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# Application report – 22 / Japan

## REWITEC® Nissan GT-R R32 engine treatment

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Date of report:	2016/03/21
Sector:	Automotive
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Responsible:	MIDORI SEIBI CENTER
Application date:	29.01.2016
Car manufacturer:	Nissan
Car type:	GT-R R32
Project task:	Application with REWITEC® special racing engine protection, as well as increase of horse power. In addition the gearbox has been treated with special racing concentrat.

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## 1. Aim of application

By adding the REWITEC® treatment product for racing, the effect of the coating concentrate is to be documented if the BHP (break horse power) and torque increase in the engine system. The analysis will be documented with the aid of dynamometer (Dynapack Chassis DYNAMOMETERS Evolution 3000) during the application. The engineers of the company Midori Seibi Centre will be observing the horsepower levels on site.

### 1.1 Background

The reason to do this application, is to test the efficiency of the surface treatment concentrate REWITEC®. This would be a big step towards a more efficient and more powerful car world.

#### Report

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## 2. Technical Data

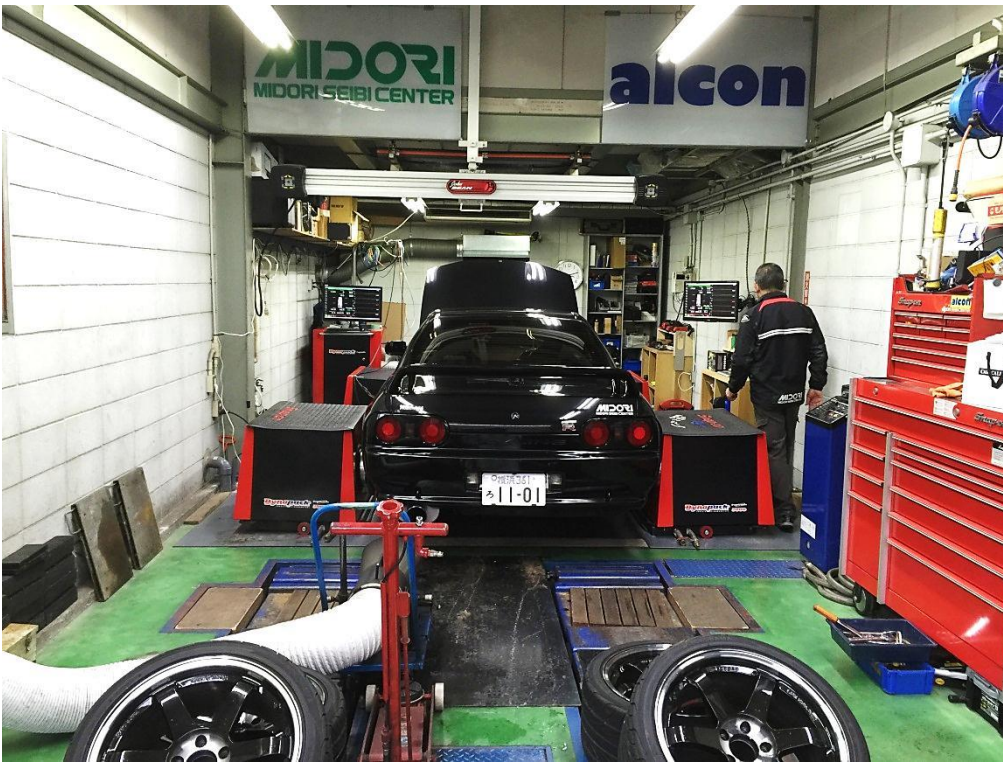
Technical Data	Information
Year of manufacture	1992
Model	Nissan GT-R R32, 4WD
Engine	Serial 6-Cylinder Bi-Turbo, 2.6 Liter
Oil type	-
Lube oil system (refill)	4,6 liters
Mileage	66.680 km
Place	Midori Seibi Center, Japan
Analytical instrument	Dynapack Chassis DYNAMOMETERS Evolution 3000



Picture 1: Test engine Nissan GT-R R32

### 3. Application

At the beginning, the power and torque was determined on the Dynaback Dynamometer attached to all 4 wheels and the power output was measured at the wheels as a reference value. Then, the REWITEC® treatment product for racing was added to the warm engine oil. After running the engine for a quarter of an hour, a second performance test was undertaken. After a period of time, four further tests were carried out at the Midori Seibi Centre to determine the power and torque on the dynamometer.



Picture 2: Dynamometer



## 4. Procedure

The Nissan GT-R R32 engine was running without REWITEC® for about 66.680. In order to compare the engine horsepower performance before and after the treatment with REWITEC®, the engine horsepower performance was measured at the baseline after some engine tuning was taken. No oil change was made.

Then, the engine was treated with REWITEC® treatment product for racing. Afterwards the engine kept running in idling speed for about 15 minutes. The first engine power data was taken, following after that four more power output tests were taken.

### 4.1 Analysis of the data

#### Power curve

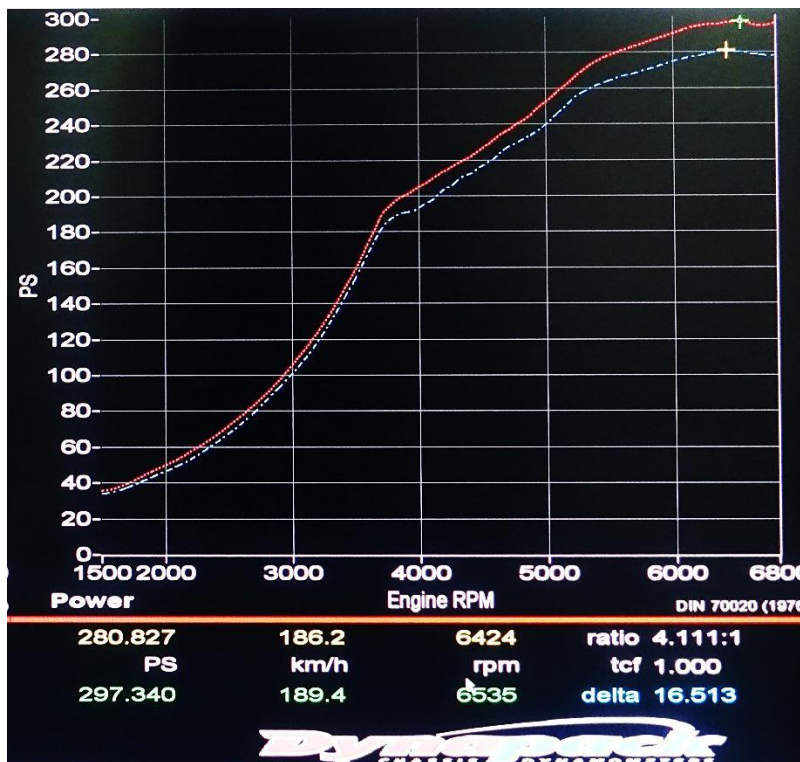


Table 1: Before and after REWITEC® treatment

Dotted Bottom Line: Original run 281 BHP

Red top line: After REWITEC® treatment 297 BHP

## Torque curve



Table 2: Torque without and with REWITEC®

Dotted Bottom Line: Original run 348 Nm

Red top line: After REWITEC® treatment 363 Nm

Delta of 15 Nm after the REWITEC® treatment.

## Test results

Test run	Data output
Baseline without REWITEC®	281 BHP / 348 Nm
First test after 15 minutes	279 BHP
Second test	285 BHP
Third test	287 BHP
Fourth test	292 BHP
Fifth test	297 BHP / 363 Nm
<b>Improvement</b>	<b>16 BHP and 15 Nm (After about 2 hours)</b>

The test results show a significant increase of the break horse power of up to 6 %. In other words the engine performance has been risen up about 17 break horse power and the torque has been risen up about 15 Nm.



Picture 3: Applied was a special REWITEC® treatment product for racing purposes only



## 5. Additional testing

On the 30<sup>th</sup> of January 2016 the REWITEC® G5 concentrate syringe for gearboxes was added to do some further tests.

THIS IS A COMMENT BY UCHINAGA SAN, REGARDING THE GEARBOX BEHAVIOUR AFTER ADDING REWITEC® G5:

After driving the car for 1,5 days, there was noise reduction and the shifting process became very easy. Especially on downshifts from 3rd to 2nd gear, something which was difficult to do before when on higher revs, the gears shifted very easily. It was even possible to shift down to 1st gear when coming from high revs, something that was not possible before. Hence the adding of REWITEC® had a very positive effect on the feeling of the gearbox and its behaviour. As a next step he wants to use REWITEC® for the differentials.



Picture 4: Applied was a special REWITEC® treatment product for racing purposes only

## 6. Additional testing II

Driving the car for six weeks after the first Rewitec application and testing of the surface treatment, the Nissan GT-R R32 went back on the Dynapack test stand at Midori. The goal was to test the GT-R's performance again, measure the difference of performance after the surface treatment was fully used up and applied in the engine, gearbox and differentials.

The only drawback was that the outside temperature was 10 degrees warmer and it is well known that temperature will diminish BHP. However, even with that the cars performance went up to 308 BHP.

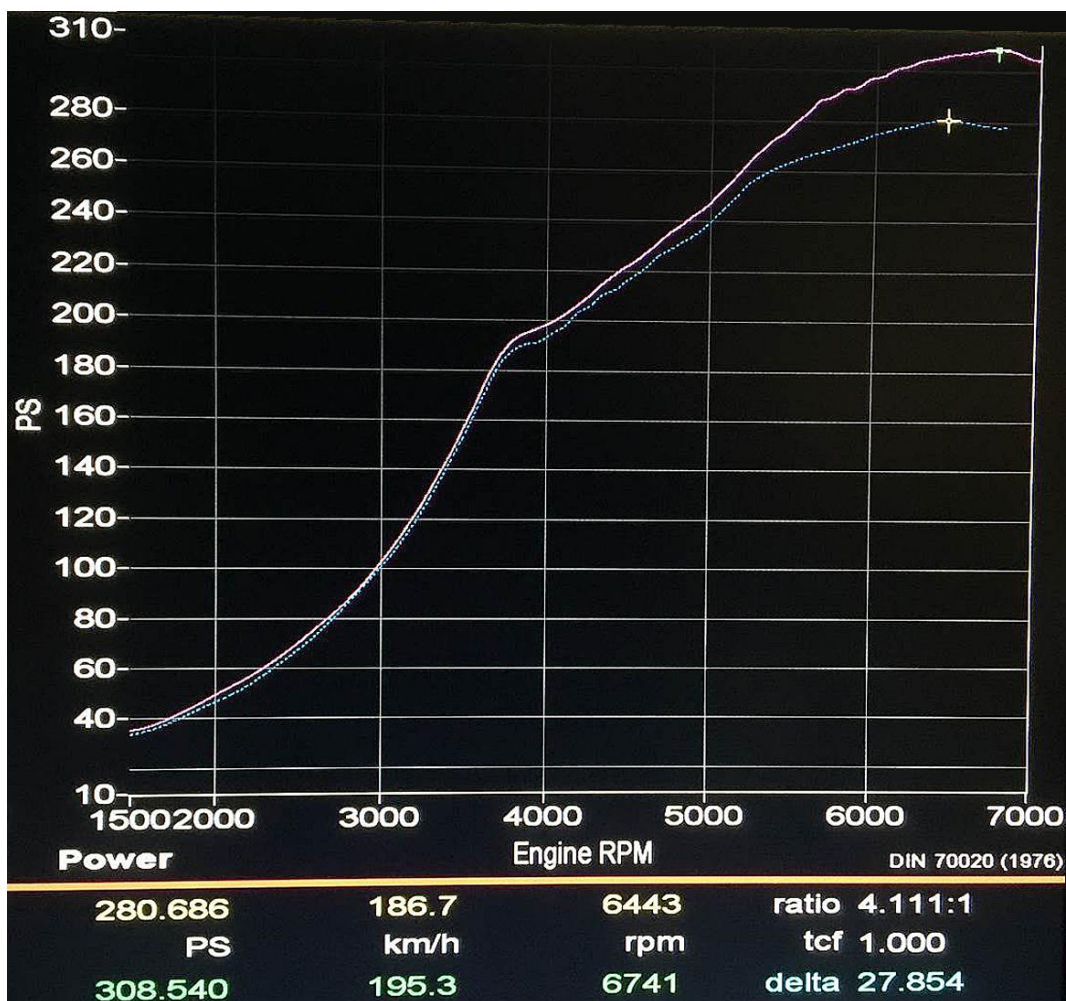


Table 3 Before and after REWITEC® treatment

Test run	Data output
Baseline without REWITEC®	281 BHP / 348 Nm
First test after 15 minutes	279 BHP
Second test	285 BHP
Third test	287 BHP
Fourth test	292 BHP
Fifth test	297 BHP / 363 Nm
<b>Improvement</b>	<b>16 BHP and 15 Nm (After about 2 hours)</b>
Sixth test	309 BHP
<b>Improvement II</b>	<b>28 BHP (After about six weeks)</b>

The test results show a significant increase of the break horse power of up to 10 %. In other words the engine performance has been risen up about 28 break horse power.

## 7. Conclusion

Please note, that REWITEC® actually needs about 100 operating hours to finish the treatment inside the engine. Based on the analyses of the tables which are showing a significant increase of power and torque. The effect of the REWITEC® racing treatment is very clear to see. The aim to improve the efficiency of power and torque in the current condition by adding the wear-protection coating has thus been fully achieved. Considering that the power and torque should continue to increase or stay stable for many km to come.

### 6.1 Recommendation

The aim of the REWITEC® application is to improve the surface structure of the previously damaged/worn systems, has been here with achieved.

The improved surface structure of the engine should substantially increase the life of the engine.

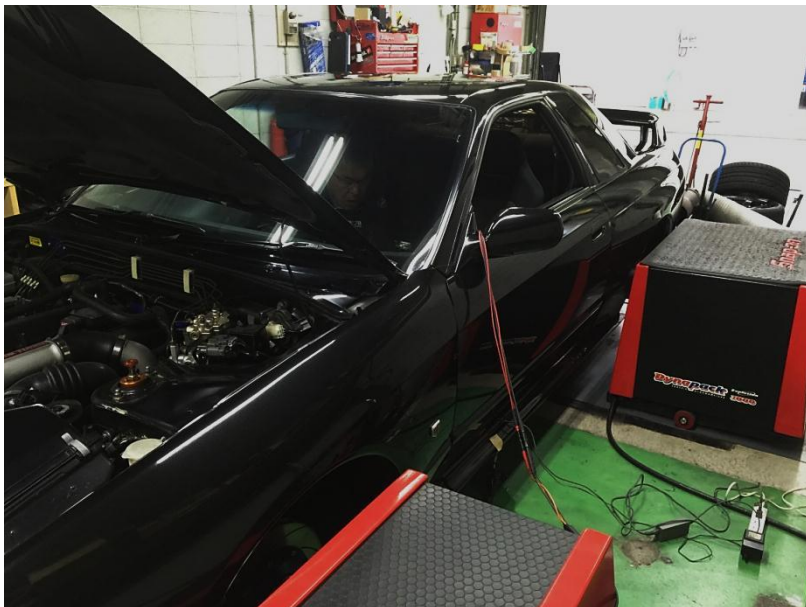
The practical results confirm the scientific studies at the University of Mannheim and the University of Giessen.

A yearly REWITEC® after-treatment is recommended to protect the engine for years to come.

## 8. Attachment



Picture 5: Monitor screen

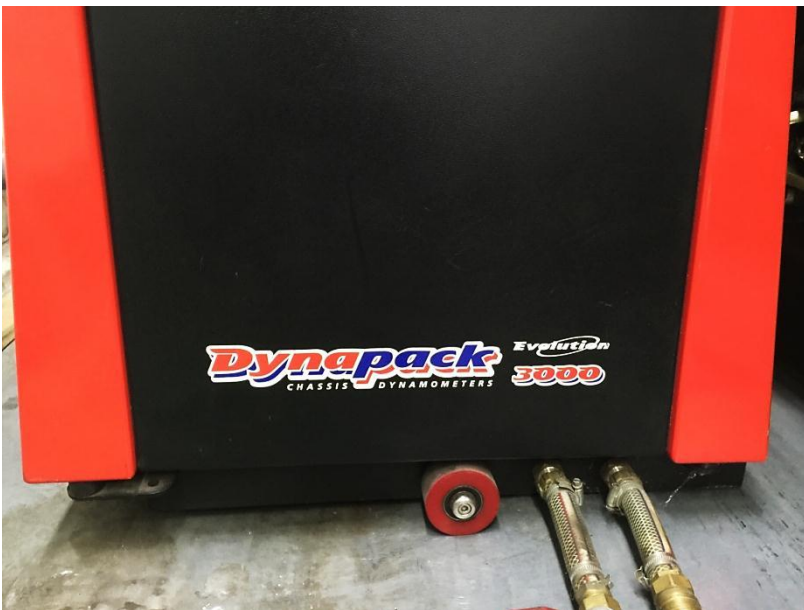


Picture 6: Picture from the test car





Picture 7: Engineer at the dynamometer



Picture 8: Detail picture of the dynamometer

**Please note: This was the first test result dated 2016/03/21 further long term test results will be added in the following weeks.  
To be continued.**