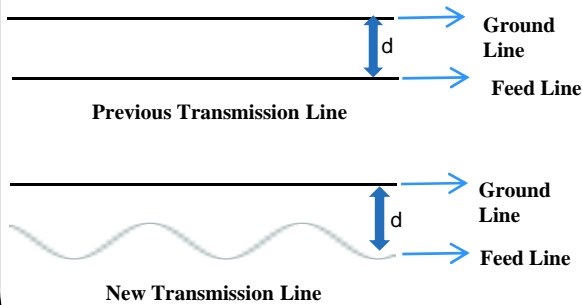


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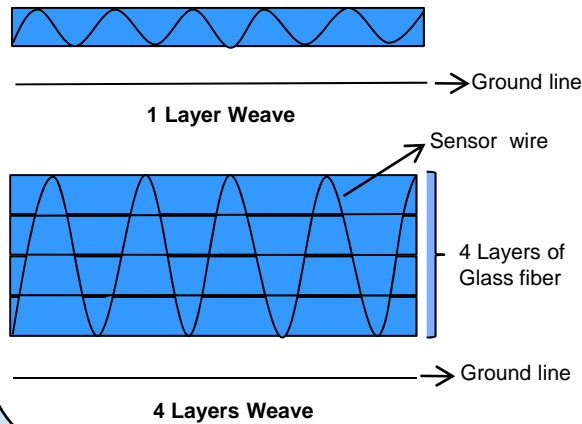
INTRODUCTION – PREVIOUS WORK

- ◆ Time domain method was developed to measure the crack propagation in composites.
- ◆ Straight line geometry sensors were used.



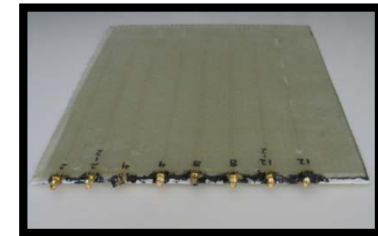
SENSOR GEOMETRIES

Insertion was made after every tow (1 indent weave)



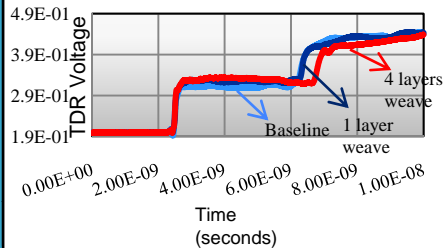
SENSOR & PANEL PREPARATION

- ◆ Copper wire with a small diameter was used as the sensor material.
- ◆ The geometry of the wire was varied by weaving it through the fabric.
- ◆ SMA connectors were soldered to the copper wires.
- ◆ Panels were infused using VARTM



TDR PROFILE - RESULT

Comparison Chart for 1 Indent Weave & d of 2 layers



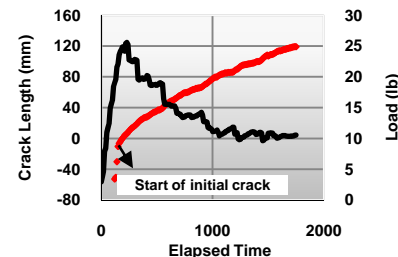
DCB MODE I TEST



Propagating crack during DCB test.

TDR Oscilloscope monitoring the crack propagation.

REAL TIME CRACK PROPAGATION - RESULT



Sample used had a d spacing of 2 layers and the sensor had a non linear geometry – crack propagation could be clearly noticed.

CONCLUSION – FUTURE WORK

- ◆ The TDR profile was affected by d spacing
- ◆ TDR – DCB method can be used to calculate the crack length in composites with weaved sensor having non-linear geometry.
- ◆ The results obtained so far show that there is a good possibility of being able to incorporate sensors into the fabric and still be able to effectively measure the crack propagation.
- ◆ In future work, the geometry of the ground line would be varied and results will be analyzed.