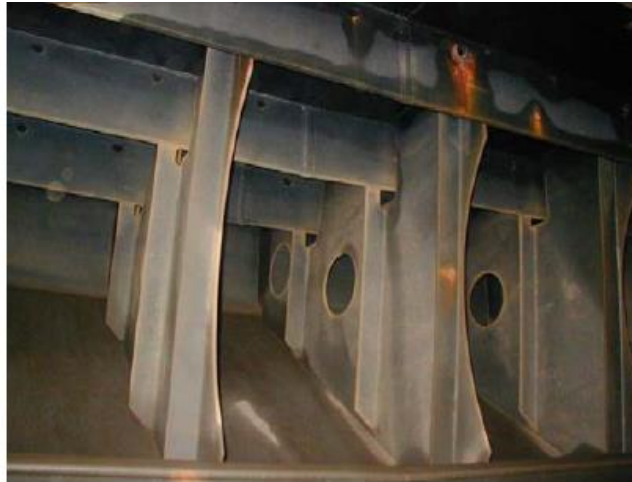


world of beveling

Optimum weld preparation and edge preparation



Corrosion protection

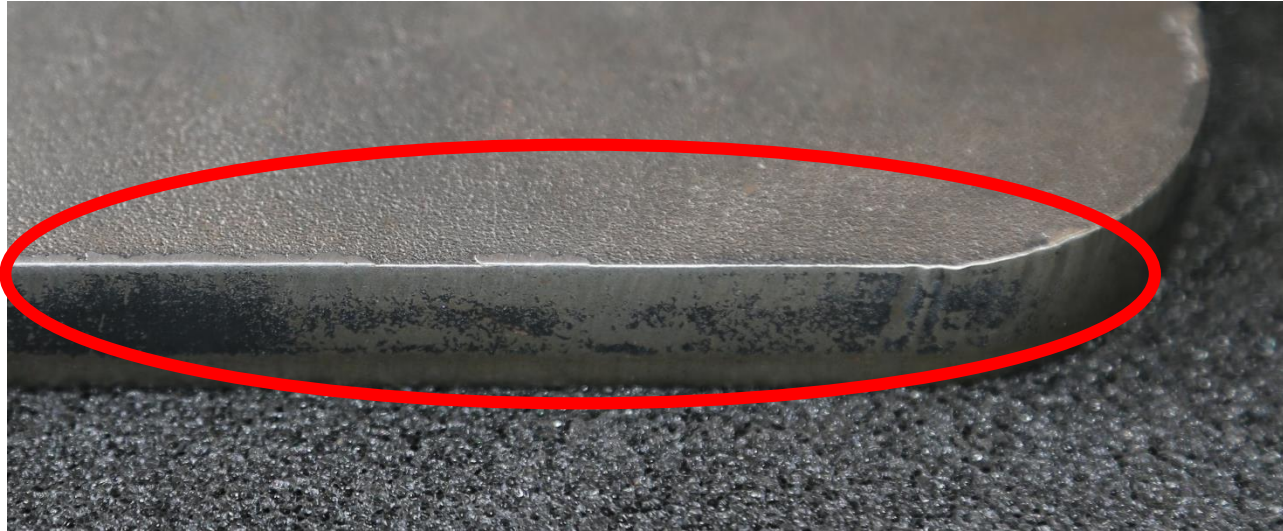


good edge protection

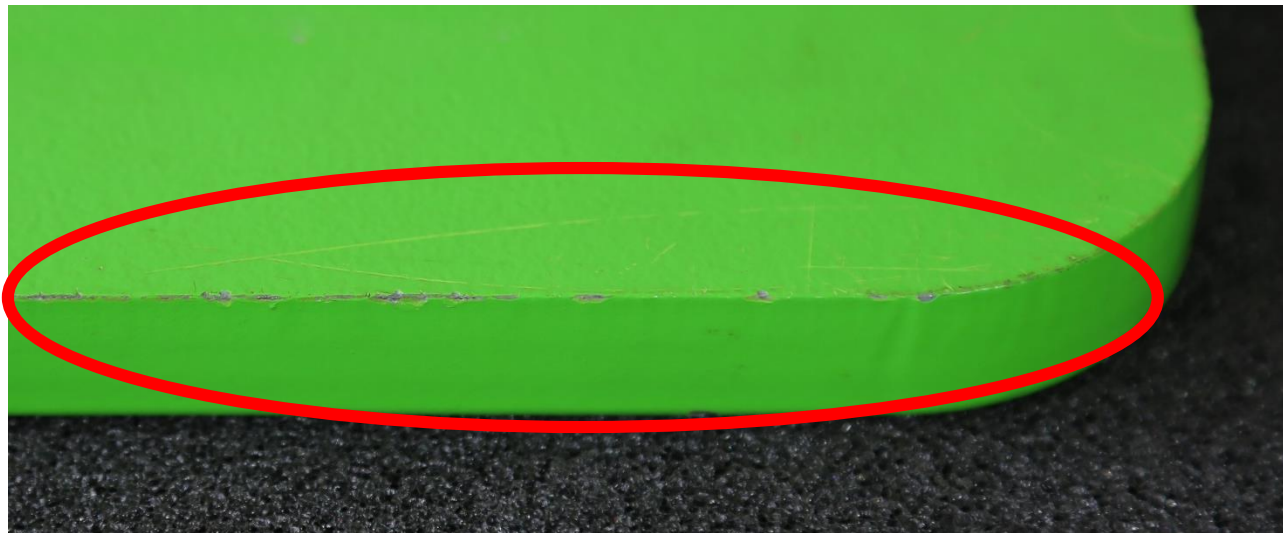


bad edge protection

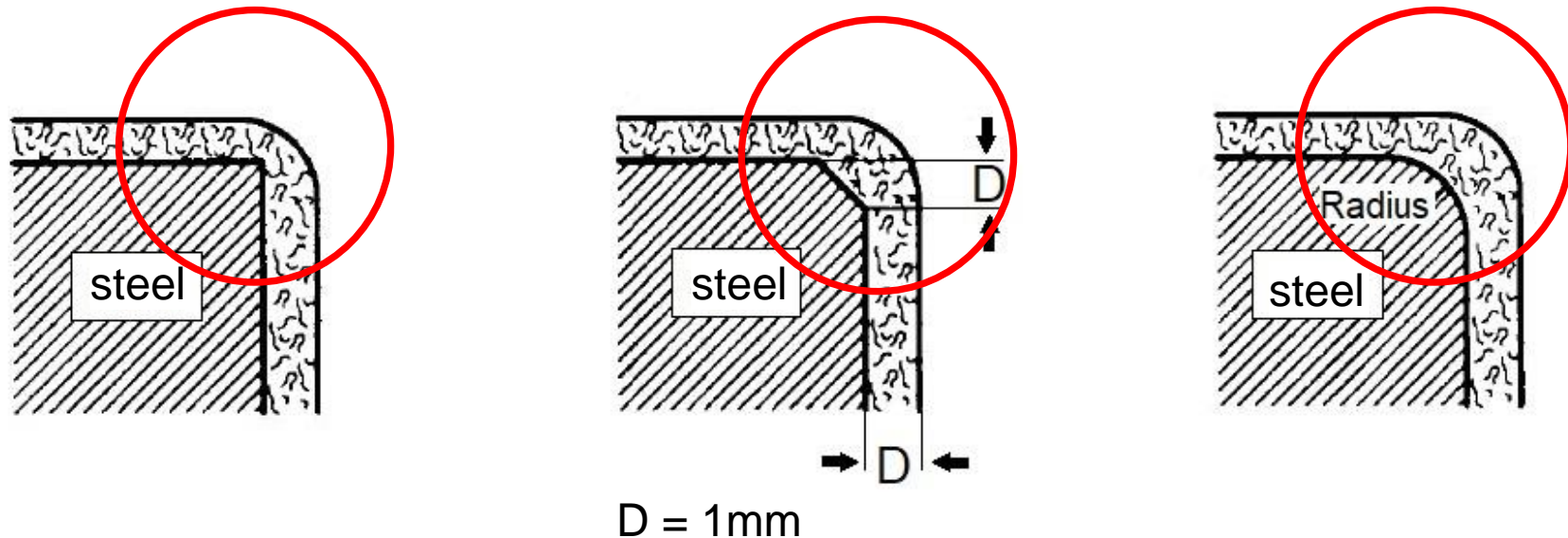
Corrosion protection



Coating degradation and corrosion usually start first in the edge areas.



Corrosion protection: Basic rules of design DIN EN ISO 12944-3

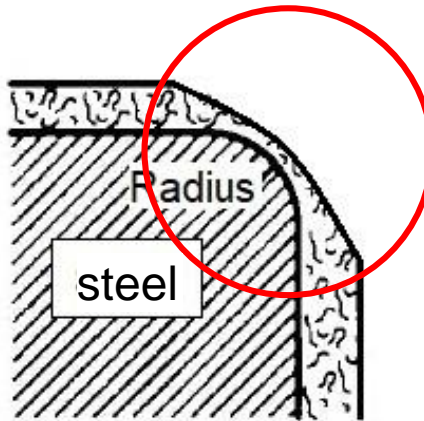


- To be able to apply the coating evenly and to achieve sufficient layer thicknesses at edges, rounded edges are desirable
- Coatings on sharp edges can be damaged more easily
- All sharp edges from the manufacturing process should be rounded or at least broken
- Burrs on holes and along cutting edges must be removed

Edge protection ZTV-ING T4, A3 planning aids



- note the problem of edging at edge radii < 4 mm



The **edge loss** is a physical effect. He occurs in the coating from surfaces and causes the coating to be thinner at edges than on flat surfaces. The edge loss represents a serious problem in the coating technology, because parts of the workpiece are not coated sufficiently. This can prevent the desired protection especially for anti-corrosion coatings.

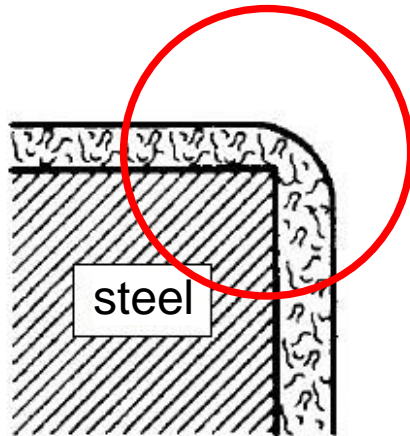
Corrosion protection preparation

Break edges or round edges?



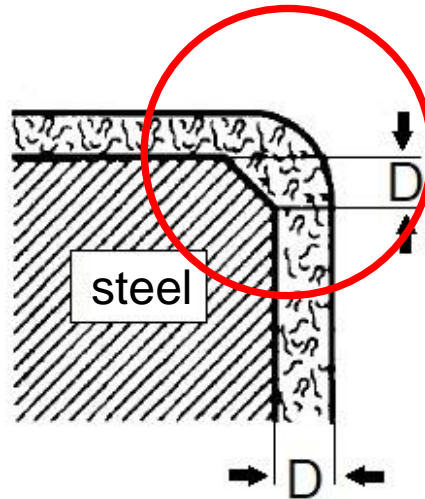
- Sharp edges are very susceptible to corrosion as the paint wetting is not sufficient there, therefore:
 - form the edge as a surface
 - the larger the area, the larger the paint wetting
 - from radius $R > 2\text{mm}$ there is a surface effect
 - from radius $R > 4\text{ mm}$ there is no edge loss

Layer thickness distribution edge / surface



sharp steel edge

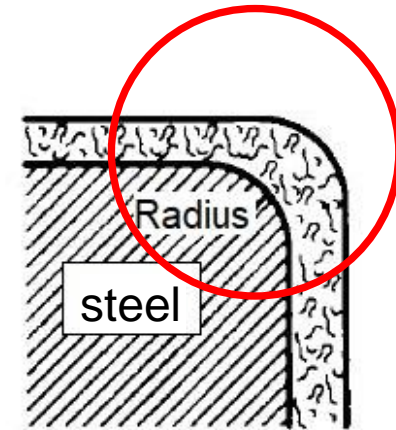
Bad



$D = 1\text{mm}$

broken steel edge

better



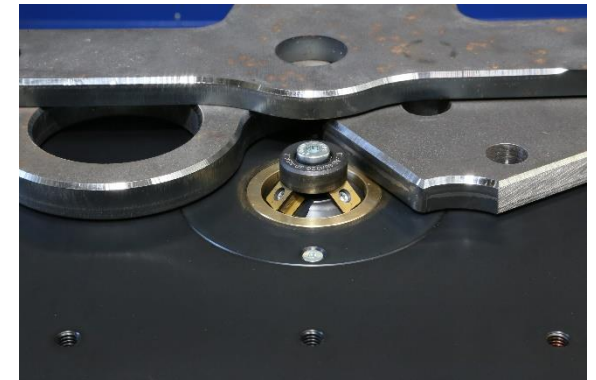
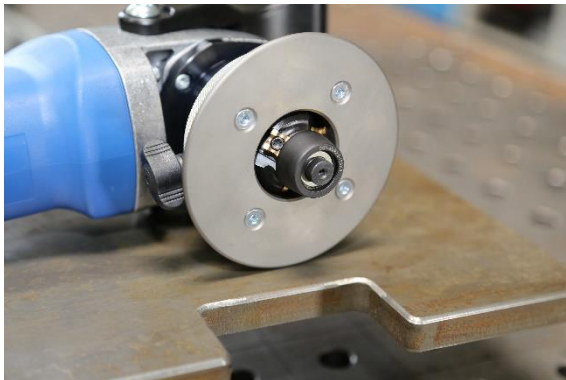
rounded steel edge

good $r > 2\text{mm}$
optimally $r > 4\text{ mm}$

Corrosion protection of steel structures: Coating must be carried out in accordance with EN ISO 12944-7



The coating must be carried out in accordance with EN ISO 12944-7. If the protection period of the corrosion protection is to be greater than 5 years with a corrosivity category of C3 or higher, e.g. in Germany, the rule is, the steel structure must have **rounded or beveled edges according to EN 12944-3**.



Standards



- DIN EN ISO 2944-3 Fluid Power Components - Nominal pressure
- DIN EN ISO 8501-3 Preparation of steel surfaces before application of coating materials
- DIN EN ISO 12944-3 Corrosion protection of steel structures by coating systems
- DIN EN 1090-2 Execution of steel structures and aluminum structures, coating processes
- DIN EN 14879-1 Coating and lining of organic materials to protect industrial equipment against corrosion by aggressive media
- ZTV-ING T4 Edge protection
- IMO Resolution MSC.215(82) Performance Standard for protective coatings



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