RHOMBERG SERSA
SERVICE

Inspection & Analysis

www.rhomberg-sersa-service.de

Ein Unternehmen der
RHOMBERG SERSA RAIL GROUP

Rhomberg Sersa Service provides a comprehensive service portfolio for railway projects, and as a multidisciplinary full-service company acts as a one-stop shop.

Inspection: more than just measuring!

The most economical form of maintaining track and track structures is condition-dependent maintenance. In combination with preventative elements (made up of servicing and care), a high availability can be achieved with ideal utilisation of the maximum possible amount of wear. The most important prerequisite for this is information. The quality of information collected relating to condition directly affects the quality of maintenance delivered.

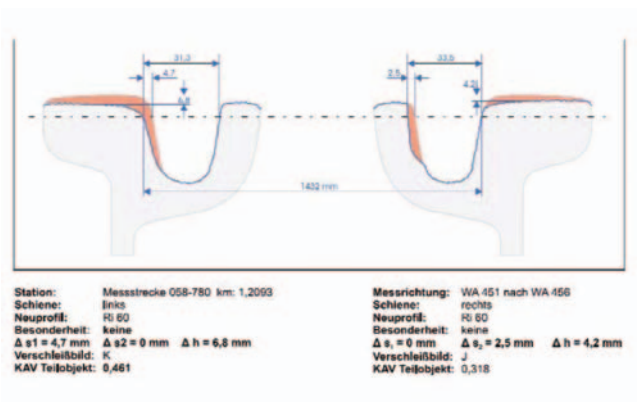
Geometry measurements constitute just a small part of the condition information required. A clear assessment of the material and geometrical condition is indispensable for the evaluation and assessment of the condition of the track and corresponding derivation of the maintenance requirement. In addition to diagnostic skills, this requires above all experience-based knowledge – the trained eye of an expert.

This is why inspection is a matter for specialists who are masters of the entire inspection procedure for the recording, assessment and evaluation of the condition of the infrastructure, and who are continuously developing such procedures. Only in this way is it possible to generate the information required for reliable and transparent planning, budgeting and operations scheduling of the maintenance.

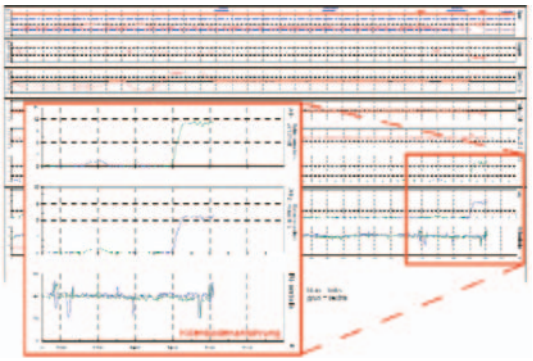
Recognised know-how

Rhomberg Sersa Service has created its own network of experts and expertise for maintenance duties and inspection analysis. Such work is handled by an experienced, highly qualified and responsible team of experts who concentrate exclusively on inspection work.
Their profession: recording, assessing and evaluating the condition of the infrastructure, recognising causes and recommending the correct repair measures. A complete package – evaluated, prioritised and documented in a comprehensible manner. They deliver everything that is needed in terms of reliable information on the condition for the planning, budgeting, control and operations scheduling of maintenance.

Thanks to continuous improvements in the use of IT and in the methods used for permanent way diagnosis, Balfour Beatty Rail has created new opportunities in infrastructure maintenance: the work effort and expense for the recording, analysis and administration of information on the condition is greatly reduced through the MR.pro® database and diagnosis system developed especially for this purpose – lasting improvements are achieved in the quality of the information.



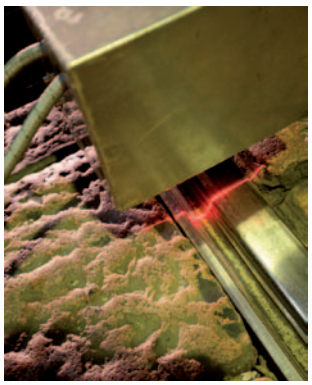
Comparison of the rail profile measured with EMA and the new profile. In addition to the quantified height and lateral wear and tear, the wear contour was allocated to a standard wear schema (K or J).



Results of the track geometry measurement with rail wear diagrams of the EMA uni®.

Reliable and proven measuring technology

The use of digital testing and measuring technology creates the basis for the further processing of the information.



Continuous cross-profile scan of the rail

The measuring instruments

We place our faith in modern but reliable and proven technology which we adapt to our high standards from both hardware and software perspectives, e.g.:

- *EMA uni® track measuring devices with continuous rail scan, quantified wear of the rails (height and lateral wear)*
- *DigiProf® cross-profile measuring devices for location-specific recording of rail profiles*
- *DigiLot® wheelset cross-elasticity measuring devices*

EMA uni® track measuring device with continuous railscan

Diagnosis: data is transformed into useful information

Interpretation, condensing and verification by our experts transforms the data obtained into useful information. Worthy of particular mention is the clear and easily comprehensible documentation which can be easily digested by users, decision makers and supervisory authorities alike. It ensures the traceability of the condition of the track and provides a solid basis for action and accountability of decision making:

- *Reliable, reproducible results*
- *Indicative, clear and easily comprehensible*
- *Creates transparency, can be interpreted without specialist knowledge or additional aids*
- *Detailed individual results and condensed overall results*
- *Uniform traceability of the development of the condition of the track*

The condensed supplementary information on the condition can be used for quality and availability agreements between track operator and maintenance body within the scope of target-oriented maintenance procedures (maintenance by objectives) and without further processing.

To enable the condition evaluation and master-data information to be used as inputs for maintenance planning and control without additional work, the output data format is compatible with all existing systems.

We use the database application MR.pro® and robust mini notebooks for the structured collection of condition- and masterdata

Evaluation and classification procedures

Direct visual checking by experienced experts is indispensable for the correct assessment of the material and of geometric condition. With the help of a standardised fault diagnosis procedure, Rhomberg Sersa Service up-grades this into an objective assessment of the condition. This provides additional knowledge and greater security in the planning and control of the maintenance.

Fault categories

STOP FAULT CATEGORY 1
Operations-endangering
Need for immediate action

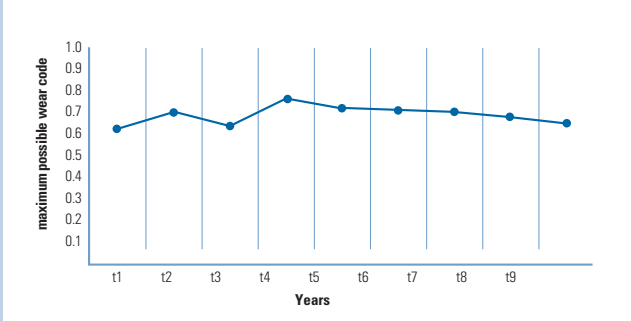
FAULT CATEGORY 2
Safety-relevant defects with high priority
Removal of the defect required within 1 month

FAULT CATEGORY 3
Defects with medium priority – influence on the life span
Removal of the defect within the scope of the next scheduled maintenance and repair work

FAULT CATEGORY 4
Defects without priority – deviations from the target condition
Only long-term effects – no need for action

With fault categories Rhomberg Sersa Service upgrades the visual inspection by experts into an objective assessment of the condition

Rhomberg Sersa Service has developed the maximum possible wear code (Kennziffer Abnutzungsvorrat KAV®) as a meaningful indicator for the short and medium-term development of the track quality. With the help of the code, all track objects can be assessed individually and overall on the basis of the inspection results. When compared over several years, a clear illustration of the condition of the track is obtained. The maximum possible wear code enables effective control over cost and performance, and provides you with reliable support for all maintenance decisions.



Development of the wear margin (Kennziffer Abnutzungsvorrat KAV®)

Bespoke and tailor-made solutions

The right solution for every requirement

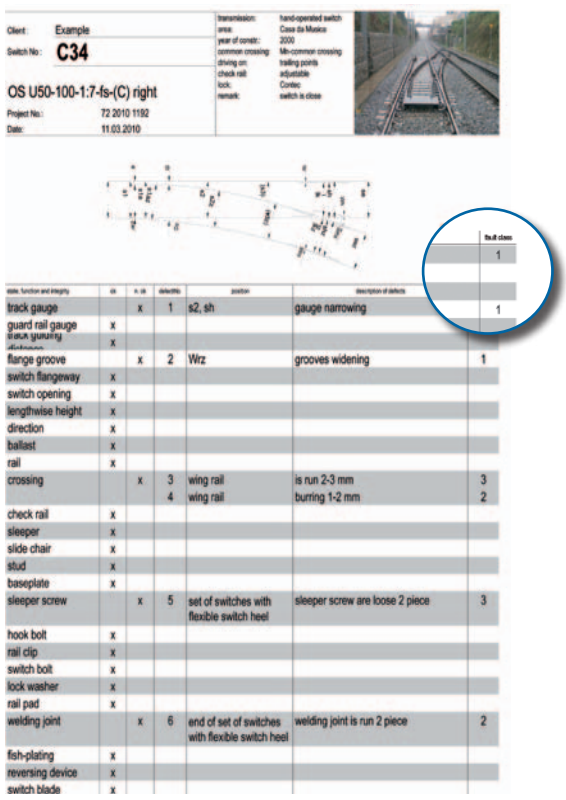
RS Gleisbau's inspections are tailor-made services in line with your requirements. The differing product scopes (Light, Basic and Premium) and variants range from simple evidence of safety through to comprehensive maintenance information with early detection and requirements analysis, and offer you the right solution in every case.

The modular structure enables an individual solution to fit all terms of reference. Our customers determine for themselves the correct mix of our services and their internal works which brings them optimum results: from advising and planning, start-up assistance for internal development of maintenance work and services, through to a full-cover package.

Since 1994, we have been imparting our in-depth and wide-ranging knowledge of all aspects of inspections to technical and managerial staff in regular seminars and through functional training courses.

Benefits

- *Qualification of decisions and planning*
- *Increased efficiency of work planning*
- *Reduction in implementation errors/ defects*
- *Transparency regarding the development of the condition*
- *Objectify visual checking and condition assessments*
- *Fulfilling the requirements of quality management*
- *Provision of data for decentral and central access as well as long-term analyses*
- *Guard against liability risks*
- *Comprehensibility of decisions*



Client: Example
Switch No.: C34
OS U50-100-1:7-fs-(C) right
Project No.: 72 2010 1192
Date: 11.03.2010

state, function and integrity	ok	n. ok	defect No.	position	description of defects	fault class
track gauge		x	1	s2, sh	gauge narrowing	1
guard rail gauge	x					
[illegible]	x					
flange groove		x	2	Wrz	grooves widening	1
switch flangeway	x					
switch opening	x					
lengthwise height	x					
direction	x					
ballast	x					
rail	x					
crossing		x	3	wing rail	is run 2-3 mm	3
			4	wing rail	burring 1-2 mm	2
check rail	x					
sleeper	x					
slide chair	x					
stud	x					
baseplate	x					
sleeper screw		x	5	set of switches with flexible switch heel	sleeper screw are loose 2 piece	3
hook bolt	x					
rail clip	x					
switch bolt	x					
lock washer	x					
rail pad	x					
welding joint		x	6	end of set of switches with flexible switch heel	welding joint is run 2 piece	2
fish-plating	x					
reversing device	x					
switch blade	x					

action to do

to defect No.	action to do	finished
1	no need for action at present (check tolerance)	
2	back plate build in	
3	at present no action need (should be observed however)	
4	wing rail trimming	
5	sleeper screw - screw on or renew	
6	welding joint repair using grind-technical methods	

Date of inspection: 11.03.2010 inspector: M. Rainer
file: c:\samples\brochure2010.xls

switch inspection 2010

Switch No.	client	Example
C34	area	
	place	
	project No	72 2010 1092

measurement exceeding: SR ys = XX | date of measurement | 11.03.2010 | 19.02.2009 | 05.06.2008
tolerance
inspector | Marco Haaß | Mario Rainer | Marco Haaß

measur.point	nominal ys	SR ys Tol.max. +	SR ys Tol. min. -	value ys	fault	value ys	fault	value ys	fault
sa	1435	10	0	1437,5		1436,7		1437,0	
s1	1435	10	0	1437,8		1438,2		1437,5	
Zar	160	5	5	158,0		155,0		157,0	
Zal	160	5	5	158,0		156,0		157,0	
D	70	20	0	80,0		78,0		80,0	
s1a	1435	10	0	1435,0		1435,1		1435,3	
Dz	70	20	0	79,0		77,0		78,0	
s1az	1435	10	0	1435,2		1435,0		1435,3	
s2	1435	10	0	1433,4	XX	1433,2	XX	1434,0	XX
s2z	1435	10	0	1435,0		1435,5		1435,3	
s3	1435	10	0	1435,6		1435,2		1435,0	
s3z	1435	10	0	1435,1		1435,2		1435,5	
sh	1435	10	0	1433,6	XX	1433,1	XX	1435,0	
Wh	31	3	2	33,3		33,8		32,0	
l	1404	4	2	1402,9		1402,4		1405,0	
lk	1380	0	20	1369,9		1368,6		1373,0	
Wr	31	1	3	31,2		30,7		30,0	
shz	1435	10	0	1437,9		1436,8		1437,2	
Whz	31	3	2	32,3		32,0		32,4	
lz	1404	4	2	1405,4		1404,5		1405,4	
lkz	1380	0	20	1373,5		1372,5		1373,0	
Wrz	31	1	3	32,9	XX	32,3	XX	31,8	
se	1435	10	0	1435,3		1436,0		1435,7	
[illegible]	1435	10	0	1438,8		1438,1		1437,7	

Documentation of visual condition check and measuring results of a point including fault categories as well as proposals for remedy

On the basis of well-founded theoretical knowledge and in consideration of the interdisciplinary experience from our many successful projects we contribute substantially to ensuring that

- immissions can be reduced,
- wear and energy consumption optimized and
- maintenance performed economically in the long run.

You are also welcome use our know how as a guarantee for your long-term success.

QM zertifiziert
Qualität, Umweltschutz,
Arbeitsschutz, SCC

TÜV AUSTRIA

Lightrail Service

Of course, iterating optimization procedures in accordance with the principle of trial and error are still in use. However, due the many possible failures and the long test periods it is very likely that such procedures will not work out.
Sound and documented results of calculations, simulations and – above all – the experience of all the various kinds of experts definitely offer better results in a fraction of the time.

Thus, due to the complexity of the railway system optimization projects require competent consultancy and assistance from all kinds of experts as a function of the need.

A) survey
B) system assessment
C) implementation
D) ensuring the success

With an extensive range of service and a healthy mixture of theory and practice we provide the required transparency for upcoming optimization measures.
We ensure your success sustainably with clear and understandable arguments and documentation.

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