Product & Services Catalog

Our Innovation Keeps Your Train Rolling

(678) 722-5261

sales@acsrail.com

www.acsrail.com

ACS Railroad Solutions
Products & Services for Today's Railroading Environment

Whether you're a Class I, Regional or Shortline Railroad, your face an array of challenges in this hyper-competitive environment for freight transport. Getting the shipment from point A to point B as quickly and safely as possible is always the goal, but you're under the gun to do more with less.

Technology from ACS Railroad Solutions can help you navigate complexity and give you a competitive edge. Our product and service offering can directly impact many of the key value drivers for your railroad.

Operational Efficiency
Get your locomotives repaired quickly and back on the road

Sustainability
Reduce your Greenhouse gas emissions and lower fuel costs

Enhanced Safety & Employee Wellbeing
For both Train Crews and Repair Shop associates

Regulatory Compliance
Products & Services to ensure compliance with FRA and/or internal requirements

Our Products

Railyard Devices
Innovative products that your maintenance crew can leverage to increase repair velocity, decrease repeat defect rate and ensure you get Power when and where you need it

Locomotive Enhancements
Add-ons to your existing fleet to automate and modernize locomotive operation and maximize the value of your PTC systems

Connectivity
A range of cables, antennas, converters and specialty products that facilitate both in-cab and remote data acquisition

Idle Reduction
Lithium Ion Battery Technology, working in conjunction with an AESS, reduces fuel usage and GHG emissions by maximizing time between Locomotive restarts

Our Services

Professional Services

- Process development and documentation
- Technical Training
- FRA and/or Internal Audits
- Project Management

Mechanical Labor

- Retrofit locomotives with new technology
- Troubleshooting

Our Innovation

With an expert team that encompasses over 350 years of railroad experience we understand your challenges and strive to bring to market customer inspired products and services. At ACS Railroad Solutions, when customers speak, we act. If you're in need of a technology solution that you don't see within this catalog, let us know as we love the challenge of solving valuable railroading issues.

Railyard Devices

Multi-Unit (MU) Test Kit

Automate trainline validation to drastically reduce expended labor, comply with FRA requirements, and ensure you can get Power when and where you need it.

- Complete validation process with one electrician instead of three
- Complete the validation process in 30 minutes instead of 90*
- Total reduction in man-hours expended of 90%
- Electricians no longer need to precariously position themselves between locomotives
- Lightweight and Easy to Transport
- Simple to use - console is powered off of MU receptacle and test lights match the receptacle configuration

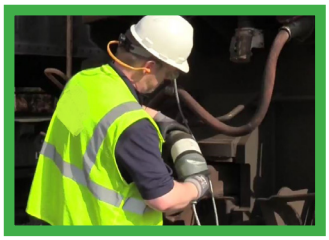
** Per Locomotive*

Verifying connectivity between locomotives is an FRA requirement, but is time consuming, laborious and can delay your train from getting back on the road. However, failure to comply can lead to train stoppages on the road and potential FRA penalties.

The ACS-RS MU Test Kit provides an automated, reduced labor method for verifying the 27 pin trainlines on all models of locomotives. The kit is easily transportable and consists of a test console, 27 pin jumper and sufficient length cables from the train stand in the cab to the long and short hood receptacles.

Current process requires an electrician in the cab and one on both ends of the locomotive. Manual test done pin by pin with a multi-meter

With ACS-RS MU Test Kit, a single electrician plugs the cable into the receptacle and uses console to complete the test in the cab



Ordering Information

ACS-RS Part #	Description
33198	MU Test Kit 27 Pin Trainline

Fiber-Optic Test Light

Fit for purpose solution to quickly detect fiber optic cable issues.

- Quickly identify bad fiber-optic cables that may be preventing you from having Power ready when you need it.
- Compact - easy to transport and use
- Manget mount enables cable verification to be done by one Electrician
- Can be used on both GE and EMD locomotives

A corrupted Fiber-Optic cable can stop your locomotive from getting underway and locating it can be tricky and time consuming. Railroad personnel are often left to create their own diagnostic tools and often two Electricians - one on each end of the cable - are required for troubleshooting.

The ACS-RS Fiber Optic test light is designed as an easy to use diagnostic tool specifically to address the issue of locating bad Fiber-Optic cables. A cable end inserts into the test light and a red beam is transmitted to verify cable continuity. After the cable is attached, the tester can be magnet mounted and the same Electrician can then move to the other end of the cable to confirm if the red beam has made it through.

Ordering Information

ACS-RS Part #	Description
33200	Fiber Continuity Test Light Kit with Canvas Carrying Case and Magnet Mount

Electrician Test Light

Compact, easy to use solution to test for control grounds on locomotive circuits

- Quickly identify locomotive electrical or safety issues due to compromised circuits
- Compact - easy to transport and use
- Lanyard and magnet mount enables hands-free operation
- Leads combine to make a handy jumper and includes overload fuse protection
- Light is visible in 360 degree radius through a protective lens

Lack of electrical continuity can stop your locomotive from getting underway and locating it can be tricky and time consuming. Railroad personnel are often left to create their own diagnostic tools leading to makeshift devices and also taking away time that could be spent on repair

The ACS-RS Electrician Test Light is designed as an easy to use diagnostic tool specifically to test for control grounds on the locomotive control circuits. On older locomotives the Test Light can be used to troubleshoot manual relay circuits

Ordering Information

ACS-RS Part #	Description
31931	Railroad Electrician Test Light

CPM Service Kit

Ensure CPM Memory isn't lost during a battery change-out and avoid the unnecessary cost and lost time associated with having to reprogram the module

- Full self contained and easy for the Electrian to transport
- Includes integrated battery test switch to ensure power is present
- Provides visual ID the battery is charged

Changing out Lead-Acid batteries is a common maintenance activity, but if the lack of DC voltage causes the CPM memory to be lost, you could be looking at a significant delay in getting that locomotive back in service.

ACS-RS CPM Service Kit is a great addition to your Electrician's tool kit. Easy to transport and use, the kit can ensure CPM memory is maintained, and time consuming reprogramming can be avoided

Ordering Information

ACS-RS Part #	Description
32762	CPM Service Kit 3.6V Battery Voltage Transfer Tool

Locomotive Enhancements

Electric Wiper Kit

Electric wipers offer significant cost savings, improved performance and enhanced crew comfort versus pneumatic wipers

- Reduced Maintenance effort and cost - Electric motors have a replacement cycle approx. four times longer than pneumatic
- No need to fix air leaks, replace rotted hoses or failed connectors
- Use of off the shelf wiper blades reduces replacement costs
- Cut in-cab noise levels in half
- Elimination of odorous air discharge into cab
- Electric wipers always return to home position and won't block forward facing camera like pneumatic wipers
- Improved visibility through greater wiper coverage (52% vs. 39% at centerline)

Historically locomotives have come from the manufacturer with wiper systems driven by pneumatics. Railroads have lived with the fact these system need frequent maintenance, and are noisy and odorous when in operation. Pneumatic wipers tendency to block the forward facing camera when the train is powered down is a more recent issue that ads to the list of why pneumatics are a sub-optimal approach.

The ACS-RS MU Electric Wiper Kit provides a better way. Next time you have a locomotive in for repair or overhaul, don't pour more time and money into fixing/replacing the pneumatic system. The ACS-RS solution is comparably priced to a new pneumatic system and will quickly pay for itself in reduced maintenance costs.

Delivered as a kit (unlike pneumatic systems), all the components you'll need are included to complete the straightforward installation process. Orderable as a wet or dry system and for Road or Yard units.

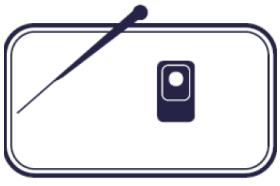
Electric Wipers also offer improved performance

Superior Windshield Coverage

Electric wipers operate off a higher pivot point, adding 30 square inches of additional windshield coverage

Won't block forward facing camera

When locomotive power is cut, pneumatic wipers often come to rest in a position that blocks the forward facing camera



Electric Wipers include a capacitor that allows the wiper to always return to a home position that does not block the camera

Ordering Information

ACS-RS Part #	Description
33329	Electric Wiper Kit Yard Unit
33337	Electric Wiper Kit Road Unit (Wet)
33344	Electric Wiper Kit Road Unit (Dry)

Locomotive Enhancements

Anti-Glare Film

Ensure your train crew can view display screens clearly and without distraction across the variable lighting conditions that may occur in a locomotive cab

- Improve safety by ensuring train crew can consistently view all PTC and other operational data and warnings
- Lessen discomfort glare and associated digital eye strain for crew members
- Reduce screen scuffing and scratching, and extend the usable life of the screen
- Cost effective - Approx 2% of the cost of replacing a broken display
- Easy to apply - can be done by your mechanics in 15 minutes without any training

Trains needs to keep moving 24/7/365, meaning locomotive operators need to deal with varying lighting conditions based on time of day, location & terrain and weather conditions. Simply rounding a curve can cause a sudden and drastic change in the visual environment in the cab.

These types of visibility issues are not new to locomotive engineers. However, in 21st century the stakes have risen with more advanced computer systems such as Positive Train Control (PTC) requiring a higher degree of operator interface. While PTC represents one of the most significant safety advances in the history of Rail, its impact can be severely diminished if a locomotive operator can't clearly see the displayed information.

In response to these challenges, ACS Railroad Solutions [ACS-RS] has partnered with 3M, a global leaser in anti-glare technology, to create a solution for the Railroad industry. When applied these filters can allow train crew to see the screens clearly and without distractions and in additional can protect your IDU screens from damage that may necessitate repair or replacement.

Specifications

Property	Typical Average Units
% Transmission	93.8%
Haze	24.5%
Normal Thickness (with adhesive)	.308mm
Steel Wool Abrasion	No Scratching, 125 g/cm2, 25 rubs, #0000 steel Wool
Pencil Hardness	5H
Water contact angle (Hydrophobic)	95 degrees
Hexadecane contact angle (Oleophobic)	55 degrees
Heat Resistance	60° C, 15 % RH, 7 days
Humidity Resistance	85% RH, 40° C, 7 days
Thermal Shock Resistance	-35 C to 60° C for 10 cycles at 11 hours/cycle

Ordering Information

ACS-RS Part #	Description
32434-1	Anti-Glare Film for 9 & 8 IFD and PTC display CDU
32569-1	SDIS Units Individual screen

Battery Cranking Monitor

In-Cab display of battery voltage levels, while under crank, facilitates proper diagnosis of locomotive starting issues in the Repair Shop, Yard or on the Road

- In the Shop, gives repair personnel visibility if they are giving Transportation back a locomotive with healthy batteries

When starting trouble occurs in the Yard or on the road:

- Train crews can provide the Locomotive Help Desk with key data to confirm if the batteries are the root cause
- Avoid wasting time attempting to jump shorted batteries
- Increase repair efficiency by identifying which battery needs to be changed-out

Locomotive starting issues can occur at multiple locations and lead to costly delays. But train crews and mechanical teams lack sufficient diagnostic data, and often just default to trying to jump the battery. Flying blind, multiple hours are wasted on batteries not healthy enough to accept a charge or when the starter circuit may be the root cause.

The ACS-RS Cab Battery Cranking Monitor provides an in-cab display of the voltage level of both batteries while being cranked. The monitor is placed in the cab, close to the isolation switch, and the two cables are routed to the locomotive battery box.

Now armed with insightful information, Mechanical can increase the likelihood they are returning to Transportation a Locomotive that won't experience battery related starting issues. When Yard or Line of Road starting issues do occur, crews can relay the monitor readings back to the Help Desk and Mechanical can efficiently address the issue and get the locomotive back in service.

ACS-RS Part #	Description
33397	In-Cab Mounted Battery Cranking Monitor (Batt F and R) with 20 Foot Leads and clips

Connectivity

Cab Signal Monitor

Connect serial devices to the locomotive IP network and enable remote administration, log downloading/retrieval and other administrative functions

- Signaling information becomes integrated within the primary locomotive network
- Ultra Cab II data becomes available for remote access, both in real-time or for later retrieval
- Facilitate communication with signals that detect lights, gates and bells
- Alert engineers to signal issues
- Monitor is easily configured without any special training

Previous generation cab signaling solutions, such as Ultra Cab II, were standalone systems that weren't intended to interact with PTC and other locomotive control systems. This created an island of information where key data had to manual retrieved, decoded and imported into other reporting systems. In many instances this scenario led to relying on locomotive engineers to notify safety personnel whether an FRA defined event has occurred during the run.

The ACS-RS Cab Signal Monitor is a Serial to Ethernet converter, that enables information from the legacy signaling system to be incorporated into the on-board network. Depending on the configuration of the PTC system, this data can now be immediately available via remote access to Operations control centers, creating greater real-time insight.

Ordering Information

ACS-RS Part #	Description
32986.010	Cab Signal Monitor, 10 Ft. Ethernet Kit Enclosure, Power Cable, Ethernet Cable D-Sub Cable
32986.025	Cab Signal Monitor, 25 Ft. Ethernet Kit Enclosure, Power Cable, Ethernet Cable D-Sub Cable

Ethernet Cables

Cat 5, Cat 5e, Cat 6A and Cat 7 cables, available as shielded/unshielded, halogen free and no smoke, with standard RJ-45 or sealed (IP67 rated) connectors

- Quick turn bayonet style connectors with an IP67 rating to prevent liquid and particulate ingress
- Stranded or Solid Wire Construction including armored version to provide increased performance and longer cable life even in the harshest operating conditions
- A variety of jacket types available for indoor and outdoor use including fire retardant plenum rated versions

Ordering Information
Please contact ACS-RS for details on your application so we can help you determine which Ethernet cable(s) is best suited for your application

Download Cable Starter Kit

Have the right cable readily available to plug your Logic Springs or comparable device into various locomotive systems.

The starter kit includes the cables listed below and comes with a canvas bag for easy transport

Ordering Information
Order as a Kit or Individual Cables

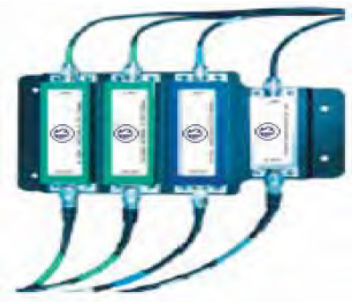
ACS-RS Part #	Description
30917	Download Cable Stater Kit, which encompasses all cables listed below in this table and includes canvas carrying case
30445	Logic Springs Test Adapter Cable, Universal Serial, 12 POS Circ Plug/DB9F PVC 12 FT
30446	12 POS Recep. DB25 M PVC 12 IN GE Dash 8 & 9
30447	EPIC 3 102, Air Brake Cable 12 POS Circular Recep/DB25 M PVC, 1 FT
30450	QUANTUM Pulse ISO Ampl. 12 POS Circ Recep to 7 POS Circ plug
30454	DB25 Serial Cable 12 POS Recep Pin/DB25 M PVC, 1 FT
30453	12 POS Recep Plug to 6 Pin MIL Plug 12 IN PVC
30454	DB25 Serial Cable 12 POS Recep Pin/DB25 M PVC, 1 FT
30455	12 POS M Recep/14 POS M Plug EPIC 3102 CCU-BCU Serial Adapter Kit
30757	Universal Serial Adapter Cable, 12 POS Recep M to DB9 Plug

Contact ACS-RS to check availability of additional download cables

Connectivity

RF Filter Kits

Eliminate internal and external RF interference, with Filter Kits designed and built to withstand the challenging environment a locomotive faces while on the road.



- Weather-proof (IP67 rated) design enables installation within the antenna farm instead of the cab vestibule
- All surfaces treated with corrosion resistant material
- Mounting Plate is weld-on ready
- Compatible with most other antenna systems that are currently in use

For Positive Train Control (PTC) it's essential Advanced Civil Speed Enforcement System (ACSES) messages make it to the locomotive without RF interference from external elements in the atmosphere or other train control system. In today's connected world, multitudes of filter kits are available, but picking one for a railroad environment can be a challenge. Lighter duty kits, need to be shielded from the elements by mounting it in the vestibule, where space is already at a premium. The preferred mounting location is the antenna farm on top of the locomotive, but you'll need a kit that can withstand rain, sleet and snow.

ACS-RS RF Filter Kits are constructed of durable machined components in order to withstand outdoor mounting. An IP67 rating and a weld-on ready mounting plate, make for a perfect solution for ensuring locomotive remote communications.

Ordering Information

ACS-RS Part #	Description
30560	Antenna Filter, Radio 220 MHz N-Type Female Connectors
30561	Antenna Filter, Radio 160 MHz N-Type Female Connectors
30563	Antenna Filter, Radio 160 UHF, UHF Female Connectors
30563	Antenna Filter Mounting Plate 4 Filter Mount Steel
30564	Antenna Filter Assembly, 2ea, 220 MHz, 1ec. 160 MHz 1ea UHF, on mounting plate

Specifications

Spec	Unit	30561	30560	30562
Frequency Range	MHz	160 - 163	216 -222	450 -460
Radio Frequency	MHz	>216	<163	<220
Bandwidth	MHz	3	6	10
Interface Independence	Ohms	50	50	50
Insertion Loss	dB	<0.5	<0.5	<0.5
Isolation	dB	>75	>75	>75
VSWR	N/A	1.5:1	1.5:1	1.5:1
Interface	N/A	N-Female x2	UHF-Female x2	N-Female x2
Power Rating	Watts	100	100	50
Dimensions	Inches	7.25 x 2.25 x 1.13	7.25 x 2.25 x 1.13	5.25 x 2.0 x 1.13
Ingress Protection	N/A	IP67	IP67	IP67

Connectivity

Locomotive Wiring Harnesses

Custom kitted assemblies to help speed along your locomotive rebuild project

- Experienced ACS-RS personnel work with your team to create the wire run list for your locomotive rebuild
- Harnesses built with components that meet or exceed your specifications
- All harnesses pre-kitted to facilitate efficient installation

Locomotive rebuilds are a major undertaking that can tie up your personnel for extended periods of time. Determining the specifications for the wiring that needs to be replaced is a step that's required even before finding a source for the harnesses.

ACS-RS expertise can make this whole process easier and free-up your Electricians for other tasks. Our experts can work with your project team to build the wire run list for any type of locomotive. From there we take responsibility for getting the harnesses constructed and kitted, all the way rigorously ensuring your specifications are met.

Example of Wire Run List:

30780 MP15 HARNESS 'START' 2X14AWG 2X8AWG 2X40AWG POLYRAD 25FT						
LABEL TEXT	ZONE LABEL	GAUGE	LENGTH	HARNESS LABEL	ZONE LABEL	LABEL TEXT
START HARNESS						
STC STA	STR PAN	14	25		ENGINE	STC STARTER MOTOR
STD ST COIL NEG		14	25			STD STARTER MOTOR
STPA STA (FR-NEG)		8	25			STPA STARTER MOTOR
STNX STA (BK-POS)		8	26			STNX STARTER MOTOR
STP ST (FR-NEG)		4/0	25			STP STARTER MOTOR
STN ST (BK-POS)		4/0	25			STN STARTER MOTOR

Locomotive Antennas

A variety of antennas, across multiple frequency ranges and bandwidths all built to common Radio Frequency specifications used within the Railroad industry

- High strength cast aluminum construction
- Compact, low profile design
- Includes all necessary hardware for secure installation

ACSRS Part Number
29397 159.50-163.50 MHz
TRANSIT VHF ANTENNA

ACSRS Part Number
29400 217-223 MHz
TRANSIT
NO RADOME N ANTENNA

ACSRS Part Number 29398
450-465 MHz TRANSIT
N ANTENNA

Model		29397	29400	29398
Frequency Range	MHz	138-163	214-228	450-465
Bandwidth	MHz	2.5	14	15
Interface Impedence	Ohms	50	50	50
Gain		Unity	Unity	Unity
Radiation Pattern	dB	Omni-Directional	Omni-Directional	Omni-Directional
Construction	dB	Cast Aluminum	Cast Aluminum	Cast Aluminum
VSWR	N/A	1.5:1	1.5:1	1.5:1
Interface	N/A	VHF-Female	N-Female	N-Female
Power Rating	watts	300	300	50
Dimensions	inches	21.75" x 2.25" x 4.13"	16.5" x 2.25" x 4.13"	6.75" x 2.50" x 2.50"

50 Ohm Radiating Cable

7/8" diameter, Low Smoke, Non-Halogenated, Fire Retardant jacket. Conforms to IEC332-1, IEC332-3C, UL 1685-12

Features & Benefits	
100% Made in the USA (Buy America, Title 49 Compliant) NFPA-130/NFPA-502 Compliant (2017 Edition) & CMG-LS Listed No Water Migration 15 Year Warranty	
Indication of Slot Alignment	none
Recommended Hangar Spacing, ft (m)	6 (2)
Minimum Distance to Wall, in (mm)	2 (50.8)
Jacket Color	black

Physical Dimensions	
Center Diameter, in (mm)	0.383 (9.73)
Diameter Over Dielectric	0.980 (24.89)
Diameter Over Outer Conductor, in (mm)	2 (50.8)
Maximum Diameter Over Jacket, in (mm)	1.104 (28.04)
Center Conductor	Solid Copper Tube
Outer Conductor	Dual Slotted Solid Aluminum Tool

Electrical Characteristics	
Maximum Frequency, GHz	5
Peak Power Rating, KW	90
DC Resistance, Ohms/1000ft (1000m)	
Center	0.47 (1.54)
Outer	0.24 (0.78)
DC Breakdown, kV	6.7
Capacitance, pF/ft (m)	22.3 (73.16)
Inductance, mH/ft (m)	0.056 (0.184)
Jacket Sparks, kV RMS	8
VSWR min, (dB)	1.38 (16.0)
VSWR in-band, (dB)	1.30 (17.7)
Impedance, Ohms	50 + or - 2
Velocity of Propagation	91%

Regulatory Compliance/Certifications
RoHS 2011/65/EU Compliant

Electrical Performance			
Frequency, MHz	Attenuation dB/100 ft	dB/100 m	Coupling Loss
150	0.43	1.40	64 (68)
220	0.54	1.76	66 (69)
300	0.68	2.22	69 (72)
350	0.75	2.45	68 (71)
400	0.83	2.71	71 (73)
450	0.93	3.05	62 (67)
500	1.08	3.53	72 (74)
700	1.31	4.29	65 (68)
800	1.44	4.71	64 (68)
900	1.66	5.45	60 (64)
960	1.81	5.93	64 (68)

Mechanical Characteristics	
Minimum Bend Radius, in (mm) - Single	13 (330.2)
Cable Weight, lb/ft (kg/m)	0.33 (0.50)
Bending Moment, ft lb (N m)	26 (35.1)
Tensile Strength, lb (kg)	734 (333.6)
Flat Plate Crush, lb/in (kg/mm)	132 (2.36)
Recommended Install Temp., °F (°C)	-10 to 170 (-23 to 77)
Recommended Storage Temp., °F (°C)	-40 to 170 (-40 to 77)
Recommended OperatingTemp., °F (°C)	-40 to 170 (-40 to 77)

Ordering Information

ACS-RS Part #	Description
32372	50 Ohm Radiating Cable, 7/8"

Idle Reduction

SP Rails System

Lithium Ion Battery system works in conjunction with an AESS to reduce fuel usage and cut GHG emissions by maximizing time between Locomotive restarts

- Powers auxiliary air compressor, reducing restarts due to a drop in main air reservoir pressure
- "Tops Off" the Lead Acid battery to delay restarts that may be caused by drain from parasitic loads
- Power the locomotive's auxiliary electrical loads, including HVAC - enhances crew comfort and decreases motivation to over-ride the AESS
- Depending on use case, can reduce idle time up to 50% leading to significant fuel cost savings
- Reduced restarts can extend service life of multiple components ranging from filters to starter motors

It's not practical to just turn off your Yard Locomotives when not in use. There are essential operational systems (Oil, Water, etc.) that need to be maintained, not to mention HVAC, Safety and Analytic systems. But leaving a Locomotive running around the clock creates a huge waste of fuel and is counter-productive to Sustainability initiatives.

An Automatic Engine Start/Stop (AESS) system can help address these issues by monitoring key operating parameters to periodically stop the engine when power isn't required, and restart when readings fall below pre-set thresholds. However, AESS systems are limited in the amount of idle time reduction they can provide and are a binary solution where all systems are either off or on.

The SP-Rails systems from ACS-RS works in tandem with an AESS to potentially further reduce idle time by up to 50%. Using a Lithium Ion system, proven in other demanding transportation applications, SP-Rails can continue to power some key operational systems and reduce multiple causes of an AESS restart. Additionally, other auxiliary systems stay operational. That includes the HVAC system, meaning your crew can stay comfortable and not have a reason to manually restart the engine to cool or heat the cab.

Ordering Information
System requirements vary based on Locomotive Model and Operating Conditions
Please contact ACS-RS for details on your application

Services

Project Based and Ongoing Expertise and Resources to help fill in the gaps

Professional Services

- Process development and documentation
- Technical Training
- FRA and/or Internal Audits
- Project Management

Mechanical Labor

- Retrofit locomotives with new technology
- Troubleshooting

You've got projects to get done, projects that can have a large impact on your Railroad's efficiency, cost and sustainability goals. But in this age of Precision Schedule Railroading, you may no longer have the necessary expertise in-house, or just not have enough personnel with available bandwidth to tackle the project in a timely manner.

ACS-Railroad solutions maintains a network of experienced Railroaders with a wide range of applicable skill sets. Whether you need assistance in developing processes, training associates, or just skilled labor to get new technology installed, we can get your initiative up and going quickly.

Please contact ACS-RS to discuss how we can be of service.