kW |
| 2 nd electron beam gun | power maximum 300 kW |
| additional equipment | <ul style="list-style-type: none"> ▪ heater, power maximum 60 kW ▪ different ion etchers, power maximum 30 kW ▪ dual magnetron sputter system, power maximum 30 kW ▪ power supply for plasma activation, arc current max. 3000 A ▪ magnetic trap for the EB coating of temperature sensitive substrates ▪ turn-over device for double side coating of sheets ▪ XRF-thickness-distribution-measurement-system ▪ optical film thickness measurement system by using acromatic light |



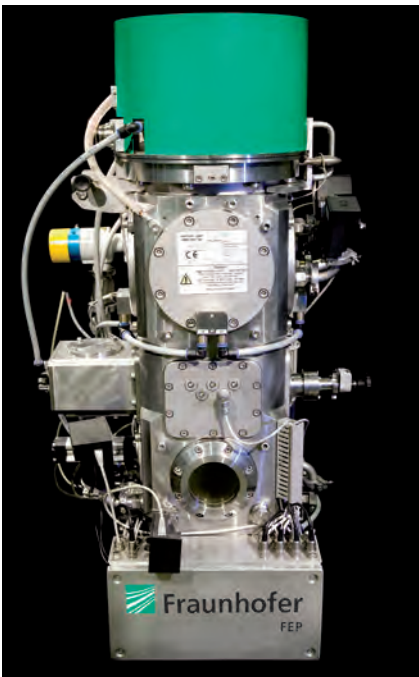
Coating equipment



magnetic field enhanced ion etcher



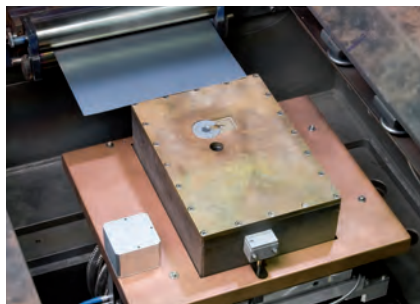
radiation heater



high-power electron beam gun



after-treatment station



XRF-thickness-distribution-measurement-system

TITLE PHOTO

Overall view of the MAXI plant

- 1 *Electron beam evaporation*
- 2 *SAD process*
- 3 *Pulse magnetron sputtering*
- 4 *Coiler station 1*
- 5 *Coating of metal sheets and strips*



We focus on quality and the ISO 9001.

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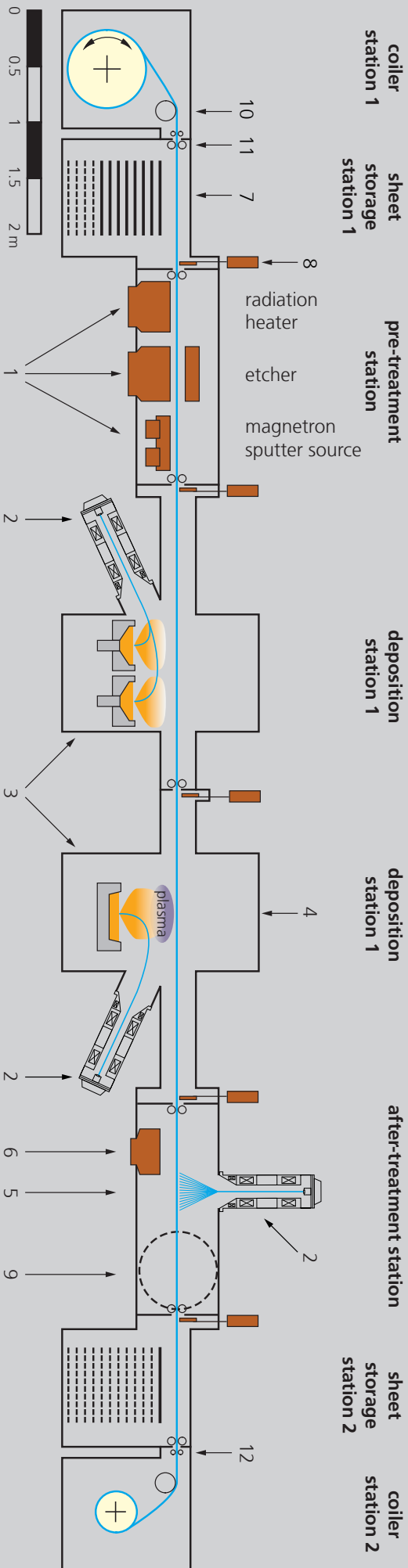
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Schematic layout of the MAXI plant



general (flexible technological equipment - example)

- 1 ... various pre-treatment processes,
e.g. heating, etching, deposition of interfacial layers
- 2 ... high power electron beam gun
- 3 ... various crucibles to evaporate different materials
(metals, alloys or compounds)
- 4 ... plasma-activated deposition process
- 5 ... thermal after-treatment, e.g. electron beam heating

- 6 ... XRF-thickness-distribution-measurement-system, optical
film thickness measurement system by using acromatic light
- 7 ... sheets in frames, stacked
- 8 ... valves, to decouple pressure
- 9 ... turn-over device for double side coating of sheets
- 10 ... strip edge control system
- 11 ... sealing roll pairs, to decouple pressure
- 12 ... squeeze valve, during coil change

strips

- maximum size: 500 mm x 500 mm
 maximum weight: 15 kg
 speed: 0.001 ... 1.0 m/s
- maximum width: 300 mm
 maximum thickness: 0.015 ... 1.5 mm
 speed: 0.001 ... 1.0 m/s