
Pantograph Damage Monitoring System

~~PANTOGRAPH MONITORING FOR THE
EHIGHWAY PHYS ORG. STUDY ON
DAMAGE DETECTING SYSTEM FOR~~

~~PANTOGRAPH USING. PANTOGRAPH
DAMAGE AND WEAR MONITORING
SYSTEM. SIEMENS DEVELOPING
MONITORING SYSTEM FOR
PANTOGRAPHS FOR. DEVELOPMENT
TESTING AND IMPLEMENTATION OF
THE PANTOGRAPH. PANTOGRAPH~~

~~MONITORING ASE GMBH BRUCHSAL.
RICARDO PANTOGRAPH MONITORING
SYSTEM APPROVED BY NETWORK.
APPROVED BY NETWORK RAIL FOR
ROLL OUT. PANTOGRAPH
MONITORING FOR THE EHIGHWAY
PHYS ORG. PANTOGRAPH DAMAGE~~

~~AND WEAR MONITORING SYSTEM.
DEVELOPMENT TESTING AND
IMPLEMENTATION OF PANTOGRAPH.
US20100322465A1 PANTOGRAPH
DAMAGE AND WEAR MONITORING.
INVESTIGATION ON MONITORING
SYSTEM FOR PANTOGRAPH AND.~~

~~PANTOGRAPH MONITORING SYSTEM
AND METHOD HENESIS S R L.
PANTOGRAPH TRANSPORT
WIKIPEDIA. CATENARY AND
PANTOGRAPH MONITORING
CATCHING SNAGS BEFORE.
PANTOGRAPH MONITORING FOR THE~~

~~EHIGHWAY. PANTOGRAPH DAMAGE
AND WEAR MONITORING SYSTEM
MACQUARIE. PANTOGRAPH DAMAGE
AND WEAR MONITORING SYSTEM.
SHOCK MONITORING ON
PANTOGRAPH BEAN AIR WIRELESS
HOT. WO2009018612A1 PANTOGRAPH~~

~~DAMAGE AND WEAR MONITORING.
PANCAM IN SERVICE INSPECTION OF
LOCOMOTIVE PANTOGRAPHS.
PANTOGRAPH CONDITION
MONITORING SYSTEM AUSTRALIAN
RAIL. DEVELOPMENT TESTING AND
IMPLEMENTATION OF THE~~

~~PANTOGRAPH. PANTOGRAPH II
FAILURE ANALYSIS MONITOR AMP
TESTING REGIME. OLERT—
OVERHEAD LINE AND PANTOGRAPH
MONITORING RAIL. DEVELOPMENT
TESTING AND IMPLEMENTATION OF
THE PANTOGRAPH. PANTOGRAPH~~

~~CONDITION MONITORING SYSTEM.
PANTOGRAPH COLLISION
ASSESSMENT SYSTEM PANDAS.
PANTOGRAPH DAMAGE AND WEAR
MONITORING SYSTEM REQUEST PDF.
DEEP LEARNING BASED ARC
DETECTION IN PANTOGRAPH~~

~~CATENARY. UNATTENDED
PANTOGRAPH MONITORING SYSTEMS
SERCO. PANTOHEALTH – VIBRATION
HEALTH MONITORING IN
MACHINERY. CAMLIN SUPPORTS
NETWORK RAIL WITH LARGE SCALE
PANTOBOT 3D. PANTOGRAPH~~

~~DAMAGE AND WEAR MONITORING
SYSTEM CORE. PANTOGRAPH
DAMAGE AND WEAR MONITORING
SYSTEM BY AURIZON. PANTOGRAPH
DAMAGE AND WEAR MONITORING
SYSTEM IET. PAVISYS A COMPUTER
VISION SYSTEM FOR THE INSPECTION~~

~~OF. RAIL TECHNOLOGY REDUCES
OVERHEAD WIRE DAMAGE. SMART
MONITORING. DEVELOPMENT
TESTING AND IMPLEMENTATION OF
PANTOGRAPH. D RAIL
INFRASTRUCTURE MONITORING
CATENARY SENSOR PANTOGRAPH~~

~~DAMAGE. PANTOGRAPH DAMAGE
MONITORING SYSTEM JRDLTD COM.
PANTOGRAPH DAMAGE AND WEAR
MONITORING SYSTEM JUSTIA.
PANTOGRAPH MONITORING DEUTZER
TECHNISCHE KOHLE GMBH.
PANTOGRAPH MONITORING SYSTEM~~

~~APPROVED BY NETWORK RAIL.
CONTACT LINES RAIL
ELECTRIFICATION SIEMENS.
PANTOINSPECT IMAGE HOUSE.
PANTOGRAPH MONITORING PASSES
TRIALS RAIL ENGINEER~~

PANTOGRAPH MONITORING FOR THE EHIGHWAY

PHYS ORG

JANUARY 13TH, 2015 - SIEMENS IS DEVELOPING AN AUTOMATIC MONITORING SYSTEM FOR PANTOGRAPHS DESIGNED INITIALLY FOR ELECTRIC AND HYBRID TRUCKS ON EHIGHWAYS THE SYSTEM USES CAMERAS AND SENSORS TO CHECK THE CONDITION OF PANTOGRAPHS IN ORDER TO PREVENT DAMAGE TO THE CONTACT WIRE SIMILAR BUT MORE COMPLEX SYSTEMS ARE'

**'study on damage detecting system for
pantograph using**

november 30th, 2019 - open areas fig 7
shows the test pantograph and fig 8 the
insulator installed at the end of the car after
the test running the system still worked well
6 conclusions 1 a low cost pantograph

damage detecting system can be constituted
by using optical fibers made of plastics'

'Pantograph damage and wear monitoring system

November 6th, 2019 - Pantograph damage
and wear monitoring system This paper

discusses the background and state of the art in pantograph monitoring as well as describing the main features of this innovative condition monitoring technology including trials in live traffic conditions'

**'SIEMENS DEVELOPING
MONITORING SYSTEM FOR**

**PANTOGRAPHS FOR
JANUARY 11TH, 2015 - SIEMENS IS
DEVELOPING AN AUTOMATIC
MONITORING SYSTEM FOR
PANTOGRAPHS DESIGNED
INITIALLY FOR ELECTRIC AND
HYBRID TRUCKS ON EHIGHWAYS**

**EARLIER POST THE SYSTEM USES
CAMERAS AND SENSORS TO CHECK
THE CONDITION OF PANTOGRAPHS
IN ORDER TO PREVENT DAMAGE TO
THE CONTACT WIRE SIMILAR BUT
MORE COMPLEX SYSTEMS ARE
OCCASIONALLY USED**

**FOR"DEVELOPMENT TESTING AND
IMPLEMENTATION OF THE
PANTOGRAPH
DECEMBER 8TH, 2019 -
PANTOGRAPH FAILURES DUE TO
COMPLEX INTERACTIONS
BETWEEN THE OVERHEAD LINE**

**OHL AND PANTOGRAPH
STRUCTURE CAUSE SIGNIFICANT
PROBLEMS TO THE RAILWAY
INDUSTRY WORLDWIDE DESPITE
MANY EFFORTS UNDERTAKEN
WORLDWIDE NO SUCCESSFULLY
IMPLEMENTED PANTOGRAPH**

**MONITORING SYSTEM HAS UP
UNTIL NOW BEEN INTRODUCED
FOR LONG TERM OPERATION ON
ROUTINELY OPERATING TRAINS'
~~'PANTOGRAPH MONITORING ASE
GMBH BRUCHSAL~~
~~NOVEMBER 28TH, 2019 - THE SYSTEM~~**

~~CONTACT CHECK DEVELOPED BY ASE
GMBH TAKES OVER ALL
MONITORING TASKS FULLY
AUTOMATICALLY AND
AUTONOMOUSLY THE MEASURING
AND RECOGNITION SYSTEM IS
MOUNTED IN THE MIDDLE ABOVE~~

~~THE RAILWAY ON BRIDGES OR
SUPPORTS AND CAN EVEN BE
INTEGRATED INTO THE MULTI
SENSOR CONCEPT OF ASE
CHECKPOINT FACILITIES'~~

'
Ricardo pantograph monitoring system approved by Network

December 15th, 2019 - The PanMon system uses Sensys' Automatic Pantograph Monitoring System APMS to provide high definition images of each passing pantograph through a combination of radar laser video and photo technology and an innovative new contact less optical uplift monitoring system, developed by Ricardo Rail in association with Italian based optical

'approved by network rail for roll out

december 21st, 2019 - damage to the wires often due to general wear and tear it can also help network rail work with operators to take early preventative action and ultimately extend the life of both the wires and the pantograph equipment carried by the trains the

panmon system uses sensys' automatic pantograph monitoring
system apms

***"Pantograph monitoring for the
eHighway Phys org***

December 5th, 2019 - Pantograph

monitoring for the eHighway 13 January

2015 Siemens is developing an automatic

monitoring system for pantographs Designed

initially for electric and hybrid trucks on eHighways the system uses cameras and sensors to check the condition of pantographs in order to prevent damage to the overhead contact wire Similar'

'**Pantograph Damage and Wear Monitoring System**

November 13th, 2019 - ×Close The Infona portal uses cookies i e strings of text saved by a browser on the user s device The portal can access those files and use them to remember the user s data such as their chosen settings screen view interface language etc or their login data

Development Testing And Implementation Of Pantograph September 12th, 2018 - Development Testing And Implementation Of Pantograph Damage Monitoring System

**PDMS By Ali Daadbin And Jarek
Rosinski Abstract Pantograph Failures
Due To Complex Interactions Between
The Overhead Line OHL And Pantograph
Structure Cause Significant Problems To
Railway Industry Worldwide'**

'US20100322465A1 Pantograph Damage And Wear Monitoring

December 15th, 2019 - A System For
Evaluating The Condition Of A Pantograph
The System Comprising A Track Side
Pantograph Monitoring Station That
Captures One Or More Images Of A

Pantograph While A Locomotive Comprising
The Pantograph Is In Normal Service A
Station Management System That Analyses
One Or More Images Captured At The
Monitoring Site And Determines'

~~Investigation on Monitoring System for~~

Pantograph and

~~July 25th, 2019 - For the pantograph catenary system as one of the key components of the vehicle system an urgent problem includes diagnosing faults and proposing a safety monitoring system to assure safe operation improve the level of detection and decrease~~

~~the cost of maintenance and repairs"~~ **Pantograph
monitoring system and method HENESIS S R L**

October 20th, 2019 - The present invention relates to the field of

image diagnostics and in particular relates to a system and a method

for monitoring the state of wear of a pantograph **BACKGROUND**

ART As is known rail haul vehicles that draw current from an

overhead contact line generally use a device known as pantograph to connect the line to the vehicle **pantograph transport wikipedia** november 4th, 2019 - as graphite is brittle pieces can break off

during operation bad pantographs can seize the overhead wire and

tear it down so there is a two way influence whereby bad wires can

damage the pantograph and bad pantographs can damage the wires

to prevent this a pantograph monitoring station can be used

'Catenary And Pantograph Monitoring Catching Snags Before

December 26th, 2019 - The Pantograph Condition Monitoring

System The System Can Measure Carbon Thickness Carbon

Damage E G Missing Carbon Edge Chips Abnormal Wear And

Cracks Pantograph Head Yaw Angle Missing Horns Horn

Alignment Uplift Force And Train Speed With Real Time Analysis

Reported Back To The Asset Owner'

Pantograph Monitoring for the eHighway

October 8th, 2019 - The system monitors the pantograph in two

ways Cameras monitor the carbon surfaces on the contact strip

Special algorithms evaluate the level of wear or incipient damage

As soon as enough measurement data is available from various systems the solution will also try to predict when the carbon strips

have to be replaced'

'Pantograph damage and wear monitoring system Macquarie

November 30th, 2019 - A system for evaluating the condition of a pantograph the system comprising a track side pantograph

monitoring station that captures one or more images of a pantograph while a locomotive comprising the pantograph is in normal service a station management system that analyzes one or more images captured at the monitoring site and determines'

~~Pantograph Damage and Wear~~

Monitoring System

~~November 17th, 2019 - NewRail the Centre for Railway Research at Newcastle University together with the specialised design and analysis company Northern Power Transmission Research Laboratories and the leading rail services provider Serec~~

~~Assurance Railtest have pioneered a unique novel system which allows impact between overhead line and pantograph to be measured'~~

'Shock Monitoring On Pantograph BeanAir Wireless IIOT

December 25th, 2019 - A Serious Failure Of

Pantograph Can Not Only Damage Contact Wires But Can Also Inflict Widespread Damage On The Catenary System Network A Cost Effective And Real Time Monitoring System During Train Operation Was Required By The Railway Operator Our Wireless Shock Sensors'

**'WO2009018612A1 Pantograph damage
and wear monitoring**

**November 16th, 2019 - A system for
evaluating the condition of a pantograph
the system comprising a track side
pantograph monitoring station that**

captures one or more images of a pantograph while a locomotive comprising the pantograph is in normal service a station management system that analyses one or more images captured at the monitoring site and determines'

,Pancam In Service Inspection Of Locomotive Pantographs

December 23rd, 2019 - Pancam Is An Inspection System For In

Service Monitoring Of Wear And Damage To Pantographs On Electric Locomotives Damage And Wear Of Pantographs Can Cause Damage To The Locomotive And Overhead Wiring With Subsequent Interruption Of Service Pancam Uses CCD Cameras To Capture Side And Top Views Of The Pantographs Of Locomotives In Normal Service,

'PANTOGRAPH CONDITION MONITORING SYSTEM AUSTRALIAN RAIL

**DECEMBER 22ND, 2019 - THE
PANTOGRAPH CONDITION
MONITORING SYSTEM PCMS
PROVIDES AUTOMATED ANALYSIS
AND REPORTS ON THE CONDITION
OF PANTOGRAPH HEADS ON
ELECTRIFIED ROLLING STOCK**

**PASSING THROUGH A MONITORING
SITE AUTOMATED ANALYSIS FROM
THIS SYSTEM ALLOWS FOR THE
PREVENTION OF OVER HEAD
WIRING TEAR DOWN INCIDENTS
THAT ARE A RESULT OF DAMAGED
PANTOGRAPH HEADS AND ALSO**

**ALLOWS FOR PREDICTIVE
MAINTENANCE OF CARBON STRIPS'**

**'Development Testing And
Implementation Of The Pantograph
December 25th, 2019 - Development
Testing And Implementation Of The
Pantograph Damage Assessment System**

**PANDAS This Paper On The Pantograph
Damage Assessment System PANDA Is
From The Proceedings Of The 12th
International Conference On Computer
System Design And Operation In Railways
And Other Transit Systems Held In
Beijing China In 2010" PANTOGRAPH II**

**FAILURE ANALYSIS MONITOR AMP
TESTING REGIME**

DECEMBER 27TH, 2019 -

PANTOGRAPH SENSORS •

PANTOGRAPH MONITORING

SYSTEM AS SHOWN PREVIOUSLY

CARBON STRIP CAN CAUSE TORN

**DOWN OF AN ENTIRE OHLE SYSTEM
• NEW LINESIDE SYSTEM
DEVELOPED TO CAPTURE AND
SCRUTINISE HIGH SPEED
PHOTOGRAPHS TAKEN OF THE
PANTOGRAPH • A BRIEF WORKING
FLOWCHART 19 10 2015 82 83'**

'OLErt – Overhead Line and Pantograph Monitoring Rail

December 26th, 2019 - In order to test the theory Great Western Railway made available a class 387 electric multiple unit to which was fitted the pantograph monitoring camera Following a calibration exercise to eliminate any lens distortion and ensure the pantograph was within height range a network video recorder NVR was installed into the train roof space'

'Development testing and implementation of

the pantograph

December 17th, 2019 - The instantaneous monitoring enables the 'hot spots' caused by the overhead line to be mapped and trended to allow successful implementation of predictive maintenance of the overhead line

OHL Figure 6 5 Conclusions The

*Pantograph Damage Assessment System
PANDAS described in this paper'*

**'Pantograph Condition Monitoring System
December 25th, 2019 - unattended
pantograph defects could eventually cause
tear down of the overhead wire which is**

not only inconvenient and very costly it is dangerous to passengers and personnel By detecting serious conditions of pantographs before it is too late The PantoInspect system can prevent considerable damage and repair costs can be avoided"~~Pantograph Collision~~

~~Assessment System PANDAS~~

~~December 17th, 2019 - damage develops further and a serious incident occurs~~

~~Continuous development has resulted in an extremely reliable system proven over many years of service under extreme environmental conditions The product has evolved to~~

~~become an industry standard pantograph
monitoring system installed across Europe
Australia and the USA'~~

**,PANTOGRAPH DAMAGE AND WEAR MONITORING
SYSTEM REQUEST PDF**

DECEMBER 13TH, 2019 - PANTOGRAPH FAILURES DUE TO

COMPLEX INTERACTIONS BETWEEN THE OVERHEAD

LINE OHL AND PANTOGRAPH STRUCTURE CAUSE
SIGNIFICANT PROBLEMS TO RAILWAY INDUSTRY
WORLDWIDE THIS PAPER ALSO DESCRIBES THE DESIGN
DEVELOPMENT AND TEST RESULTS FROM THE FIRST
FULLY PROVEN PANTOGRAPH MONITORING SYSTEM
WHICH IS NOW DEPLOYED ON ROUTINELY OPERATING
TRAINS IN THE UK,

**'deep learning based arc detection in
pantograph catenary**

december 21st, 2019 - service monitoring system for detecting wear and damage at pantographs in electric locomotives yang et al 13 set up a signal and image processing based experimental setup for pantograph inspection in another study the vibrational signals of the catenary system were measured

by a pantograph mounted device 14'

~~'Unattended Pantograph Monitoring Systems Serec~~

~~December 21st, 2019 - Unattended
Pantograph Monitoring Systems We are at
the forefront of continuous in-service~~

overhead line monitoring for the rail industry
Sercos extensive experience in pantograph
testing and overhead line monitoring enabled
us to develop an unattended pantograph
monitoring system in partnership with
Transmissions Dynamics Ltd'

**PANTOHEALTH – VIBRATION HEALTH MONITORING
IN MACHINERY**

DECEMBER 26TH, 2019 - PANTOGRAPH MONITORING

DIAGNOSIS SYSTEM TABRIZ JOLFA ELECTRIFIED TRAIN

HAD A LOT OF PROBLEMS WITH THE CONTACT QUALITY

OF PANTOGRAPH AND CATENARY SYSTEM WE

INSTALLED THE PROTOTYPE OF THE DEVICE ON RC4
LOCOMOTIVE AND COLLECTED MUCH USEFUL
INFORMATION ABOUT THE PANTOGRAPH AND
CATENARY

**Camlin Supports Network Rail With Large Scale PANTOBOT
3D**

December 27th, 2019 - The World's First Fully Automated Three
Dimensional Pantograph Monitoring System PANTOBOT 3D

Allows Rail Operators To Make Accurate Real Time Decisions

About Pantograph Condition Pre Empting The Danger Of Costly
And Disruptive Overhead Line Tear Down Caused By A Damaged
Pantograph

***'Pantograph damage and wear monitoring
system CORE***

*June 4th, 2018 - Pantograph damage and
wear monitoring system By Darryl Wesche*

*Timothy John Watkins and Leonard George
Chardborn Hamey Abstract A system for
evaluating the condition of a pantograph the
system comprising a track side pantograph
monitoring station that captures one or more
images of a pantograph"***PANTOGRAPH
DAMAGE AND WEAR MONITORING**

SYSTEM BY AURIZON

DECEMBER 24TH, 2019 - WO 2009

018612 PCT AU2008 001135

PANTOGRAPH DAMAGE AND WEAR
MONITORING SYSTEM TECHNICAL
FIELD THE INVENTION DESCRIBED
HEREIN RELATES TO LOCOMOTIVE

PANTOGRAPHS IN PARTICULAR THE
INVENTION IS DIRECTED TO AN
AUTOMATED PANTOGRAPH DAMAGE
AND WEAR MONITORING SYSTEM
ALTHOUGH THE SCOPE OF THE
INVENTION IS NOT NECESSARILY
LIMITED THERETO'

'Pantograph Damage and Wear Monitoring System IET

November 7th, 2019 - Pantograph Damage
and Wear Monitoring System Abstract

NewRail the Centre for Railway Research at
Newcastle University together with the

specialised design and analysis company
Northern Power Transmission Research
Laboratories and the leading rail services
provider Serco Assurance Railtest have
pioneered a unique novel system "*pavisys a
computer vision system for the inspection of
december 15th, 2019 - bot system henesis srl*"

*parma italy a full ?edged monitoring system
for train pantographs which also adds
remote analysis and management of images
coming from the inspection points located
along the railway the automatic inspection
algorithm consists of three main steps a
pantograph classi?er a modular quality*

*assessment"rail technology reduces
overhead wire damage*

*november 12th, 2015 - network rail is to roll
out a new pantograph monitoring system that
could reduce instances of overhead wire
damage on the west coast main line wcml the
panmon technology developed by ricardo rail*

*provides continuous measurement of
pantograph uplift forces and defects
including chips damaged'*

'Smart MONITORING

**December 15th, 2019 - consequential
damage that can arise due to dewirement
incidents and the fact that the root causes**

of the majority of these are attributable to pantograph failures All of this led to the idea behind the Ricardo PanMon pantograph monitoring system Smart monitoring idea As with many successful monitoring innovations PanMon represents'

'development testing and implementation of pantograph

december 11th, 2019 - pantograph failures
due to complex interactions between the
overhead line ohl and pantograph structure
cause significant problems to railway
industry worldwide in spite of much efforts

undertaken worldwide no successfully
implemented pantograph monitoring system
was up to now introduced for long term
operation on routinely operating trains'

**'D RAIL INFRASTRUCTURE
MONITORING CATENARY SENSOR
PANTOGRAPH DAMAGE**

**AUGUST 4TH, 2019 - D RAIL
PANTOGRAPH DAMAGE ONLY ONE
DIRECTION FOUND WITH D RAIL
CATENARY SENSOR CLEARLY HEAR
THE PANTOGRAPH HIT IN NORTH
DIRECTION INFRASTRUCTURE
MONITORING REMOTELY FROM**

**ANY VEHICLE DAMAGES AND WEAR
LIKE THIS WILL BE FOUND IN REAL
TIME AND DISPLAYED WITH GPS
POSITIONS AND VALUES"**~~pantograph
damage monitoring system jrdltd com
november 30th, 2019 - pantograph damage
monitoring system together with a time trace~~

~~of such critical events the precise gps stamp provides time date and location of their occurrence which is securely logged the receiver can automatically alert designated personnel of severe impact events via tms or gsm network and can'~~

'PANTOGRAPH DAMAGE AND WEAR MONITORING SYSTEM Justia

October 16th, 2019 - A System For Evaluating The Condition Of A Pantograph The System Comprising A Track Side Pantograph Monitoring Station That Captures One Or More Images Of A Pantograph While A Locomotive Comprising The Pantograph Is In Normal Service A Station Management System That Analyses One Or More Images Captured At The Monitoring Site And Determines'

***'Pantograph Monitoring Deutzer
Technische Kohle GmbH***

*December 8th, 2019 - This Monitoring
Demonstrates Whether The Pantograph Can
React Fast Enough To Variations In Height
Of The Overhead Line Or If There Are
Contact Interruptions Caused By The*

Pantograph's Properties It Is Also Possible To Determine How The Pantograph Reacts To Shocks And If These Shocks Could Do Damage To The Contact Strips'

,PANTOGRAPH MONITORING SYSTEM APPROVED BY NETWORK RAIL

DECEMBER 18TH, 2019 - THE SYSTEM USES SENSYS'

AUTOMATIC PANTOGRAPH MONITORING SYSTEM APMS
TO PROVIDE HIGH DEFINITION IMAGES OF EACH
PASSING PANTOGRAPH THROUGH A COMBINATION OF
RADAR LASER VIDEO AND PHOTO TECHNOLOGY AND AN
INNOVATIVE NEW CONTACT LESS OPTICAL UPLIFT
MONITORING SYSTEM DEVELOPED BY RICARDO RAIL IN
ASSOCIATION WITH ITALIAN BASED OPTICAL
MONITORING

**"CONTACT LINES RAIL
ELECTRIFICATION SIEMENS**

DECEMBER 25TH, 2019 - THE SUCCESS
OF A CONTACT LINE SYSTEM IS
CRITICALLY DEPENDENT ON ITS
DYNAMIC INTERACTION WITH THE
PANTOGRAPH LOCATE DAMAGE
MORE QUICKLY AND INCREASE YOUR
SYSTEM AVAILABILITY – WITH

MONITORING SYSTEMS FOR THE
SICAT DMS DISCONNECTOR
MONITORING SYSTEM IS DESIGNED
TO RELIABLY DETECT AND INDICATE
THE POSITION OF THE SWITCH IN'

'Pantinspect Image House

December 23rd, 2019 - Real Time
Surveillance System The PantoSystem Is An
Automated And Real Time Wayside
Pantograph Monitoring System That Inspects
And Measures The Train Pantographs For
Possible Damages And Wear During
Everyday Operations Without Any

Interruptions To Passenger Or Freight Train Services"**PANtograph MONitoring Passes Trials Rail Engineer**

December 26th, 2019 - The System Can Also Measure The Uplift Of The Contact Wire Resulting From The Force Applied By The Pantograph – Uplifts Exceeding Specified Limits Can Cause Considerable Damage To Both The Pantograph And Catenary Approval Trials Commenced At Cheddington In Buckinghamshire In March 2013'

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