



Award Details

Field corrosion protection of welded joints in pipeline systems by low pressure cold spray

Research Details

Competition Year:	2011	Fiscal Year:	2011-2012
Project Lead Name:	Maev, Roman	Institution:	University of Windsor
Department:	Physics	Province:	Ontario
Award Amount:	25,000	Installment:	1 - 1
Program:	Engage Grants Program	Selection Committee:	Ontario Internal Decision Committee
Research Subject:	Materials science and technology	Area of Application:	Materials performance
Co-Researchers:	No Co-Researcher	Partners:	The Windsor Utilities Commission

Award Summary

Water transmission and distribution pipelines are considered an essential part of the infrastructure worldwide. The need to protect underground pipes from corrosion has been ongoing for many years, as the interaction between the soil and the pipe substrate can result in an electrochemical reaction that may lead to loss of metal and subsequent corrosion. As a result of corrosion, pipelines lose their structural rigidity leading to leaks and can cause catastrophic damage to property and environment should the corrosion and leaks go unchecked. Thus, one of the most important tasks for any water utility is to adequately protect its assets by addressing corrosion and leaks extending the lifespan of the pipeline network and minimizing repair works. We propose to use Low Pressure Cold Spray (LPCS) Process as a novel maintenance tool for express repair of leaky water transmission and distribution pipelines. The main feature of the LPCS technology is the formation of dense powder coating layers at the near ambient temperature, using a stream of accelerated particles directed toward the substrate. The process is realized without particle melting, a major shortcoming inherent to all thermal spray techniques. The overall objectives of the proposed project are: (a) develop the optimal metal ceramic powder composition possessing elevated corrosion resistance to protect the low carbon steel welds; and (b) perform pilot trials of the LPCS-based pipeline welded joint corrosion protection technology, with the Industrial Partner's participation.