



Lanoguard Protection for Front-End Loaders

Background:

Fertiliser causes many corrosion problems, in particular with the front-end loaders that Ballance Agri-Nutrients uses in its manufacturing plants and distribution service centres. Traditional methods of combatting corrosion use hazardous chemicals that pose additional environmental risks. Chris Hawkes, Maintenance Engineer at Ballance Agri-Nutrients site at Mount Maunganui, has been working with Lanoguard NZ Ltd for the last three years to develop an environmentally friendly solution. The resulting Lanoguard treatment uses Lanolin, natural oil from the fleece of the sheep, to replace hazardous products that are not as effective and which pose risks to both employees and the environment.

Problem:

The traditional method of removing hardened fertiliser from around the chassis and primary functions of the front-end loader has been repeated manual chipping using chisel or pneumatic tools. The moisture trapped around the components and fittings causes corrosion to panel steel, seizure of nuts and bolts, break-down of electrical components and deterioration in appearance of the machine. Mechanics are required to clean these areas and remove the hardened fertiliser before servicing could proceed. Front-end loader drivers would repeat this as part of a weekly maintenance schedule, creating downtime for both the employee and the machine. This has been a major issue for Ballance Agri-Nutrients for a number of years.

The problem becomes even more acute during the business peak season, with extended working hours and multiple machine operators. The regular chipping and cleaning often does not get carried out as thoroughly, resulting in even greater build-up of fertiliser which causes more problems or repairs and increased time to remove it when it finally does get done. The cost of damage from corrosion to each front-end loader has been calculated to be \$10,000 per year over a six year period. In addition there is \$60,000 - \$80,000 of refurbishment costs directly associated with this issue.

Refer to the photos below of a six-year old untreated front-end loader.



Figure 1: Under loader after 6 years not treated



Figure 2: Side panel off loader after 6 year untreated



Figure 3: Engine bay after 6 years untreated (compare with Figure 11)



Figure 4: side of loader 6 years untreated (compare with Figure 10)



Figure 5: front hydraulic compartment untreated after 6 years

Consequences:

Over time repairing or replacing components on the front-end loaders has become more expensive and the components have become less durable. Components are being made of milder steels, electrical connections are not as durable, and replacement parts are more costly than was the case in the past. In addition, the cost of down-time is high as the labour effort to carry out maintenance or placement of parts is double what it would otherwise be because of the extent of the corrosion. There is also additional effort and investment required in the training and operation of the regular cleaning programs.

Without adequate protection from corrosion and fertiliser accumulation, the life of a front-end loaders can be reduced by 50% and reliability of the machines reduces as breakdowns increase and the cost of maintenance increases.

Solution:

Chris Hawkes, Maintenance Engineer at Ballance Agri-Nutrients in Mount Maunganui, has worked with front end loaders operators, the maintenance team and Lanoguard NZ to develop and implement safe and environmentally friendly cleaning programmes for the loaders. The operators have been trained to follow a Standard Operating Procedure that:

- ✓ Replaces harmful products, such as diesel, with natural products that are safe to use,
- ✓ Significantly reduces hot water consumption,
- ✓ Ensures consistent cleaning,
- ✓ Saves money (in both time and direct costs).

The regular Lanoguard corrosion protection programme is both environmentally friendly and cost effective.

The following images show the improvement that Lanoguard have made to the state of the equipment after being in use for 2 years.

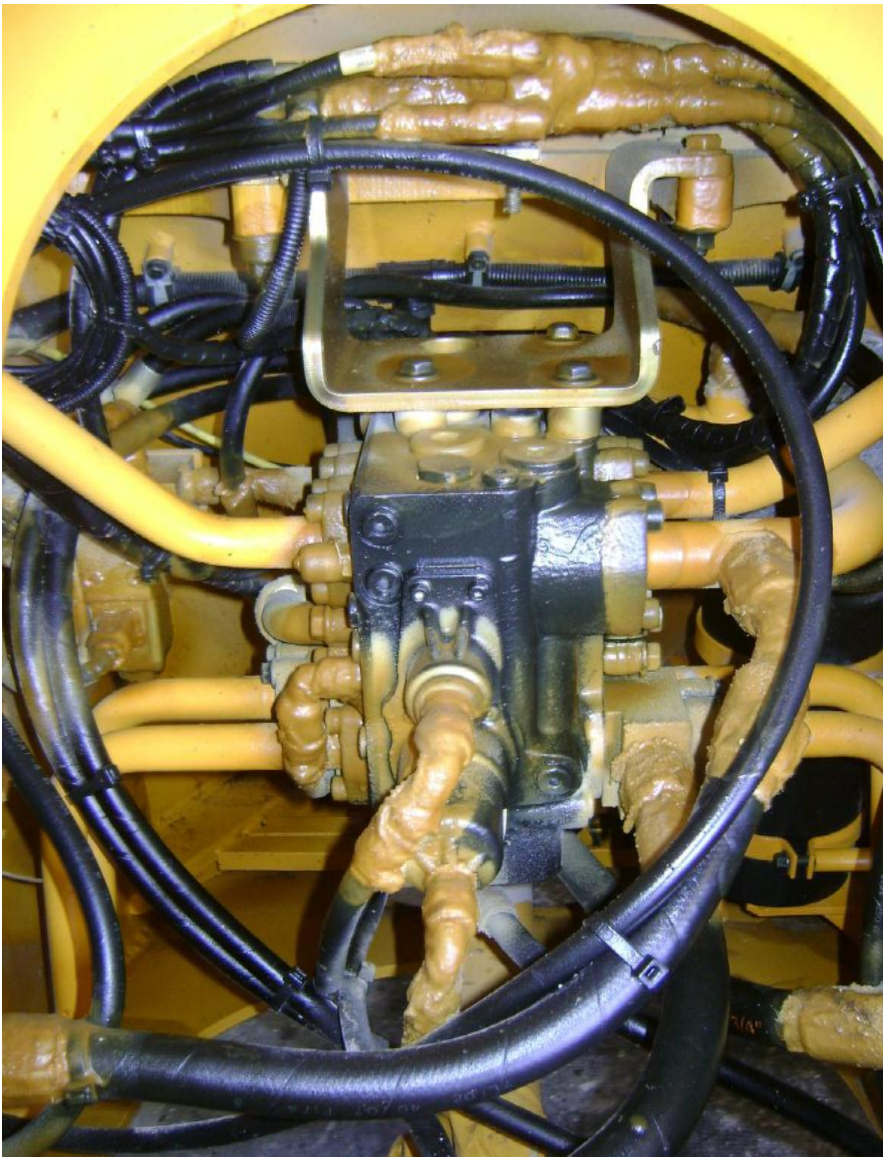


Figure 6: Loader treated for 2 years

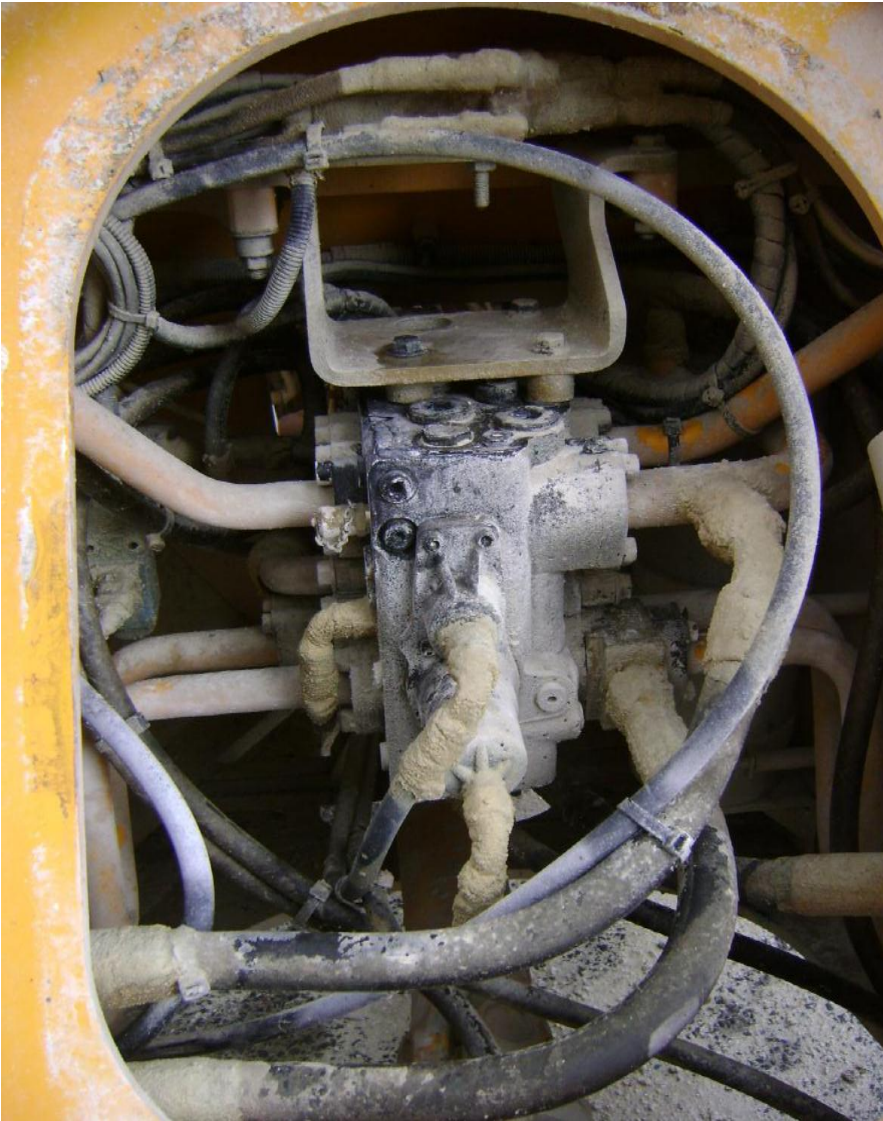


Figure 7: Loader washed cold water by operators each week 6



Figure 8: Loader washed hot water ready for treatment

Conclusion:

Protecting front-end loaders equipment with Lanoguard twice a year provides significant environmental and financial benefits for Ballance Agri-Nutrients, in particular:

- ✓ Reducing hot water used in cleaning by over 85% for each front-end loader a year,
- ✓ Saving \$7,000 a year per loader in reduced service downtime and costs.
- ✓ Saving up to 70% in refurbishment costs after six years of use.



Figure 9: Front axle treated over 6 years



Figure 10: Side loader treated 6 years service



Figure 11: Loader treated 6 years - engine

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