Thickness Measurement Technique For Impinging Jets on Moving Surface

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Project Period: September 2015 – April 2016

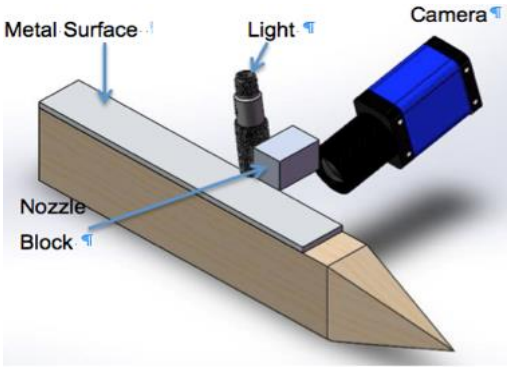

Figure 1: Image recording set up

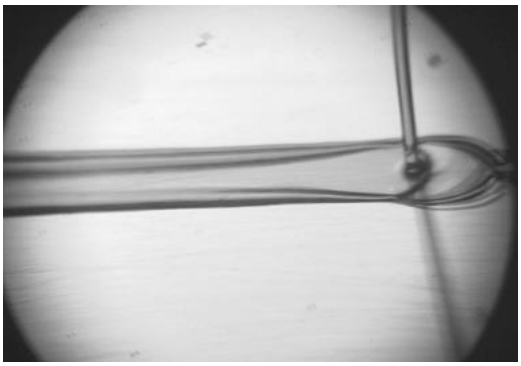

Figure 2: Liquid Jet Impingement on Moving Surface

Impingement flows on a moving dry substrate are extensively used in industrial applications such as spray coating, diesel fuel injecting, inkjet printing and pesticide spraying. In railroad industries, spray coating process is implemented at the application of liquid friction modifiers (LFMs). Applying LFM to the wheel-rail interface has been proven in many studies and applications to be an effective means of controlling friction and mitigating wear, and thereby reducing fuel consumption and maintenance cost. The primary goal of this research work is to achieve the best possible transfer efficiency while providing a uniform deposition on the target surface by applying LFM in the form of a liquid jet. In this research project, we studied the impact of non-Newtonian droplets on a moving surface and focused on the measuring techniques for impinging jets on a moving surface. The impingement image (Figure 2) was obtained from image recording set up shown in figure 1. Through different calibration tests and post data processing routines the average lamella thickness is computed based on Beer-Lambert Law through Matlab. The obtained theoretical data is later compared with the theoretical value found out by early research.