



METROLINX CASE STUDY

REGIONAL TRANSPORTATION AGENCY REDUCES DAMAGE TO BUSES
UP TO 82% AND REDUCES COSTS BY 33% WITH NANO-CLEAR[®]



About Metrolinx

Metrolinx is the regional transportation agency for the Government of Ontario operating GO Transit, UP (Union Pearson) Express and PRESTO payment systems. **GO Transit**, a public transit service for the Greater Toronto and Hamilton Area with an extensive network of train lines and bus routes, serves a population greater than seven million spanning more than 11,000 square kilometres and a ridership of 70+ million passengers per year.

May 3, 2019

Ongoing Issues

Metrolinx was seeking a new topcoat solution for their GO Transit bus fleet that would improve upon the performance of their current stone guard solution. Historically, the fleet has been experiencing a series of issues including discolouration, peeling and numerous and deep stone chips.



Product Testing & Evaluation

To resolve the issues, a series of testing with alternative products was performed by Metrolinx engineering, and results were compared in order to find a superior solution. The most current round of testing included **Nano-Clear[®] Industrial Coating (NCI)**. At the end of April, 2018, our team met with MTB personnel & management to oversee the proper preparation and application of NCI. At the time, an engineer pointed out the higher DFT (6 to 8 mil) level of the factory stone guard versus NCI (2 mil), and the high gloss level to the base coat of the coach which he was very happy to see.



Long Term Testing - Real World Conditions

The evaluation was based on a test period of 9 months (May, 2018 to Feb., 2019), during which a select group of buses from the GO Transit Bus fleet were "*monitored to see how each product stood up to all the road conditions that are experienced during the different seasons*".

The buses coated with NCI were driven an average of ~87,000+ km and then closely inspected to determine the degree, severity and quantity of stone chips. The results were compared against 3 new buses that had just been delivered and entered into service which were coated with the current stone guard product.

Results

Results demonstrated that the "*extreme small chipping as seen on other DDS buses was not evident, and ... small impact indentations were noticed on each side of the bumper but chipping did not occur. The surface of the bumper was very easy to clean and did not discolour during the trial time as seen on the DDL bus fleet.*"



New / Factory Coated Buses

Experienced 100 - 218 stone chips throughout the front of the bus which were around 0.5 - 7 mm in diameter.



Nano-Clear[®] Coated Buses

Experienced less than 56 stone chips, the majority of which were around 2 - 5 mm diameter.

An Easy Decision

Upon careful analysis of the results, Nano-Clear[®] Industrial Coating (NCI) was selected by Metrolinx after the completion of a System Evaluation Report (SER-1903) released in April, 2019. It was found that 2 coats of NCI "*significantly reduced the number of stone chips to the front bumper*" and outperformed other protective coating systems which required as many as 6 (or more) coats.

The final decision to switch to Nano-Clear[®] was also supported by a previous 2015 two year study of a competitive product which proved to be effective. However, "*The unattractive part of this product is that the process to obtain certified installers was expensive and cumbersome*".

Deciding Factors

NCI's protective features resulted in:

- > a reduction of damage to the buses ranging from 44 - 82%, along with
- > a reduction in product costs per bus of over 33%.

Also Noteworthy

- > Nano-Clear[®] is a low VOC, 1K (one component) product vs the current 2K product which requires mixing prior to application.
- > Nano-Clear[®] has a 10 year performance warranty which is over 3X longer than the current or competing products.

Reduction of
Damage

44 - 82%

Reduction of
Product Costs

33+%

Longer Warranty

3+X

According to Metrolinx Engineering,

"As shown above, 2 layers of Nano-Clear[®] has outperformed 6 layers of the (current) stone guard. ProGuard Canada has also indicated that the hardness of Nano-Clear[®] can be further increased beyond the hardness rating of 4H. Using the updated Nano-Clear[®] stone guard, and with the addition of another layer, a further decrease in stone chips could be seen (realized)."

"As Nano-Clear[®] has significantly reduced the number of stone chips to the front bumper, and has proven to be a more resilient stone guard, Engineering recommends that future bus deliveries, and buses that go out for refurbishment have the NCI stone guard applied."



A comprehensive System Evaluation Report from Metrolinx Engineering is available upon request.

Nano-Clear[®] Industrial Coatings is the *only* industrial coating in the global marketplace that enhances, restores, and extends the service life of freshly coated (newly painted) and oxidized (previously painted) surfaces by 10+ years. Nano-Clear[®] dramatically improves surface hardness and provides extreme corrosion, weathering, abrasion, scratching, chipping, chemical and UV resistance. Nano-Clear[®] coatings are used by a diverse range of international corporations such as: Toshiba, Nippon Paint, Chevron, Sterling Crane, DOW, OSG America, UTC Aerospace Systems, and Seabourn.

Nashville, Tennessee, March 26, 2019 - Nano-Clear[®] Industrial Coating was selected as the international winner of the prestigious "NACE MP Corrosion Innovation of the Year Award" (Coatings & Linings category).



Global nominations were rated by a panel of leading corrosion experts spanning multiple niches across the industry.

Assero Industrial Coatings is an industrial coating technologies organization with a premiere line of multifunctional coating technologies. Assero provides the world's most advanced industrial topcoat products that are engineered to exceed the technical and functional specifications required by transportation, construction, architectural & structural preservation, industrial marine, fleet, aerospace, and oil & gas markets. For more information, please contact an Assero Representative.

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The data contained within this Case Study represents tested sample values. Since application variables are a major factor in product performance, this information should serve only as a general guide. Assero Coatings Incorporated and NANOVERE Technologies, LLC assumes no obligation or liability for use of this information. ASSERO AND NANOVERE WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Locations

Vancouver, BC; Toronto, ON; and Montreal, QC

CONTACT: info@assero.co



Assero Industrial Coatings
Tel: +1.888.588.6986