

DUNDEE'S RETROFITTED AUTOMATED GRITTING JOURNEY



2017 APSE Winter Maintenance Innovation Award

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Project Background

Dundee City Council Road Network.

Urban routes feature significant extents of unnecessary double treatment.

To manually start / stop spreader associates hundreds of driver commands per route. Due to potential for human error, material is deployed continuously from the start to the end of route.

Aim is to utilise GPS vehicle tracking technology to automatically control the start / stop spreading control and reduce the quantity of salt deployed.



Dundee Winter Network

14 priority routes, 14 secondary routes & 12 tertiary routes

Road network length 570km

Priority network treated 324km

Priority network travelled 667km

Average annual salt use 8,000T

Annual winter budget £1.2M



Dundee Winter Fleet

7 No. Purpose Built 6m³ Gritters

2 x Schmidt Autologic

2 x Cuthbertson

3 x Econ

7 No. Demount Gritters

1 x 9m³ Cuthbertson

4 x 6m³ Cuthbertson

1 x 6m³ Econ

1 x 1.2m³ Econ



Automation Technology Options

Schmidt Autologic vehicles procured on fleet replenishment programme.

Cuthbertson / Integrated Skills collaboration option allowed retrofit of GPS technology to existing vehicles

Option to retrofit Econ vehicles available but not progressed



The Project Team



Integrated Skills Ltd
Mark Basham & Mike Caunt



James Cuthbertson Ltd
Ewan Tolson



Dundee City Council RMP
Ronnie Mackenzie & Mark Wilson



Tayside Contracts
Graham Robertson



Stage 1 – Route Optimisation

68 routes built with ISL Routesmart software (P1,2,3 + snow extensions)

10% driven length saving achieved on the existing 20 year old route model which had evolved through changes and additions and wasn't efficient



Map below shows the P1 Network
Extract of left shows Lochee area



Stage 2 – Route Navigation

- Toughbooks are mounted in cab to provide satellite navigation
- Optimised routes are uploaded to a Cloud server (fusion)
- Routes downloaded in cab from cloud server to ISL Navigator software

Benefits; Reduced driver training

Driver resilience options

Office administered route changes



Stage 1 Stage 2
Routesmart → Fusion → Navigator

Stage 3 – Cuthbertson / ISL Link Up

Optimised route model advanced to identify spreading extents (start / stop) and spread width, direction & pattern

Hard wired link between the Navigator toughbook and the EcoSat control box

Navigator automatically sends rear end control commands to the EcoSat box

30% less salt used by controlled spreading (start / stop)



Stage 1

Stage 2

Stage 3

Routesmart → Fusion → Navigator → EcoSat

Project Summary

Retrofitted technology allowed Dundee to achieve financial savings from automated spreading quicker than possible with fleet renewal programme.

Retrofitted technology was prone to faults in hardware and cabling. Also issues in development of routes.

Allows desktop implementation of new routes & revisions

Associated a 6 month implementation period with a lot of staff resource assigned to development (79 project tasks)

Cost effective option to achieve automated spreading



Results and Testimonies

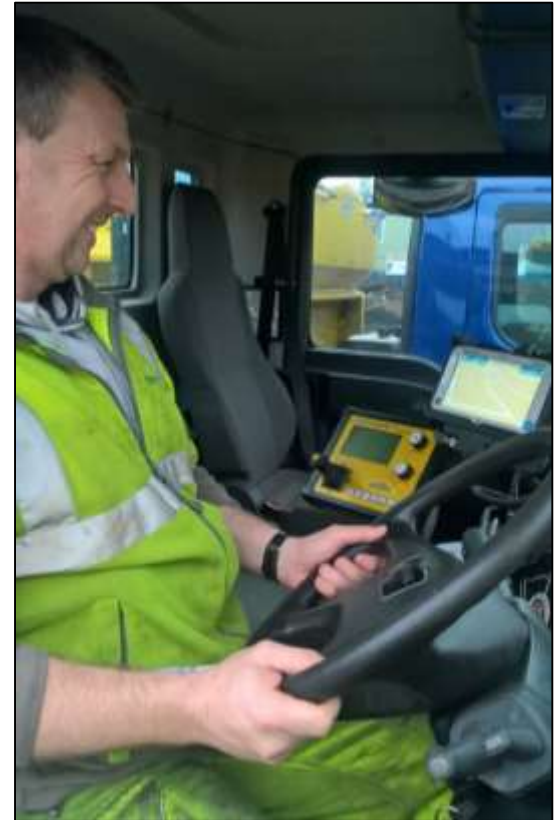
30% less salt use on precautionary treatments

7% winter revenue saving (£100k per annum)

Reduced carbon footprint of operation

“On Friday past I was asked to cover route 109, a route I am not familiar with. I found the system worked excellent and made the drive so much easier, quicker and safer. From the minute I loaded up the route and headed out from the depot to finish it worked perfect with no issues at all making things a lot easier.”

Billy Barrie – Tayside Contracts Gritter Driver



Future Developments

- Further work to develop on refining spread width and pattern
- Proactively seeking further revenue saving opportunities
- First principles winter service review.

Any Questions



Alan Sturrock – Tayside Contracts Gritter Driver