

NISSAN REPORT (summary)

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1. BACKGROUND

In 1996 and 1997, I and other engineers and technicians at Nissan Motors of Japan performed field tests in an attempt to analyse and rectify oil contamination problems in our assembly plant that manufactures the Maxima and Blue Bird models.

Final results of the year-long study showed that installing off-line filtration systems reduced

- hydraulic breakdowns by **86,7%**
- failure of servovalves by **92,4%**

We were so impressed with the results that we now specify this type of filtration system on all new hydraulic machinery equipped with servovalves.

2. ANALYZED SOURCES OF CONTAMINATION

The analyses enabled us to narrow down the sources of contamination into five categories:

- Contamination from the workspace environment.
- Contaminants produced within the hydraulic system.
- Water from oil cooler cracks.
- Contaminants resulting from fluid decomposition.
- Contamination from additive decomposition.

Concentrations of all these contaminants exceeded acceptable limits.

As the hydraulic fluid carried the contaminants, a variety of problems resulted, including abrasion, clogging of narrow passageways, and oxidation.

These actions were responsible for the malfunction of many different components, including pumps, directional-control valves, servovalves and actuators.

We concluded that these contaminants caused 85% of hydraulic equipment failures!

We predicted that keeping hydraulic fluid free of debris would extend its longevity and significantly lower the frequency and severity of breakdowns.

3. TEST and RESULTS

We conducted in-depth field test studies in the most troublesome area, the Carrosserie Shop.

This is an automated area that assembles press-worked panels by inserting them into a jig. They are then formed by hydraulically powered equipment and welded by robots.

Almost all of the equipment involved is hydraulic, and the 26 welding robots and auxiliary equipment produce an abundance of weld spatter.

We incorporated various TRIPLE R filtration systems into 8-month field tests by incorporating them into all hydraulic power units in the Carrosserie Shop.

During the tests, hydraulic fluid contamination was carefully documented and breakdown rates and maintenance problems were closely monitored.

The results revealed :



Removal of contamination	93,3%
Reduction in machinery breakdowns	86,7%

4. CONCLUSION

We now routinely install the TRIPLE R filtration systems on all new hydraulic machinery equipped with servovalves before putting into production.

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