

Anti-Corrosion with Titanium Foils for a preventive maintenance of Steel Lighthouses

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A Steel Lighthouse exposed in severe conditions

- Lighthouses are exposed to severe conditions:
 - sand, seawater, moisture and salty air...
- Such conditions lead the quick development of corrosion with steel surfaces of lighthouse structures



Conventional way of preventive maintenance

- Protective paint are commonly used in Japan
- Corrosions on surface of lighthouses spreads very fast; re-painting needed every 10 years
- Budget and personnel are limited in the JCG.



Fresh painting



10 years after

Applying Titanium foil to lighthouse surfaces

The process of anti-corrosion operation with titanium-foils



October 2016



Pre-painting and pasting of titanium foils



Covered with titanium foils

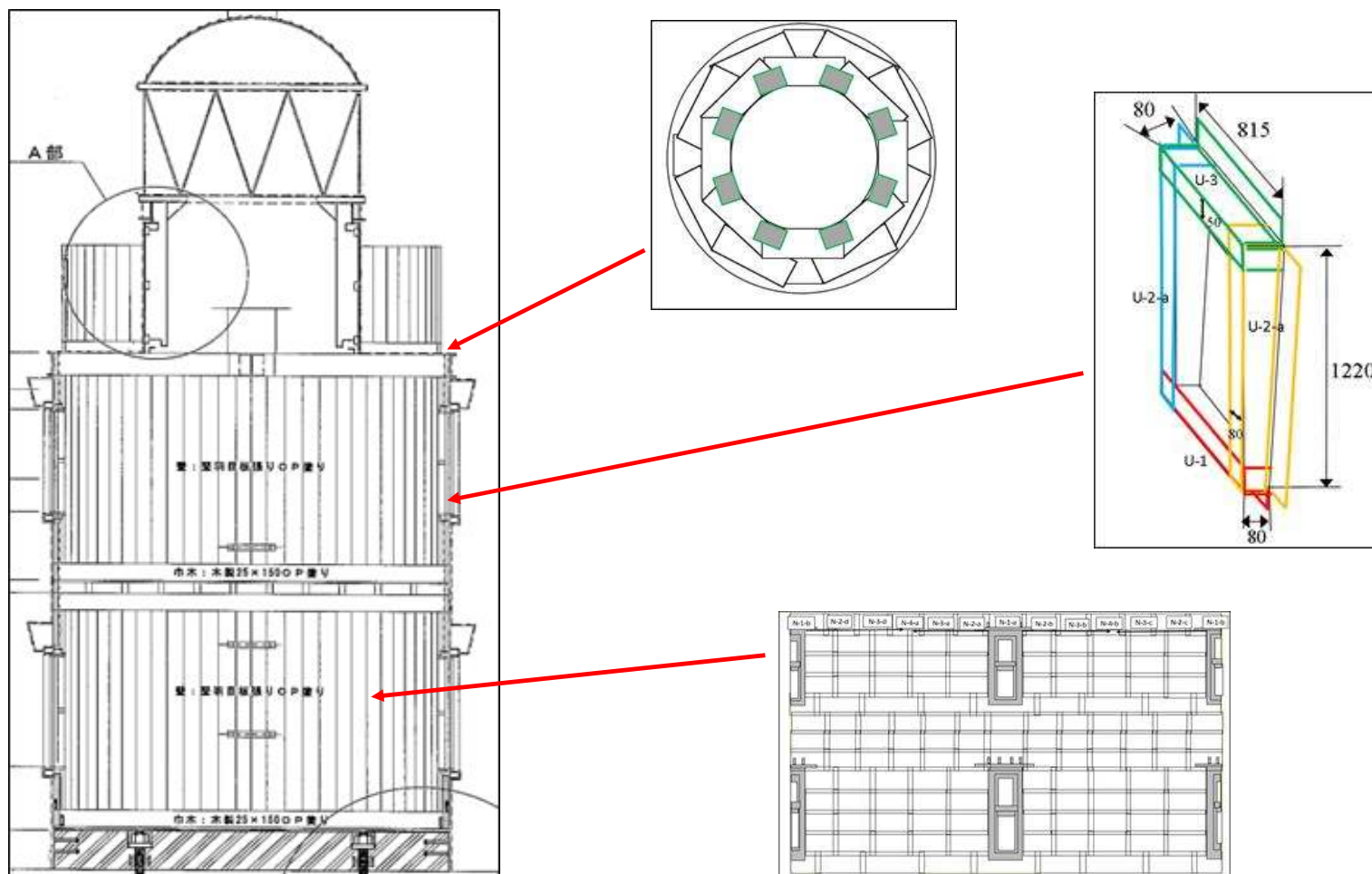


Top coating



Completed! January 2017

Titanium Foils pasting



Titanium foils are pasted by segment to fit on the structure

The condition after 6 months from the coating in terms of corrosion



VS

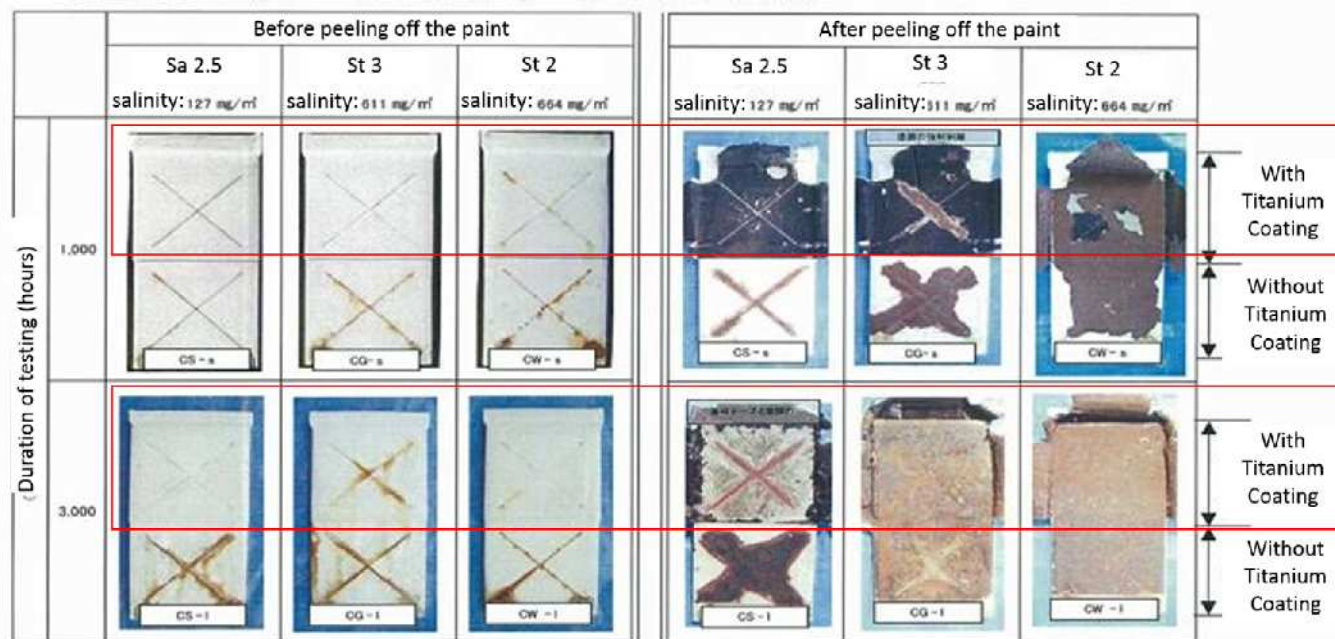


A part with titanium coating:
no corrosion is observed

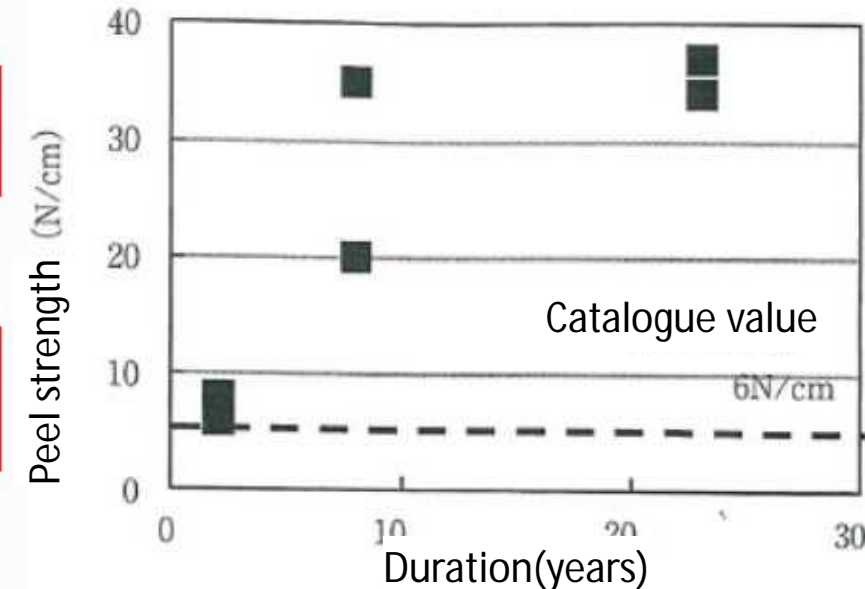
A part without titanium coating:
little corrosion has started to develop the edge

Characteristics of Titanium Foils Pasting

- Titanium Foil has high performance in terms of
 - Anti-corrosion
 - Adhesion durability
 - Easy to peel off



A Result of a Combined Cyclic corrosion Testing





Before



After

Expected durability	10 years	60 years
Initial cost	20,000 JPY	79,000 JPY
Total cost in 80 years	365,000 JPY	189,000 JPY

An easy and cost-effective solution for lighthouse maintenance