



Railcar Integrated Maintenance Suite

DATA COLLECTION • AUTOMATION

Complete CEPM Solutions

www.aicRail.com

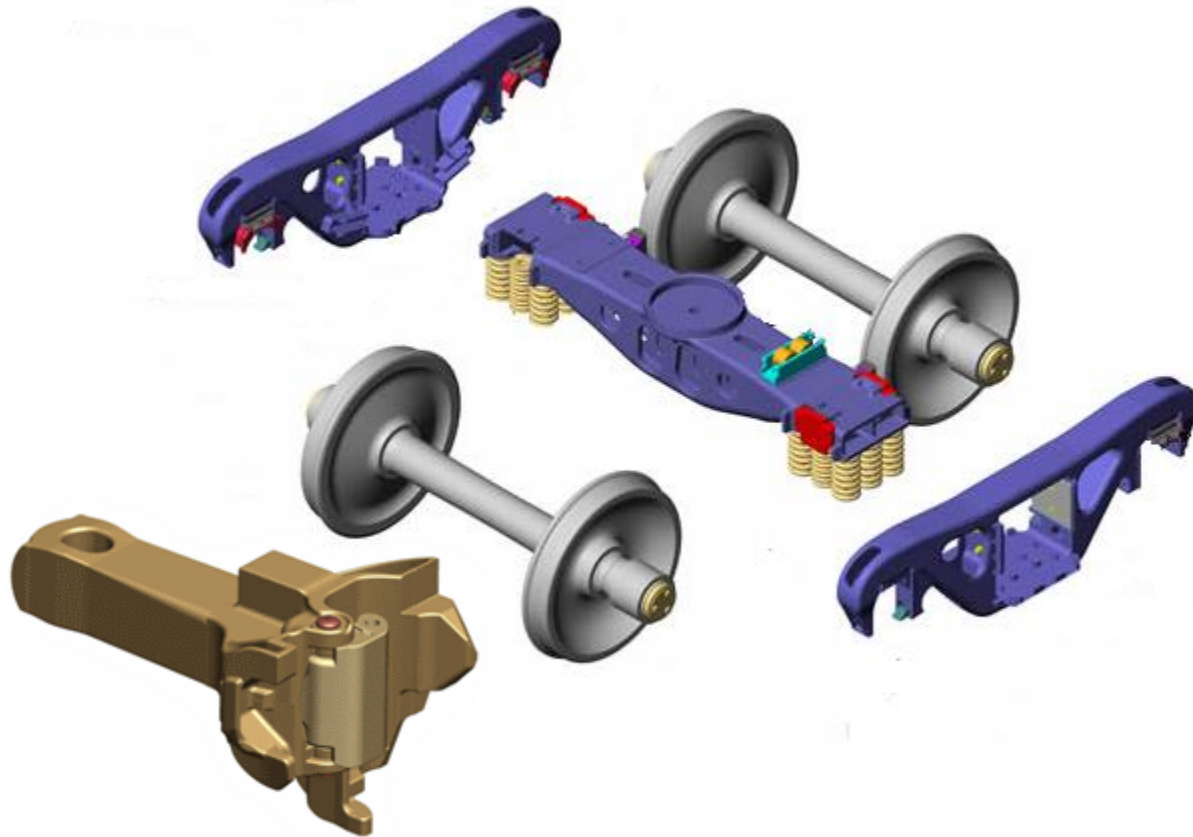
Who are we...

- 18 years in rail industry
- 80 customers in 6 countries
- Charter member of the CEPM committee

Comprehensive Equipment Performance Monitoring

- AAR Mandated
- Facilitates component recall
- Integrates with EHMS and CRB

Current CEPM Components



CEPM Component Labels



AIC Rail

AAR CID: WHEELSET

AICI 000002417



AIC Rail

AAR CID: SIDEFAME

AICI 000002417



AIC Rail

AAR CID: BOLSTER

AICI 000002417



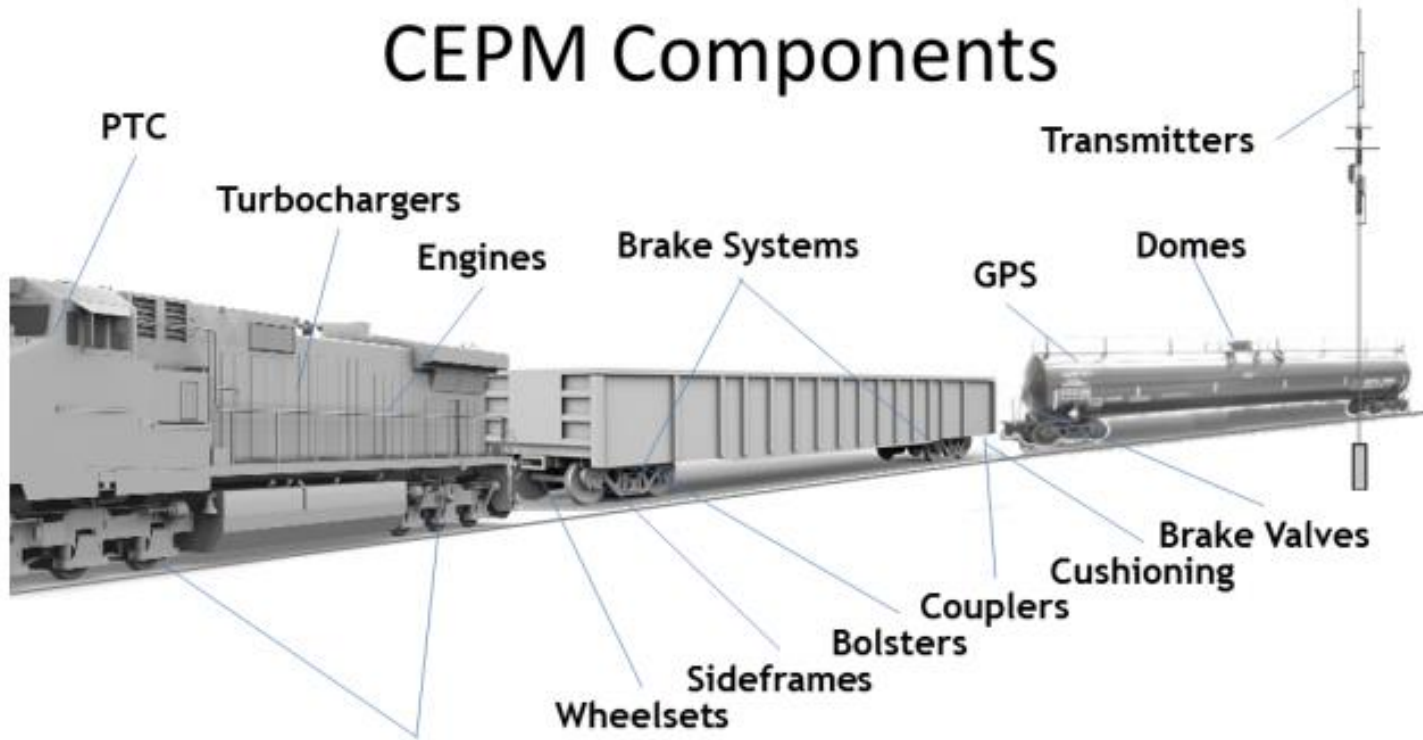
AIC Rail

AAR CID: COUPLER

AICI 000002417



CEPM Components



Type	Component
Brake Systems	Brake Beams Brake Valves-Service Portion Brake Valves-Emergency Portion Brake Cylinders Brake Shoes
Truck Castings	Bolsters Sideframes
Draft Systems	Couplers Knuckles Draft Gears Yokes Cushioning

Type	Component
Locomotives	Traction Motors Emission Kits Engines PTC Crankshafts Fuel Injectors Alternators Turbos
Tank Cars	Tank Valves Dome Covers
Bearings	Side Bearings Bearing Adapters
Non-Rolling Assets	Transmitters (Antennae)

CEPM Component Process

1. Require Registration
2. Require Association to the railcar
3. Require Association for billing

CEPM Schedule

Date	Event
2012	
July 1	Wheelset registration required
June 1	Side Frame and Bolster Registration Allowed
2013	
January 1	Association of Wheelset required
July 1	Wheelset Association required for AAR billing
	Side Frame, Bolster and Coupler Registration Required
2014	
January 1	Castings Association Required
July 1?	Castings Association Reuired for billing



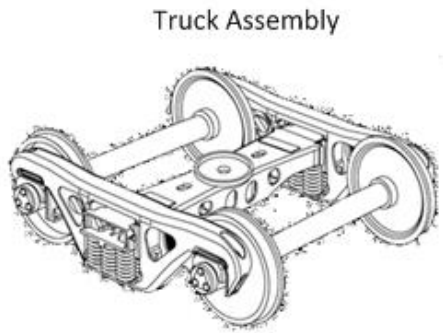
Railcar Integrated Maintenance Suite

DATA COLLECTION • AUTOMATION

- Associate Components to railcars
- Register Components
- Manage truck components
- Track Component inventory

RIMS Features

- Register components (new and reconditioned)
- Associate railcar components to the car
- Validate registration at receiving
- Transfer shipping manifest electronically
- Capture components at the truck build station
- Inbound component inventory
- Car arrival / Repair
 - In for repair
 - Repair duration
 - Repair due date / Completion date



Truck Assembly



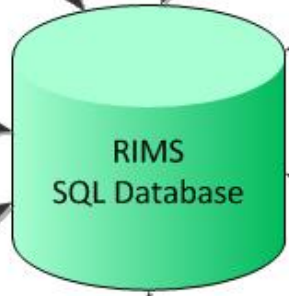
Truck Builder Fixed Station



Casting Registration (CODEC)



Truck Builder Mobile



RIMS SQL Database



Office

Car Manager



Wireless Railcar Association (Car Builder)



Server Computer Host for Database Host for Web Services



Final Inspection



Car Arrival / Outbound

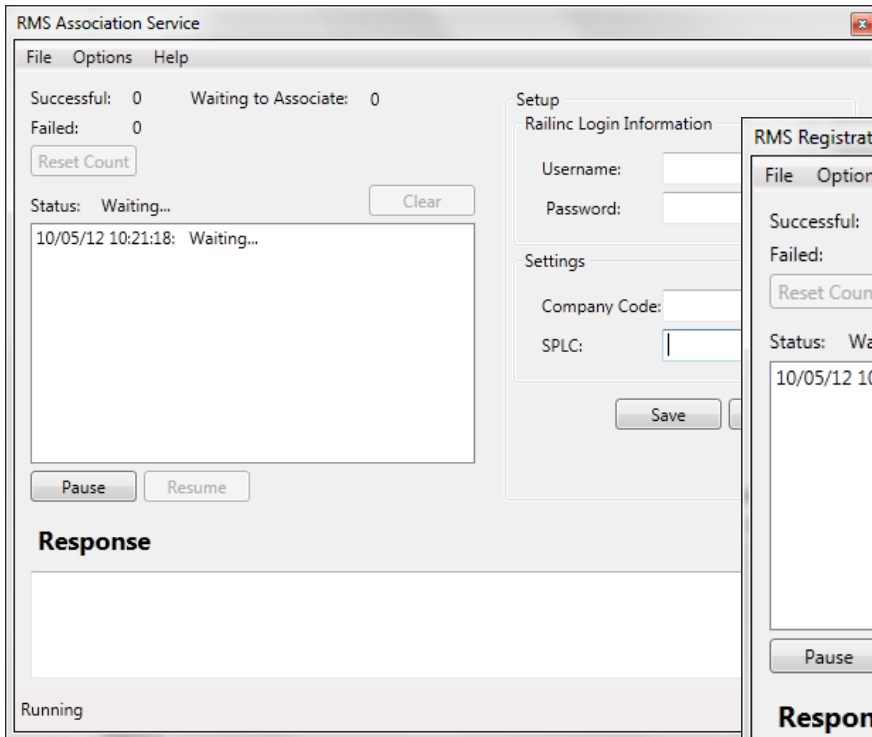
Web Services Association Registration Query



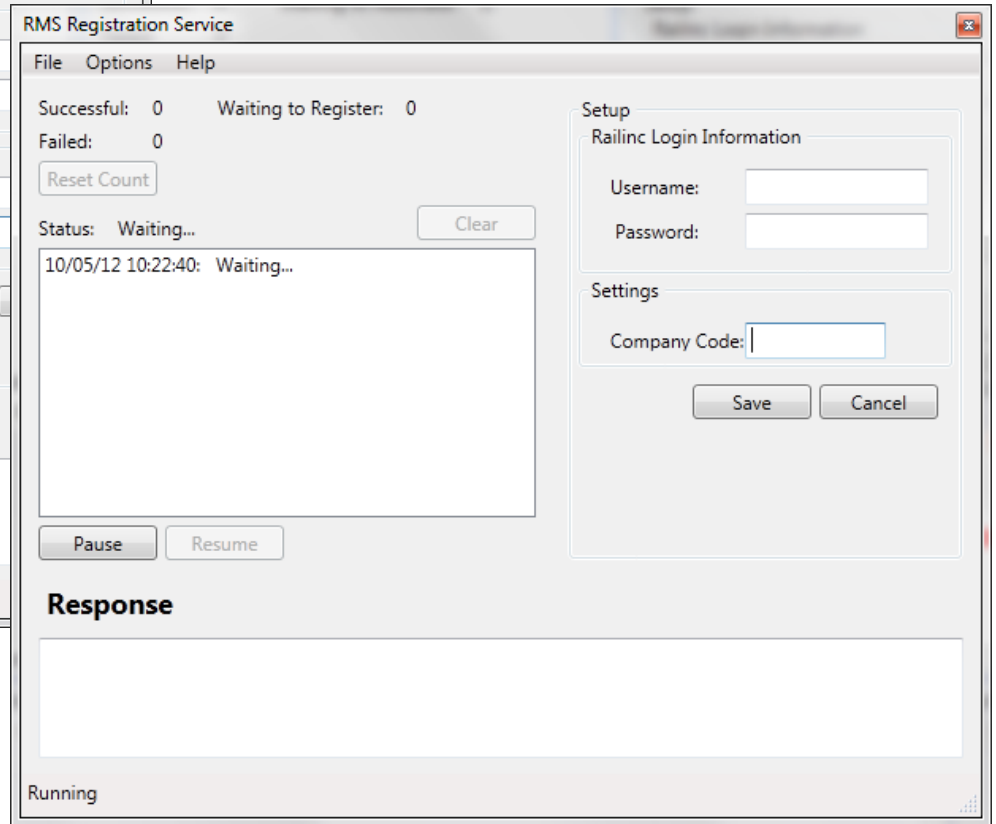
RIMS Uses Railinc Web Services

- Reports Association and registrations to Railinc
- Power house for all applications
- Runs in Background
- Real Time Response
- No CSV Uploads
- Uses Railinc Web Services
 - Repair
 - Registration
 - Query

RIMS Services



Association Service



Registration Service

RIMS Association Overview

- Associate Components to Railcar
 - Wheelsets
 - Side Frames
 - Bolsters
 - Couplers
- Uses Railinc's Repair Web Service
- Meets CEPM Requirements

Car Manager

- Desktop application to manage all data collected in the shop
- Manages Equipment Association Status
- Associates Components to Equipment
 - Wheelsets, Side Frames, Bolsters, Couplers
- Captures Equipment Data
 - Type, truck count
- Registers Components
- Manages component inventory

Car Manager

The screenshot shows the Car Manager application window. The title bar reads "Car Manager" and the menu bar includes "File", "Equipment", "Reports", "Tools", and "Help". The "Shop Code" is "AIC".

On the left, there is a vertical navigation pane with three buttons: "Equipment" (selected), "Trucks", and "Components".

The main area is divided into two sections. The top section is a search interface with the following fields:

- Find:
- in: **Equipment ID** (dropdown)
- Filtered
- Date: **This Week** (dropdown), (calendar), - (calendar)
- Buttons: and **CLEAR**

Below the search fields is a table with the following data:

Equipment ID	Equipment Type	Creation Date
RAIL012345	Hopper	2/7/2013 1:39 PM -06:00
AARE012345	Box Car	2/7/2013 1:38 PM -06:00

At the bottom of the table area, it says "2 Results".

The right section is a form for associating components to a railcar. It contains the following information:

- Equipment: Description:
- Type:
- Truck Count:
- In For Repairs Inactive

Below this is a tabbed interface with "Components" selected. The components are listed with input fields for their location:

- Wheelset
 - Location 1:
 - Location 2:
 - Location 3:
 - Location 4:
- SideFrame
 - Location BL:
 - Location BR:
 - Location AL:
 - Location AR:
- Bolster
 - Location B:
 - Location A:
- Coupler:

A text box with the instruction "Click submit to send associations to Railinc" has a red arrow pointing to the "Submit" button.

At the bottom right, there are three buttons: "Submit", "Save", and "Cancel".

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Car Manager - Association

The screenshot displays the Car Manager software interface. On the left, a sidebar shows 'Equipment', 'Trucks', and 'Components'. The main window is titled 'Equipment' and contains a search bar and a table of equipment. The table has columns for 'Equipment ID', 'Equipment Type', and 'Creation Date'. The row for 'BNSF488413' is highlighted. To the right, a detailed view for 'Equipment: BNSF488413' is shown, including 'Type: Hopper', 'Truck Count: 2', and 'Current Repair' information. Below this, a 'Components' section lists various parts like 'Bolster', 'Coupler', 'SideFrame', and 'Wheelset' with their respective locations and association status (Success or Error). A red arrow points to the 'Location 1' field under 'Wheelset'. A yellow callout box at the bottom right contains the text: 'Manually enter CID or use Mobile Association Data Collection'. The bottom of the screen shows the Windows taskbar with the 'Car Manager' application icon and the system clock at 9:00 AM.

File Equipment Reports Tools Help Shop Code: CNPU

Find in Filtered

Date -

Equipment ID	Equipment Type	Creation Date
RAIL100034	Hopper	03/20/2013 11:16 AM
RAIL100032	Hopper	03/20/2013 11:11 AM
RAIL000352	Hopper	03/05/2013 02:34 PM
RAIL000351	Hopper	03/05/2013 02:33 PM
RAIL000350	Hopper	03/05/2013 02:28 PM
RAIL000318	Hopper	03/05/2013 12:23 PM
RAIL000317	Hopper	03/05/2013 12:23 PM
RAIL000316	Hopper	03/05/2013 12:23 PM
RAIL000315	Hopper	03/05/2013 12:23 PM
RAIL000313	Hopper	03/05/2013 12:22 PM
RAIL000034	Hopper	02/15/2013 10:27 AM
RAIL000014	Hopper	02/15/2013 10:22 AM
RAIL000013	Hopper	02/15/2013 10:22 AM
RAIL000012	Hopper	02/15/2013 10:22 AM
RAIL100003	Hopper	02/15/2013 10:06 AM
RAIL200003	Hopper	02/15/2013 09:47 AM
RAIL300003	Hopper	02/15/2013 09:42 AM
RAIL400004	Hopper	02/15/2013 09:33 AM
RAIL500005	Hopper	02/15/2013 09:23 AM
RAIL749925	Hopper	01/16/2013 04:18 PM
BNSF488413	Hopper	01/11/2013 02:39 PM
BNSF488414	Hopper	01/03/2013 03:01 PM
BNSF488416	Hopper	12/20/2012 03:45 PM

27 Results

Equipment: BNSF488413 Description:

Type: Hopper

Truck Count: 2

Inactive

Current Repair: Arrival Due End

03/05/2013

Components Inspections

- ▲ Bolster
 - Location B RAIL000008005 Success
 - Location A
- Coupler
- ▲ SideFrame
 - Location BL
 - Location BR
 - Location AL RAIL000009002 ERROR
 - Location AR RAIL000009003 Success
- ▲ Wheelset
 - Location 1
 - Location 2 RAIL000007367 Success
 - Location 3 RAIL000007365 ERROR
 - Location 4 RAIL000007366 Success

Manually enter CID or use Mobile Association Data Collection

Copyright © 2013 Arkansas Industrial Computing, Inc. Car Manager Version 1.2.0.13478 9:00 AM

Car Manager - Association

The screenshot shows the 'Car Manager' application window. The interface is divided into three main sections: 'Equipment', 'Trucks', and 'Components'. The 'Equipment' section contains a table with the following data:

Equipment ID	Equipment Type	Creation Date
AARE000000001	TANK	10/5/2012 4:07 PM -05:00
AARE0000651272	GOND	10/5/2012 4:04 PM -05:00
BNSF45816	Coal Car	10/2/2012 1:01 PM -05:00
BNSF003423	Maxi	9/5/2012 12:29 PM -05:00
BNSF010123	5 Truck Car	8/30/2012 12:23 PM -05:00
BNSF123456	Coal Car	8/30/2012 9:22 AM -05:00
BNSF488416	Hopper	8/29/2012 10:00 AM -05:00

The 'Components' section is currently active, showing a 'Wheelset' configuration. It includes a search bar and a 'Truck Count' field. Below these are tabs for 'Components' and 'Inspections'. The 'Wheelset' section is expanded, showing two positions:

- Position 1: AARE0000000450 (Success)
- Position 2: RAIL0000007362 (Success)

Below the wheelset section, there is a list of equipment IDs with their association status:

- RAIL0000112232 (Success)
- RAIL1000000001 (Success)
- RAIL0008342123 (ERROR)
- RAIL0005123456 (ERROR)
- (Empty field) (ERROR)
- RAIL0000300506 (Success)
- NATX0000008040 (Success)

A modal dialog box is displayed in the center, containing the following text:

```
PARTIAL_SUCCESS  
ERROR 18004001  
Failed to associate component to car  
Source: CEPM  
  
ERROR 000005552  
Component requested does not exist  
Source: CEPM
```

An 'OK' button is located at the bottom of the dialog. A red arrow points to the 'Success' status of the NATX0000008040 component. A callout box at the bottom right contains the text 'Click here to see association status'.

At the bottom of the application window, there are three buttons: 'Submit', 'Save', and 'Cancel'.

Car Manager – Association

The screenshot shows the 'Car Manager' application window. The main interface is divided into three vertical sections: 'Equipment', 'Trucks', and 'Components'. The 'Equipment' section contains a table with the following data:

Equipment ID	Equipment Type	Creation Date
AARE0000000001	TANK	10/5/2012 4:07 PM -05:00
AARE0000651272	GOND	10/5/2012 4:04 PM -05:00
BNSF45816	Coal Car	10/2/2012 1:01 PM -05:00
BNSF003423	Maxi	9/5/2012 12:29 PM -05:00
BNSF010123	5 Truck Car	8/30/2012 12:23 PM -05:00
BNSF123456	Coal Car	8/30/2012 9:22 AM -05:00
BNSF488416	Hopper	8/29/2012 11:25 AM -05:00

The 'Trucks' section is currently selected, showing a detailed view of the '5 Truck Car' (Equipment ID: BNSF010123). The 'Equipment' and 'Truck Count' fields are populated with 'BNSF010123' and '5' respectively. The 'Description' and 'Equipment Type' fields are empty. The 'Components' section is expanded to show 'Inspections' for the 'Wheelset' and 'SideFrame'.

Wheelset Inspections:

Position	Value	Status
Position 1	RAIL9000003211	ERROR
Position 2	RAIL9000323456	ERROR
Position 3	RAIL9000432122	ERROR
Position 4	RAIL9000612345	ERROR
Position 5	RAIL9100012345	ERROR
Position 6		
Position 7		
Position 8		
Position 9		
Position Z		

SideFrame Inspections:

Position	Value	Status
Position BL	RAIL0034512345	ERROR
Position BR	RAIL0045412345	ERROR
Position CL		
Position CR		
Position DL		
Position DR		
Position EL		

At the bottom of the window, there are 'Submit', 'Save', and 'Cancel' buttons.

Works with multi-unit Cars

Association – Mobile Data Collection

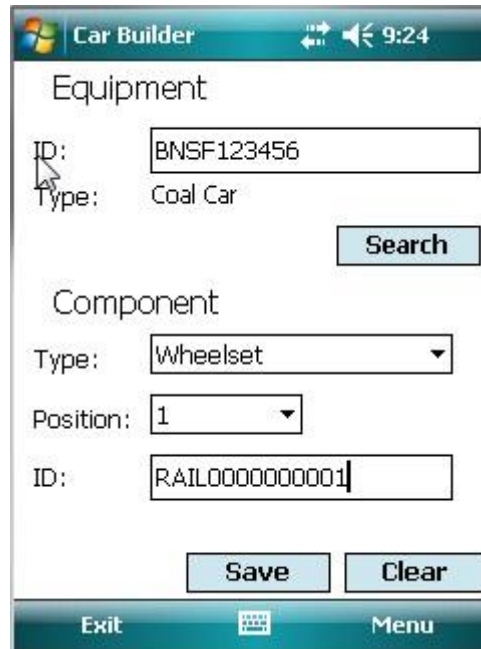
Scan AEI Tag or Manually Enter
Equipment Number



How it works



Manually Enter Equipment ID



Car Builder 9:24

Equipment

ID: BNSF123456

Type: Coal Car

Search

Component

Type: Wheelset

Position: 1

ID: RAIL0000000001

Save Clear

Exit Menu

Select Equipment

Select component to associate

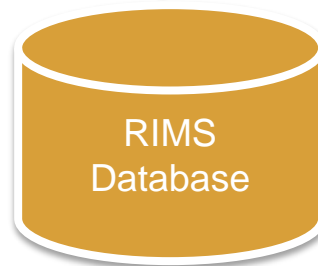
Set the position

Scan or enter component ID



Scan AEI Tag with RFID Reader

Stores component ID in the RIMS Database for Association to the Equipment at a later time



Car Manager – Car Arrival

File Equipment Reports Tools Help Shop Code: CNPU

Find in **EquipmentID** Filtered

Date **All** 12/20/2012 15 - 3/22/2013 15

Equipment

Equipment ID	Equipment Type	Creation Date
RAIL100034	Hopper	03/20/2013 11:16 AM
RAIL100032	Hopper	03/20/2013 11:11 AM
RAIL000352	Hopper	03/05/2013 02:34 PM
RAIL000351	Hopper	03/05/2013 02:33 PM
RAIL000350	Hopper	03/05/2013 02:28 PM
RAIL000318	Hopper	03/05/2013 12:23 PM
RAIL000317	Hopper	03/05/2013 12:23 PM
RAIL000316	Hopper	03/05/2013 12:23 PM
RAIL000315	Hopper	03/05/2013 12:23 PM
RAIL000313	Hopper	03/05/2013 12:22 PM
RAIL000034	Hopper	02/15/2013 10:27 AM
RAIL000014	Hopper	02/15/2013 10:22 AM
RAIL000013	Hopper	02/15/2013 10:22 AM
RAIL000012	Hopper	02/15/2013 10:22 AM
RAIL100003	Hopper	02/15/2013 10:06 AM
RAIL200003	Hopper	02/15/2013 09:47 AM
RAIL300003	Hopper	02/15/2013 09:42 AM
RAIL400004	Hopper	02/15/2013 09:33 AM
RAIL500005	Hopper	02/15/2013 09:23 AM
RAIL749925	Hopper	02/15/2013 08:18 PM
BNSF488413	Hopper	03/05/2013 02:39 PM
BNSF488414	Hopper	03/05/2013 03:01 PM
BNSF488416	Hopper	03/05/2013 03:45 PM

27 Results

Trucks

Components

Equipment: BNSF488413 Description:

Type: Hopper

Truck Count: 2

Inactive

Current Repair: Arrival Due End

03/05/2013 3/12/2013 15

Components **Inspections**

- ▲ Bolster
 - Location B RAIL000008005 Success
 - Location A
- Coupler
- ▲ SideFrame
 - Location BL
 - Location BR
 - Location AL RAIL000009002 ERROR
 - Location AR RAIL000009003 Success
- ▲ Wheelset
 - Location 1
 - Location 2 RAIL000007367 Success
 - Location 3 RAIL000007365 ERROR
 - Location 4 RAIL000007366 Success

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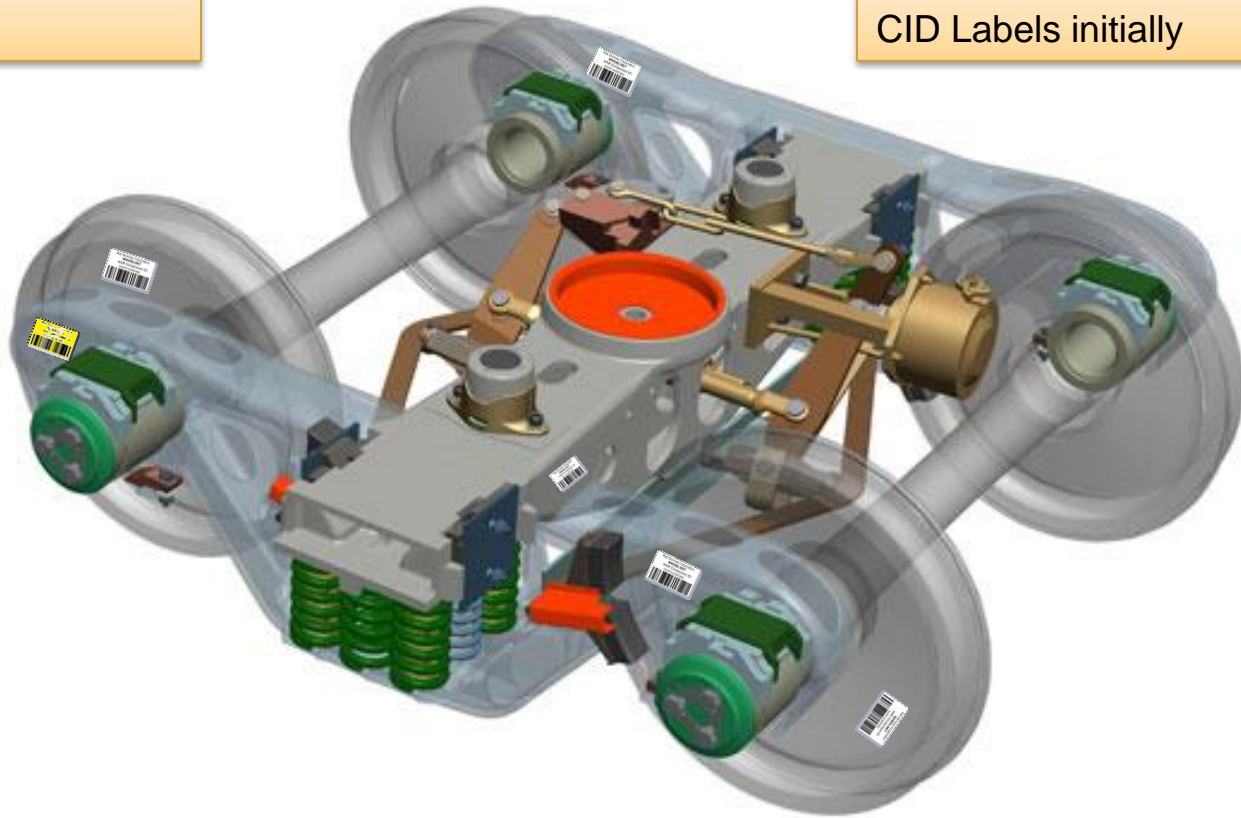


Automatically populates the Equipment and marks it as "In for Repair"

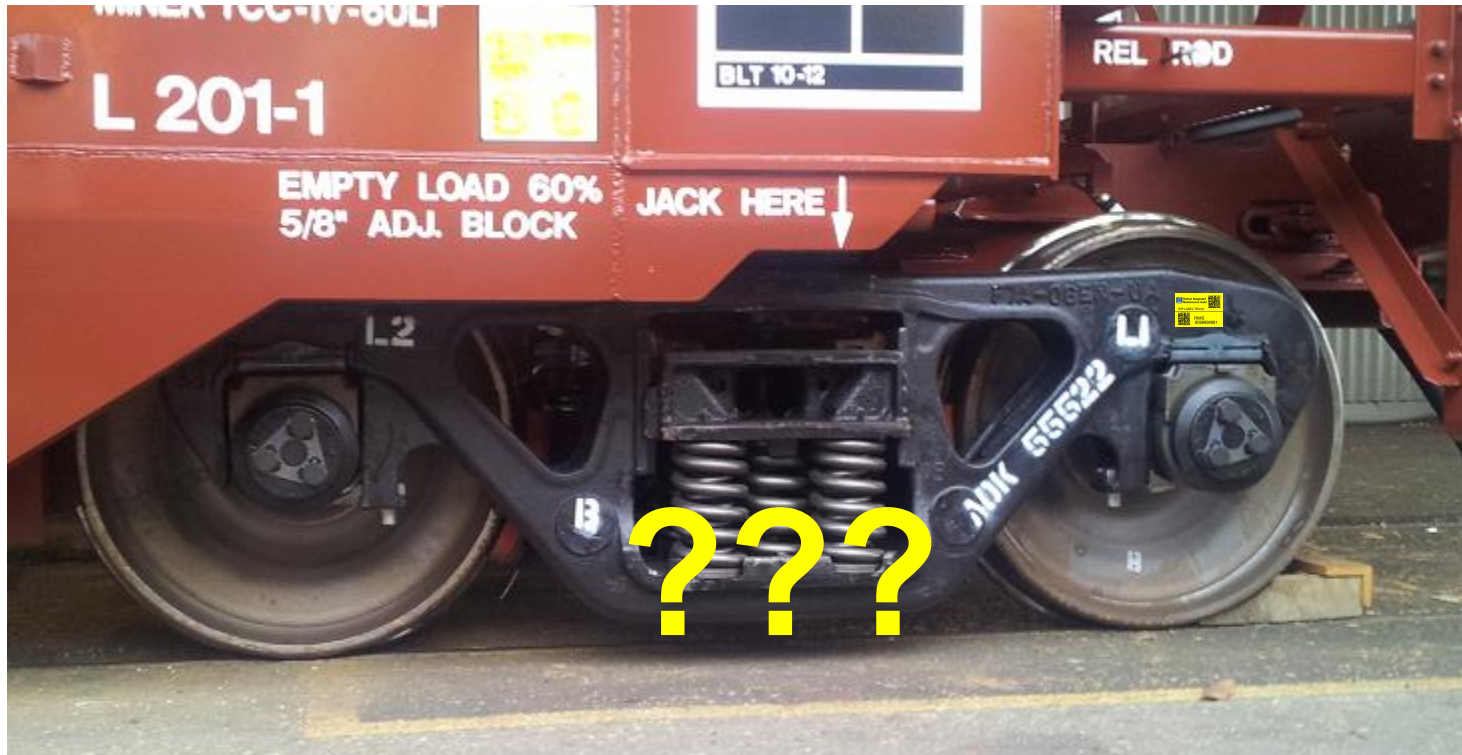
Truck Builder

Non-AAR Truck Work-in-Progress Label

Each truck will have 5 CID Labels initially



Component ID labels are not easily accessible after the truck is under the car



Truck Work-In-Progress Label



Truck Builder

- Enter truck component ID's as the truck is assembled
- Attach a WIP Label to the truck which is associated with all truck components
- When the Truck is associated with the car then all truck components are associated automatically by RIMS
- Allows entry of casting data not required by CEPM
- Data can be retrieved from Railinc and stored locally

Truck Builder Station

File Help

Truck Builder

Search

WIP Tag:

Wheelsets

1

2

Sideframes

Left

Right

Bolster

1

Condition Code	Reconditioned	Nominal Wheel Base	<input type="text"/>
Reconditioner AAR Facility Code	AMIS	Button Count	<input type="text"/>
Serial Number	1234	Pattern Number	<input type="text"/>
Cast Month	11	Cast Trademark	<input type="text"/>
Cast Year	12	Heat Number	<input type="text"/>
Design Feature Code	<input type="text"/>	Foundry AAR Facility Code	<input type="text"/>
AAR ID Code	<input type="text"/>	Heat Treat Load Number	<input type="text"/>
Drawing Number	<input type="text"/>	Classification / Reconditioned Date	Select a date <input type="text"/>
Drawing Number Revision	<input type="text"/>	Column Wear Plate Installed	<input type="text"/>

Recognizes existing 1D barcodes

Layout and content is fully customizable

Left Sideframe

Truck Work-in-Progress Label

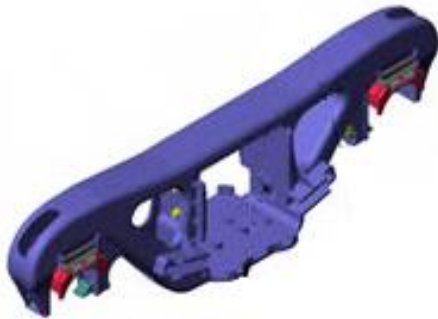
- Yellow color to differentiate it from other AAR labels
- Placed on a side frame at an easily accessible location
- Uses XML (like wheelset components)
- 2D Data Matrix Symbology

CASTINGS

Registration of Reconditioned and New

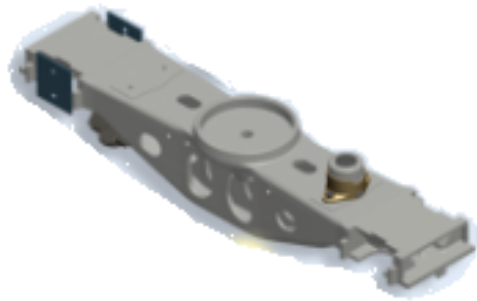
- Side Frames
- Bolsters
- Couplers

Side Frames – Required Data



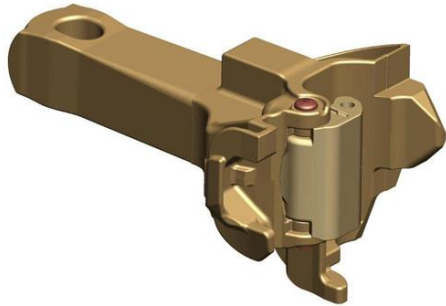
Side Frames	
company Code	company Code
idNumber	idNumber
C501	AAR Foundry Facility Code
C502	Cast Month
C503	Design Feature Code
C504	AAR ID Code
C505	Pattern Number
C506	Drawing Number
C507	Drawing Number Revision
C508	Serial Number
C509	Heat Number
C510	Heat Treat Load Number
C511	Reconditioner AAR Facility Code
C512	Not Used
C513	Classification / Reconditioned Date
C514	Condition Code
C515	Column Wear Plate Installed
C516	Nominal Wheel Base
C517	Button Count
C518	Cast Year

Bolsters – Required Data



Bolsters	
company Code	company Code
idNumber	idNumber
C401	Facility Code
C402	Cast Month
C403	AAR Design Feature Code
C404	AAR ID Code
C405	Pattern Number
C406	Drawing Number
C407	Drawing Number Revision
C408	Serial Number
C409	Heat Number
C410	Heat Treat Load Number
C411	Reconditioner AAR Facility Code
C412	Cast Trademark
C413	Classification / Reconditioned Date
C414	Condition Code
C415	Pocket Wear Plate Installed
C416	Converted Bolster
C417	Cast Year

Couplers – Required Data



Couplers	
company Code	company Code
idNumber	idNumber
C601	Condition Code
C602	AAR Code Number
C603	Catalog Number
C604	Cast Month
C605	Cast Year
C606	Serial Number
C607	Cavity Number
C608	Conditional Approval
C609	AAR Facility Code
C610	Heat Number
C611	Heat Treat Load Number
C612	Reconditioner AAR Facility Code
C613	Classification Date
C614	Reconditioned Heat Treat Load Number
C615	Reconditioners Tag

RIMS Castings Registration

- Collects casting CEPM data in the shop
- Saved for review before registering with Railinc
- Recall and review old casting data
- New registrations
- Modify a registration
- Delete a registration (nullification)
- Fully customizable entry screens
- Custom data fields

CODeC - Reconditioned Castings Registration

Component Data Collector (CODeC)

File Tools Window Help

Component ID:

SideFrame Bolster Coupler

Condition Code	<input type="text" value="Secondhand"/>	Drawing Number Revision	<input type="text"/>
Cast Month	<input type="text"/>	Serial Number	<input type="text"/>
Cast Year	<input type="text"/>	Heat Number	<input type="text"/>
Foundry AAR Facility Code	<input type="text" value="ASFZ"/>	Heat Treat Load Number	<input type="text"/>
Design Feature Code	<input type="text"/>	Cast Trademark	<input type="text"/>
Reconditioner AAR Facility Code	<input type="text" value="GRSC"/>	Classification / Reconditioned Date	<input type="text" value="2/4/2013"/>
AAR ID Code	<input type="text"/>	Column Wear Plate Installed	<input type="text"/>
Pattern Number	<input type="text"/>	Nominal Wheel Base	<input type="text"/>
Drawing Number	<input type="text" value="123EFG"/>	Button Count	<input type="text"/>

Copyright © 2013, Arkansas Industrial Computing, Inc. Collector **CODeC** Version: 1.1.1.25874

Layout and content is fully customizable

CODeC – Custom Elements

The screenshot shows the CODeC Component Data Collector software interface. The window title is "CODeC - Component Data Collector". The menu bar includes "File", "Tools", "Window", and "Help". There is a "Component ID:" field and "History" and "Search" buttons. Below the menu bar are tabs for "Bolster", "Coupler", and "SideFrame". The "SideFrame" tab is active, displaying a form with the following components and quantities:

Component	Value	Required	Qty	Value	Required
Column Wear Plate	11132	*	Qty	2	*
Wear Plate Securements			Qty		
Transdyne Wear Plates	11133	*	Qty	1	*
Welded Roof Liners	11111	*	Qty	2	*
Brake Beam Wear Plates			Qty		
Transdyn Lugs			Qty		
Column Wear Plate Lugs			Qty		

At the bottom of the form, there are tabs for "CEPM", "Page2", and "Inventory". A red arrow points to the "Inventory" tab with the text "Add your own custom elements". Below the tabs are "Save & Register", "Save", and "Cancel" buttons. The footer contains "Copyright © AIC 2012, 2013", "CODeC", and "Version: 2.2.0.24984".

Car Manager – Component View

The screenshot displays the Car Manager software interface. The window title is "Car Manager" and the menu bar includes "File", "Equipment", "Reports", "Tools", and "Help". The "Shop Code" is set to "AMIS".

Equipment Section:

Find: [] in Component ID [] Filtered []
Date: All [] 8/1/2013 [15] - 8/1/2013 [15]

Component ID	Component Type	Equipn
C4722000000001	Bolster	
C4723000000001	Coupler	
C4723000000002	Coupler	
C4721000000001	SideFrame	

4 Results

Component Details:

Component ID: C4723000000002 Registration Status: Success
Type: COUPLER Association Status: Not Associated
Equipment ID: Disposition: Good []
Truck WIP Tag: Comments: []

Component History Attachments

Condition Code	Reconditioned []	Foundry AAR Facility Code	MCT []
Reconditioner AAR Facility Code	AMIS []	Heat Number	[]
Catalog Number	E67CE []	Heat Treat Load Number	[]
Cast Month	11 []	Code Number	EKK24C05A2500E []
Cast Year	95 []	Classification Date	7/31/2013 [15]
Serial Number	2620 []	Reconditioned Heat Treat Load Number	5869 []
Cavity Number	NA []	Reconditioners Tag	[]
Conditional Approval	[]		

Buttons: Register [] Save [] Cancel []

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Industrial Enclosures for Truck Builder



- Sealed to NEMA 4 standards (dust and water)
- Internal cooling with heat sink
- 3 – Year manufacturer warranty for monitors
- Over 60 stations installed

Ruggedized Computer Hardware



Fully-rugged and sealed to IP65
Meets MIL-STD-810F to protect against dust, water, extreme temperatures and 4-foot drops to concrete.



RIMS Future Releases

- Inspections
 - Brake Tests
 - Reflectorization (decals)
 - Car Grade
- Associations
 - Brake Systems
 - Cushioning Units
 - Yokes
 - Draft Gears
- Truck Builder checks component type through Railinc

Questions?

Download the presentation

www.aicRail.com/CEPM.html



Railcar Integrated
Maintenance Suite

DATA COLLECTION • AUTOMATION

www.aicRail.com