



**Brüel & Kjær Vibro**



## **Application Note**

# **Case study – Mulcher rotor balancing using Brüel & Kjær Vibro's Data Collector**



## Application Note

# Case study – Mulcher rotor balancing using Brüel & Kjær Vibro's Data Collector

### ABSTRACT

*Land clearing along railroad tracks and roads is essential for transportation safety. Specialized tractors are often used for this purpose where a rotary mulcher head is mounted on a 9.5m reach crane on the tractor. As the tractor drives along the road, the crane is lowered so the fast turning rotor can clear away small trees and brush along the road embankment. For the railroad version, the tractor moves along the tracks on specialized wheels.*

### Application

The rotors take a lot of abuse and they wear fairly rapidly. This means they have to be balanced often. It is very expensive to send the rotor to a specialist with a balancing machine each time the rotor becomes unbalanced, so the customer decided to try and use a portable instrument for field balancing the rotor.

### Special balancing procedure needed

Balancing, however, is no easy task for these types of rotors! First of all, should the rotor be balanced clean or dirty? And because the rotor turns at different speeds, at what speed should it be balanced? Another problem is the relatively small diameter of the rotor, which requires heavy trial and correction masses for balancing. Can these be placed securely so they aren't knocked off during operation?



Figure 1. The railroad version of the land clearing tractor .

After tackling these initial problems, another major problem emerged. It was observed that the unbalance vibration can be so high (up to 100mm/s!), that it is not possible to balance the rotor in a conventional way.

Therefore it was decided to do a special balancing operation using two steps:



- Step 1: Begin with a 1-plane balancing operation where the balancing mass is placed on the centre portion of the rotor to initially reduce the unbalance vibration levels.
- Step 2: After that, proceed with a 2-plane balancing operation to finalize the balancing and minimize the residual vibration.

### Successful results with the data collector

The balancing application proved to be successful for the Brüel & Kjær Vibro data collector, so it is now being used on several land clearing tractors for both railroad track and road applications.



*Figure 2. Close-up of the rotary mulcher head of the land clearing tractor, showing the rotor that has to be balanced.*

**Brüel & Kjær Vibro GmbH**  
Leydheckerstrasse 10  
64293 Darmstadt - Germany  
Phone: +49 6151 428 0  
Fax: +49 6151 428 1000  
info@bkvibro.com  
[www.bkvibro.com](http://www.bkvibro.com)

BAN 0032-EN-12  
Date: 14.10.2014