WELCOME TO
STAINLESS STEEL SURFACE PREPARATION PRESENTATION
JUNE 17 2011 PUNE
Key figures and core business

- Founded: 1867
- Patents and copyrights: 800 active property rights, including 500 patents and patent applications
- Market: industry and manual trades
- Market segments: metal, interior construction, automotive
More than 140 years of premium power tools: the history of our company

1895
The world's first power tool is developed by C. & E. FEIN: the electric hand drilling machine.
FEIN India (100% subsidiary of FEIN GmbH) started in 2009. Head office based at Chennai.

- Having dealers in all over India.

- Demo vehicle - Fully equipped with machines and accessories: our applications advisors will at your door step.

- Solve complex, individual problems on-site at the customer's premises.
FEIN – A complete solution provider in the area of Stainless Surface Finishing.

Sharing the know – how knowledge.

A complete range of tools and abrasives for grinding to finishing according to the Ra value required by the customer.

Demo vehicle - Fully equipped with machines and accessories: our applications advisors will at your door step. Solve complex, individual problems on-site at the customer's premises.
Fascination stainless steel
Basics
Common causes of corrosion in the field

- Tools / Abrasives which were previously used with steel.
- Sparks on stainless steel surfaces
- Lack of tarnish removal.
  - No passive layer generation
- Chemical influences such as Chlorine in cleaning agents.
- Mechanical influences
- Deposits in crevices and seams
Basics
Types of corrosion

Contact Corrosion:
- Occurs when carbon steel particles are deposited on a Stainless steel surfaces (rust, grinding dust, welding sparks and grinding disks containing ferrite).

Remedy:
- Dedicated stainless steel tools
- Separate material and working areas
- Clean machines before working with stainless steel
Peak to valley height is influenced by:

- Grinding motion (rotation/eccentric/linear)
- Do not use oil and grease. They reduce the peak to valley height.
- Grinding material (Silicon Carbide, Corundum, Zircon-Corundum)
- Grinding pressure.
Basics
Surface Finishing

- **GRINDING MOTION**

  - **ECCENTRIC**
  - **ROTATION**
  - **LINEAR**
Different finishes in Stainless Steel

- **Brush finish** Grit 60
  - 1.0 micron Ra (Surface roughness)

- **Matt Finish** Grit 120
  - 0.8 micron Ra (Surface roughness)

- **Satin Finish** Grit 280
  - 0.4 micron Ra (Surface roughness)

- **Mirror Finish**
  - 1.0 micro inch or below (Surface roughness)
Focus applications

- Remove of tarnish colours
- Remove of light scratches
- Remove of deep scratches
- Remove of weld seams
- Finishing
- Grinding in edges and corners
- Deburring
- Notching
FEIN POWER TOOLS INDIA PVT LTD

FEIN – STAINLESS STEEL SURFACE PREPARATION PROGRAMME

- Weld seam removal
  - Coarse grinding of mill scale
  - Coarse grinding of stainless steel welded seams
  - Creating grinding patterns
  - Deburring larger workpieces
  - Stage prior to use of Stainless steel set
  - Satin-finishing surfaces
Roughness depths are influenced by

- the sanding material (rotary/eccentric/belt)
- sanding oils and greases (reduce the roughness depths)
- grit types (silicon carbide, corundum, zirconium corundum)
- the contact pressure during sanding
Machining surfaces
Heat-induced warping of sheet metals

- Due to the low thermal conductivity of stainless steel, it is possible for sheet metals to warp even at low temperatures.

Tips

- Reduce speed
- Lay a copper or aluminium plate underneath
- Use cool sanding tools
Machining surfaces
Polishing

Tips

- Clean with Vienna chalk + microfibre cloth

- Label the polishing tools after deciding which polishing paste to use with each finishes.
- No. 0: Hot rolled, annealed, thicker plates
- No. 1: Hot rolled, annealed and passivated
- No. 2D: Cold rolled, annealed, pickled and passivated
- No. 2B: Same as above with additional pass-through highly polished rollers
- No. 2BA: Bright annealed (BA or 2R) same as above then bright annealed under oxygen-free atmospheric conditions
- No. 3: Coarse abrasive finish applied mechanically
- **No. 4: Brushed finish**
- No. 5: Satin finish
- No. 6: Matte finish
- No. 7: Reflective finish
- No. 8: Mirror finish
Machining surfaces
Rough material removal

- Sanding polisher + sanding sleeves
  - High surface material removal
  - Basis for building up the sanding pattern further
  - Vollkolan expansion cylinders carry the sanding sleeves safely

Starting situation: Hot rolled scale

Work steps:
Coarse sanding with sanding sleeves, grit 60/80/120
speed 2500 rpm

Result:
Surface sanding, grit 120,
stage prior to satin-finishing
Machining surfaces
Matt Finish

- Sanding polisher + sanding sleeves
  - Light material removal
  - Basis for building up the sanding pattern further
  - With Low rpm and constant feed to maintain even sanding pattern

Surface sanding with elastic sanding sleeve
Grit 60 with 900 rpm

Sanding sleeve of Grit 180 with 900 rpm

Result:
Matt finish of grit 180
SATIN Finish
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