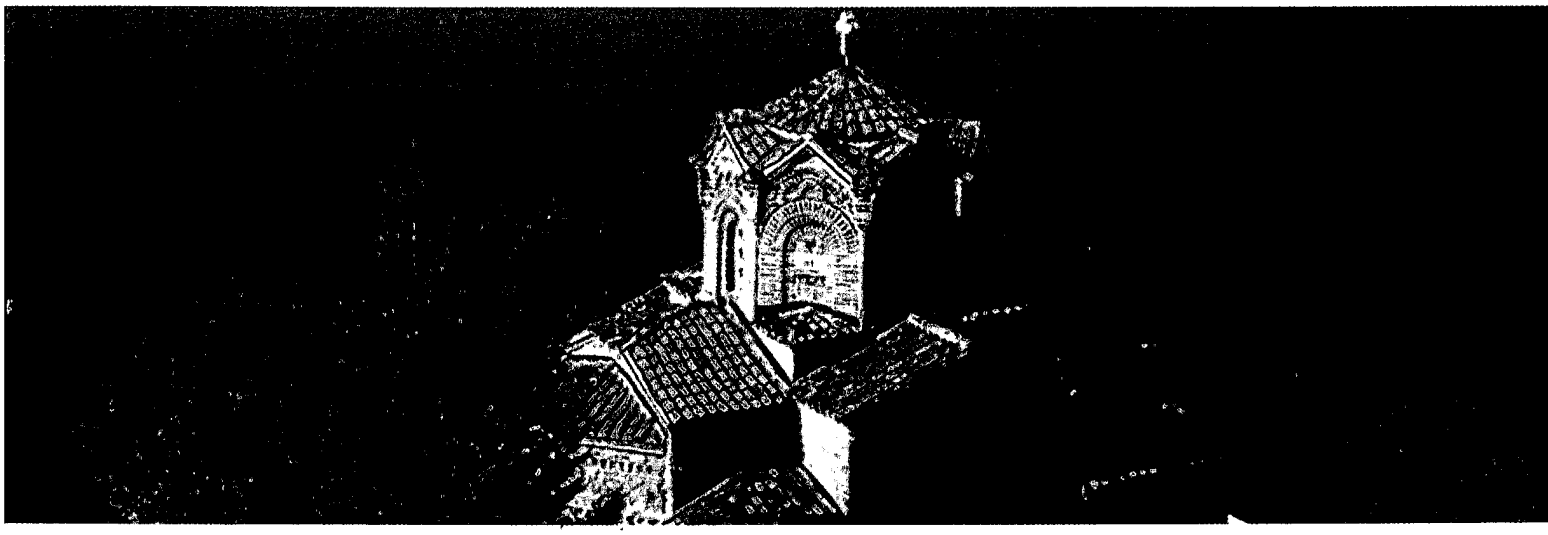
MACEDONIAN UNION OF METALLURGISTS



VIIth INTERNATIONAL METALLURGICAL CONGRESS

METALLURGY, MATERIALS, ENVIROMENTAL (MME)

BOOK OF ABSTRACTS

09.06 - 12.06. 2016
OHRID, MACEDONIA

MACEDONIAN UNION OF METALLURGISTS

VIIth International Metallurgical Congress,

METALLURGY, MATERIALS AND ENVIRONMENT

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BOOK OF ABSTRACTS

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NAM - 2

MECHANICAL AND THERMAL PROPERTIES OF FILAMENT WOUND COMPOSITE PIPES

Vineta Srebrenkoska[1], Svetlana Risteska[2], Maja Mijajlovik[2], Sara Srebrenkoska[3], Silvana Zezova[1]

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The aim of this study was to investigate the mechanical and thermal properties of continuous glass fiber reinforced composite (GFRC) pipes produced by filament winding technique with different winding speed, fiber tension and winding angle in accordance with the 2^3 full factorial experimental design. The influence of each individual factor to the response function was established, as well as the influence of the interaction of the two and three factors. From received results it was concluded that, mechanical properties of composite specimens were highly effected by winding angles in filament winding technology. It was found that the estimated first-degree regression equation with the interaction gave a very good approximation of the experimental results of the hoop tensile and compressive strengths of composite pipes within the study domain.

According to results of the thermal characterization of the composite pipes, it can be concluded that all filament wound pipes have a good thermal stability and their weight loss was observed at temperature interval from 600 °C to 1000 °C. Based on the measurements for the glass transition and rate of cure, it was concluded that crosslinking reaction between the resin and fibers in the filament wound pipes is already reached in all composites.

Key words glass fiber, filament winding, composite pipes.