WIAP® MEMV®

Metal relax with vibration

WM835 Erfahrungsbericht WIAP MEMV

Metal relax with vibration

Review 2017
(MEMV = metal relax with vibration)
expanding with vibration, the prior 2017

Contents:

1. introduction

The company WIAP worked until 2014 according to the conventional 2-axis vibration Relaxing system. Since 2014 has the WIAP on
Due to intensive analysis, accompanies all relaxation executed jobs with the 24-point measuring system and thus collected important findings, which had to be urgently investigated. It has invested a lot in money and personnel. In addition, a lot was purchased in hardware and software in order to adapt the investigation to today's technical standards.

2. Declaration of WIAP MEMV-hotsprings

2.1. Depending on the axial direction of two of three axes are excited.

2.2. At each axial direction between before and after a shift G (1G = 9.806 m / s2) is carried out.

2.3. If we turn the axial direction in all three arrays from 2D to 3D and 4D, it obtained a G-shift.

2.4. If we treat annealed components, we have no G-shift, in the third position, only one such unannealed of 1/3 on the roll in two axial directions.

2.5. The entire G-shifts are measured under the old system at a fixed, non-defined, arbitrarily determined by the operator position. The new WIAP MEMV system measures at 24 measuring points, of which always 2x4 locations on the side 1 and 2x4 locations on the side 2 in the axis 4, or 2x4 points are measured on the axis of the third The only way to determine which shifts took place in which zone of the component. Primarily, the G-shifts can be used as a guide of stress relief and so prove that we actually reduce tensions.

2.6. The motor current measurement, which we used in the old process, says a lot, but is still insufficient. If we vibrate in two-axis system and take a motor current changes as proof, we have recorded also changes and so only part of what is possible in several other axial directions.

So the old method is not reliable process. Nevertheless, the measurement of the motor current leads to a similar result as the measurement of G-shift. The old method can thus be drawn as a control measure. The disadvantage of the motor current measurement is that it only determines what happens at the exact spot where the engine is mounted. The G-measurement of contrast, says what is happening on all 24 monitoring stations and can thus also identify the dead center. This was never possible with the conventional, old system. The motor current also shows the G value. When WIAP MEMV process, the motor current sub-differences are determined in all driven axis directions, the old system but only in two axes. is the knowledge from the fact that all three types 2D, 3D and 4D arise G-shifts. With the new system we now have a method that is reliable process.

2.7. The WIAP MEMV method shows that in each axial direction of a G-shift takes place and the motor current variation can be measured. A tense component needs more motor current in the first suggestions. In the WIAP MEMV process in all axis-ups, we can see that the motor current moves, which already shows that the old measurement method brings something. But that was enough? With the old method, only a part of the excitement was getting dismantled.

2.8. Thanks to the new WIAP MEMV process is now certain that the critical problem, namely the dead center, respectively, the node subject is treated, thus avoiding a surprise when Vibrationsent-span.

2.9. In an axis rotation, 2D, 3D and 4D and the dead center shifts in components. Various types of components, such as rotationally symmetrical, cubic or simple plates, behave in vibration process completely different. Only with the new measurement method, this could be determined and for further investigations to be parsed so, allowing for standardization of the process.

Enough the old two-axis method in a welded construction?

We have transferred our orders for custom work on welding structures or equipment bought from us can convince them of our method our customers for many years. Welded constructions have longitudinal and transverse welds. The greatest stresses occur in the zones at which the liquid steel flows, together with the cold steel. This process is virtually identical in all three axes. In the 2-axis vibration, we have reduced the voltages in two axes, and distributes the rest. The strong voltages of the third axis had so but also the ability to soft in the zones of the axes. 1 and 2

In addition welded structures have different wall thicknesses. If a component is excited in the axes 1 and 2 may - also be a cross-excitation and partly also the third axis even mitberühren - depending on the design and the different material thicknesses.
Also in this case the subject dead center has always been a "black box", which means that there were always areas under the old procedures that were never even relaxed in any of the three axes. The deadzone relates about 20 to 30% of the component, which means that these sites

were not or insufficiently released from the tension.

3. plates, rollers, flame-directional components with WIAP MEMV method relax

In 2015 we tested key processes and determines all data. We have achieved that not only welded structures, but also other components having success with vibration could be relaxed. When editing no longer delay was measured. A test agent in Germany with a plate provided evidence in addition that results can be achieved only with the 4D system which are identical with the glow achieved with those.

3.1. treated plates WIAP MEMV system

This plate was flame directed 2016 and burned. She was vibrated with 2D and 3D. The client has processed an annealed and as a comparison, a vibrating plate. Result: the annealed plate has not cleared, the relaxed vibrating plate screwed up, however, on the entire length by 0.6 mm. The customer was not satisfied, despite the fact that a plate which was not treated with the WIAP MEMV, would have moved in the mm range with the result. At that time 2D and 3D test we have only briefly tested a 4D suggestion that yielded more different values, but we left unconsidered. A second experiment with the method according to 4D WIAP MEMV gave a result that was identical to that of the annealed plate.

The entire process is deposited with us, and with the data collection are all measurement methods logged:

* Measuring points old system nor motor current and speed sensing
* 24 measuring point Pin measurement in all axial directions detected and logged
* Measurement with 4 resp. 6 Data Logger 3D measurement

All measurements show the difference of the G-shift.

3.2. Rollers treated with WIAP MEMV system

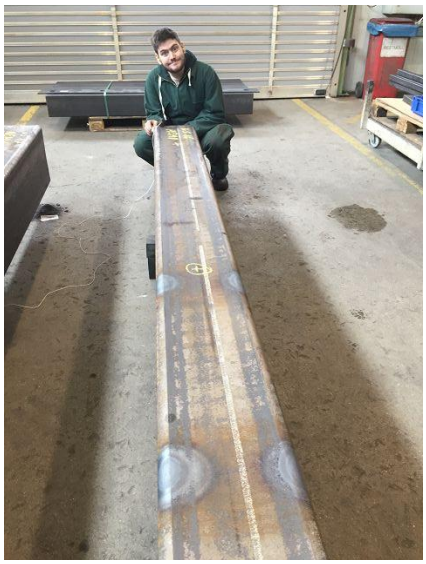
Unannealed rolls WIAP MEMV system vibrate instead glow.
(Big business means Germany - October 2016)

An annealed roller vibrate at a logging of differences from the non-annealed roll. The measurement is clear: an annealed roller makes no G-displacement in two axes and a 1/3 G-shift to the unannealed roller.

Machining Result: Annealed and unannealed rollers behave identically and have no delay on the finishing machining. Special feature: Because of the large diameter of the roller to narrow the jig robust pathogens V50 could not be placed in the 2D array. The ratio of the diameter to Queraufsetzung was 40% too low and thus the lateral force entry was not appropriate to the component weight. Nevertheless, the 4D vibration has obtained sufficient to prevent rejection of the component. This test has shown that it is not necessary to apply such a strong G-excitations in the vibration, that a component has to be moved to crack critical zones.

The whole process was very quiet and it had to be distributed no hearing protectors.

3.3. Flame and hydraulically related components in WIAP MEMV method treated



relax flame-related and hydraulic directional components with the WIAP MEMV method.

A flame-directed component without WIAP MEMV treatment warps on the machines in the mm range. A flame-oriented and annealed component warp back to the original position. The test with the new WIAP MEMV 3D system works. All axes have been measured, with both the 24-measurement point method as well as the measurement of Todpunktzone. In addition, the third axis has degraded 40% of the stresses even further by the 2D process.

4. word description of the terms

*G shifts*are G-measurements between before and after. Each process has at the beginning and at its end a measurement. This shift is called G-shift. 1, G = 9.806 m / s 2.

*dead zones*and nodes are called. This is a zone where the component is the center of deflection, that is, on the other two sides, the component moves to a quiet point that is not in the middle as a rule.

Many components have a dead center. If the vibrator placed there, no stress relaxation can be done, since the relaxation is uncontrolled.

5. Conclusion and Summary

The WIAP has started a program in 2014 to better recognize the value of the vibration-relaxation. The many acts studies, the creation of many reports and diverse evaluations have allowed us the thing to really get to the bottom, the more 935 kWh are required as the glow of a 12-ton roller while 2 kWh for the relaxing of the same roller according to our sufficient system completely.

The WIAP has hundreds of hours of paid work performed and always used the 24-point measuring system and this in order later to all results
which could be presented at respective contacts with technical schools and other interested parties a.

The comprehensive data collection will allow us to clarify whether a further patent application would be appropriate. In parallel, we will examine the way in which we can inform the user in question in the industry to move this in future apply the WIAP MEMV process instead of the costly and old-fashioned in a sense annealing.

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