



Analysis of FUJI prescale film, place in the D2 MBRDP prototype

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TE-MS-C-SMT

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Content

- Analysis of the D2 prototype (MBRDP) mid-plane stress after pre-collaring
 - Analysis with office scanner and MATLAB EDMS: 1885552

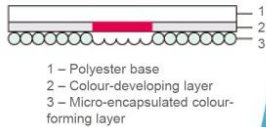
Fuji papers used for the test

Prescale film Types

Specification

- Mono-sheet
 - MS 10 – 50 MPa
 - HS 50 – 130 MPa
 - HHS 130 – 300 MPa
- Thickness: $100 \pm 5 \mu\text{m}$
- Spatial resolution: 0.1 mm
- Micro capsules 4 to 15 μm with different wall thickness per film Type

Layout of a Mono-sheet Prescale Film



Two papers were involved: MS and HS.
They were placed in the midplane



NCS ... Non connection side
LC ... lead side

Label convention

Stress analysis

- FUJI stripes have been divided into 28 segments (total length of 8m)
 - Coil halves are defined by left and right
- Stress range of the FUJI prescale films
 - MS Type 10 – 50 MPa
 - HS Type 50 - 130 MPa
- Assumptions for analysis
 - Too dark areas of HS type film have been set to 140 MPa
 - Too bright areas have been set to 0 Mpa
- Data available on EDMS: 2471988

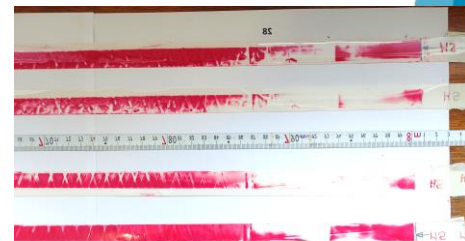
Segment 1 LC



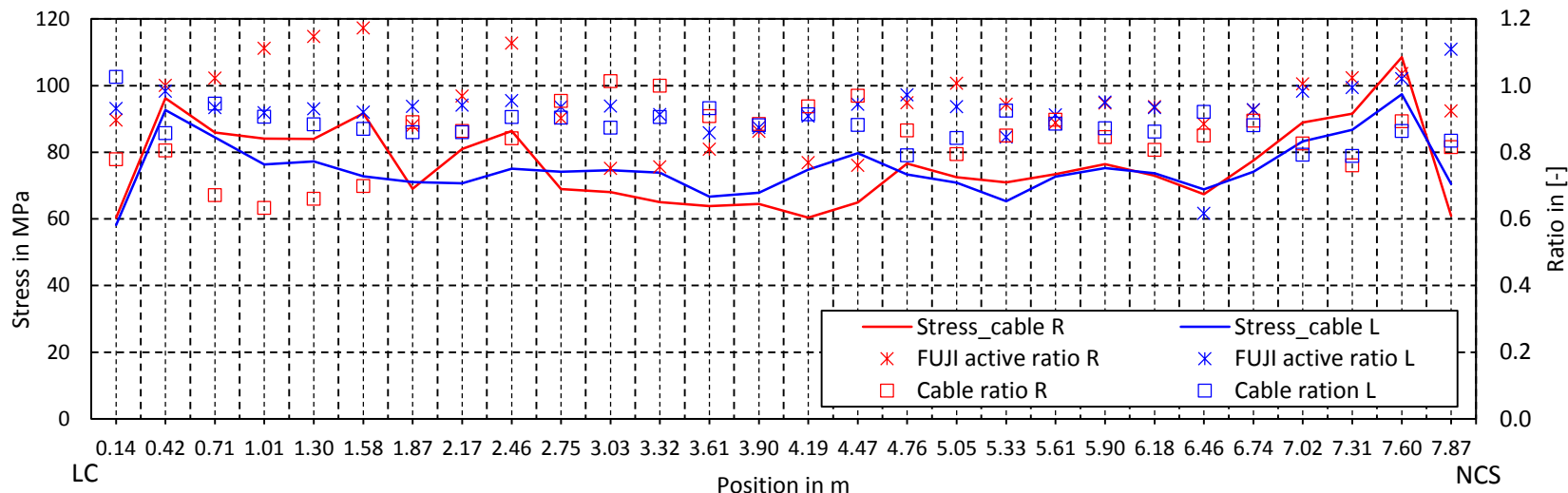
Segment 27



Segment 28 NCS



Stress distribution



Assumptions:

Too dark areas of HS have been set to 140 MPa

Too bright areas have been set to 0 MPa

Integrated forces:

Force_left = 9026 kN

Force_right = 9157 kN

Force_sum = 18183 kN

Stress left: 75.1 ± 8 MPa

Stress right: 76.1 ± 12 MPa

Reference INFN 84MPa (19920 kN)

FUJI active ratio

Ratio of the colorized area which we can be interpreted of MS and HS films.

Cable ratio

Ratio of the cable area which is covered by FUJI prescale paper.

Stress_cable

Integrated force from MS and HS film divided by cable area .

R Right.

L Left.

Conclusion

- The stress profile between the left and right side are similar
- The average stress on the left side is 75.1 ± 8 MPa
- The average stress on the right is 76.1 ± 12 MPa
- The average stress at the straight section is lower than the one at the coil ends

**Thank you for your
attention.**