TELEMATICS

ICRANETRAX.COM

WHO IS A1A SOFTWARE?

Technology company solely dedicated to the crane and construction industry A team of industry experts with a combined 80+ years of experience developing and supporting Solutions for this industry

Backed by many oem's like Link-Belt, Manitowoc and Tadano Mantis

A1A Software

weison alloadau

9

In 2007, A1A was commissioned by Link-Belt to develop 3D Lift Plan.

thisall

start?

- Trusted and respected
 in the crane industry
- One stop shop for your crane owners

Telematics

1. WHAT IS TELEMATICS 2. CRANE STANDARDIZATION 3. 6 Key Factors to Consider 4. WHAT ELSE CAN TELEMATICS DO FOR YOU? 5. OEM INSTALLED TELEMATICS VS AFTERMARKET

WHAT IS TELEMATICS

Telematics is a data collection system that allows OWNERS OF MACHINERY TO VIEW THE CURRENT OPERATION AND FUNCTION OF THEIR ASSESTS. IT'S TRUE VALUE IS WHEN YOU TAKE THE DATA AND TURN IT INTO USEFUL INFORMATION. OWNERS CAN THEN USE THAT INFORMATION TO MAKE INFORMED DECISIONS AND OPTIMIZE THEIR OPERATION. WHEN THE DATA IS SHARED WITH THE OEM AND IS KEPT FOR THE LIFETIME OF THE ASSET IT ALLOWS OWNERS AND OEM'S TO PARTNER IN ANALYZING THIS DATA. BY ANALYZING THE HISTORICAL USAGE AND FAULTS OF THE Asset, engineers for the OEM and Maintenance PERSONNEL FOR THE OWNER CAN BETTER PREDICT AND MAKE ADJUSTMENTS TO IMPROVE PRODUCTIVITY AND RELIABILITY OF THE ASSET.

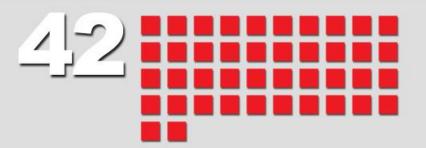
NO STANDARD FOR CRANES.



STANDARD

Developed for construction industry OEM's, and currently does not include crane specific data.



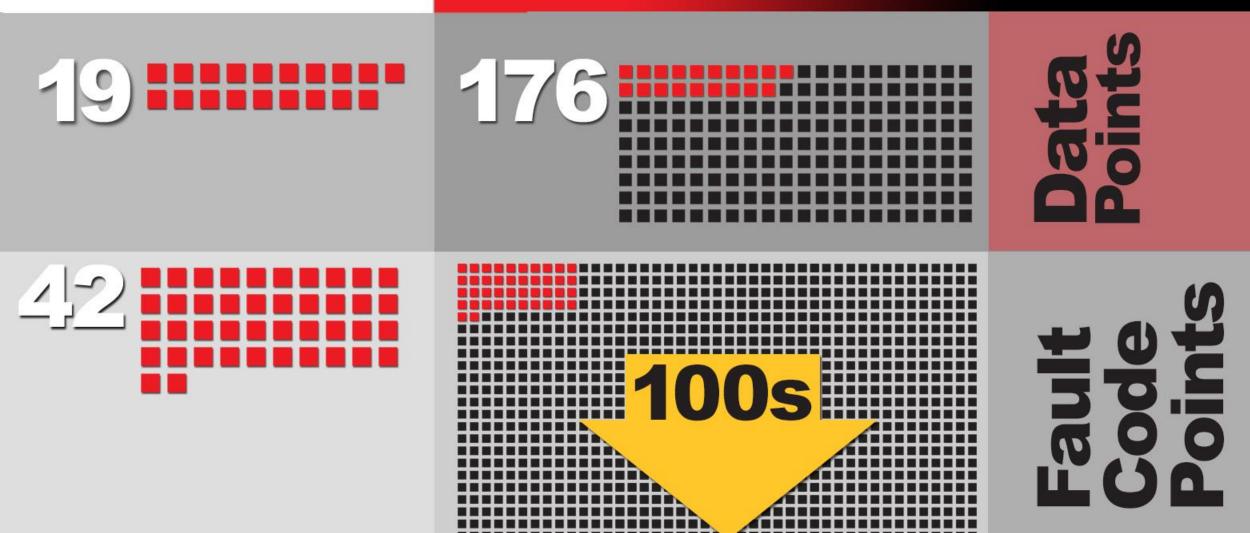






STANDARD

iCraneTrax Powered by Link-Belt



Alert	Be alerted when an asset needs maintenance
Aware	Be aware by having reports emailed directly to you, at your preferred time
Monitor	Monitor when the asset is working or sitting idle, or monitor where it has been
Find	Quickly find the asset's location
Check	Check actual operating times
Diagnose	When there is an issue with the asset quickly diagnose without having to send a technician out.

WHAT CAN TELEMATICS DO FOR YOU?

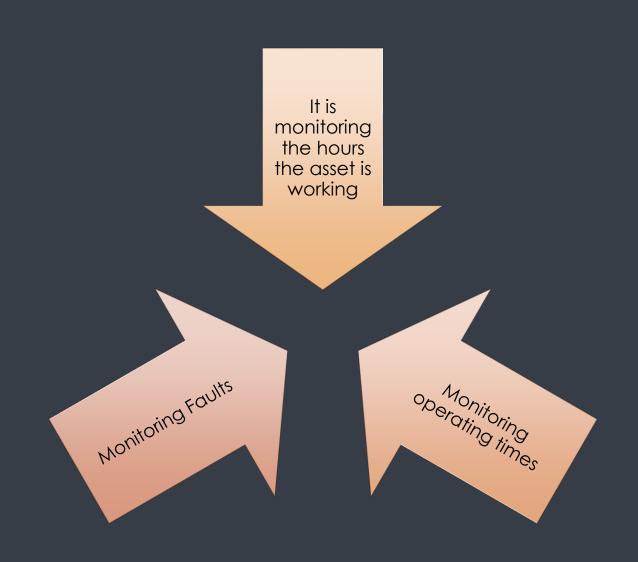
ALERT

Be alerted when an asset needs maintenance

FIT BIT FOR YOUR ASSETS



TELEMATICS IS LIKE A FIT BIT FOR YOUR ASSET



Link-Belt HTC-86100 (N3K6-5002)

Phoenix MTG (Link-Belt Telescopic), GPS Unit ID #727220

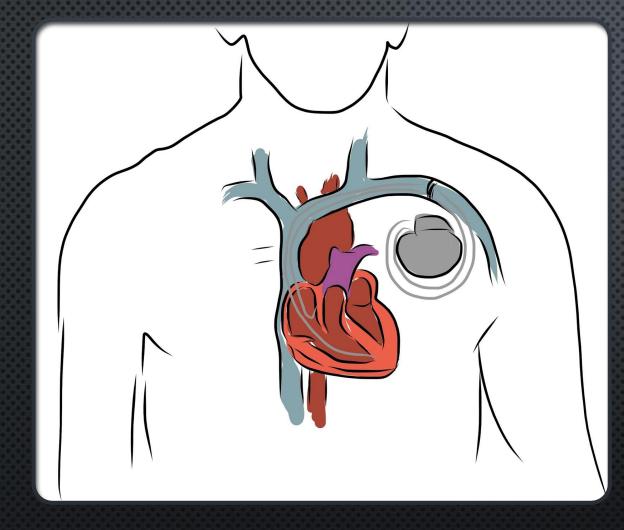
Select an asset...

Summary	Positions	Maintenance	Data	Dashboard	Diagnostics	Faults	Unit Data	
Overview	Schedule	History						
Component			Service D	ue at 100%		Due	Las	t Service
On-Highway I	Engine			64%		180 hou	rs 9/1,	/2017
Boom Hoist			Maintenanc	e interval not speci	ified	-	-	
Front Winch	Гime		Maintenanc	e interval not speci	ified	-	-	
Rear Winch T	ime		Maintenanc	e interval not speci	ified	-	-	
Swing			Maintenanc	e interval not speci	ified	-	-	
Latching Tele	scopic Boom		Maintenanc	e interval not speci	ified	-	-	
Hydraulic Luf	fer		Maintenanc	e interval not speci	ified	-	-	
Counterweig	nt Mode		Maintenanc	e interval not speci	ified	-	-	
Travel			Maintenanc	e interval not speci	ified	-	-	
Full Power Te	elescopic Boom	ı	Maintenanc	e interval not speci	ified	-	-	

BE ALERTED OF WHEN MAINTENANCE IS COMING DUE

AWARE

BE AWARE BY HAVING REPORTS EMAILED DIRECTLY TO YOU, AT YOUR PREFERRED TIME



TELEMATICS IS LIKE A MODERN DAY PACEMAKER

• A PACEMAKER IS CONSTANTLY MONITORING THE HEART AND SENDING THIS INFORMATION BACK TO THE DOCTOR TO ANALYZE.

Email Reports

Subscribe	
Report	On-Highway Engine Summary
Frequency	Weekly v
Day	Friday •
Time	Between 4pm and 5pm Eastern 🔻
	Send a test email to tawnia@a1asoftware.net
	Submit

Subscriptions Delivery Report Fleet Daily between 4pm and 5pm Eastern Unsubscribe Cautions Load on Daily between 4pm and 5pm Eastern Unsubscribe Hook Recent Daily between 4pm and 5pm Eastern Unsubscribe Faults Every Monday between 6am and 7am Eastern; Data from the Fleet Unsubscribe previous week will be displayed Summary The 1st of every month between 8am and 9am Eastern; Data Crane Unsubscribe from the previous month will be displayed Usage

Reports will be sent to tawnia@a1asoftware.net Edit

TELEMATICS WILL EMAIL REPORTS RIGHT TO YOUR MAINTENANCE PERSONNEL TO HELP THEM MONITOR THE CRANES HEALTH AND IMPROVE ITS LONGEVITY.

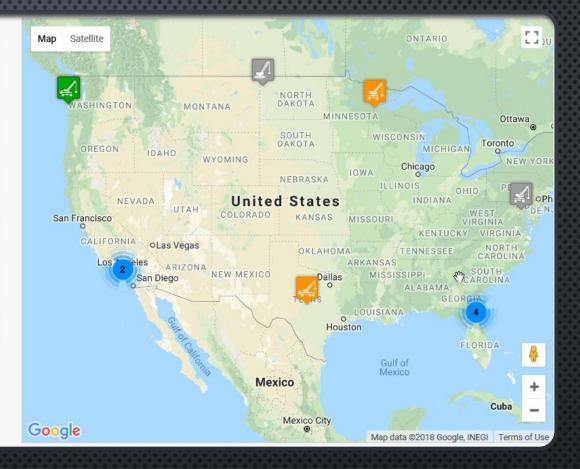
MONITOR

Monitor when the asset is working or sitting idle and where its been

HOW ARE MY ASSETS DOING?

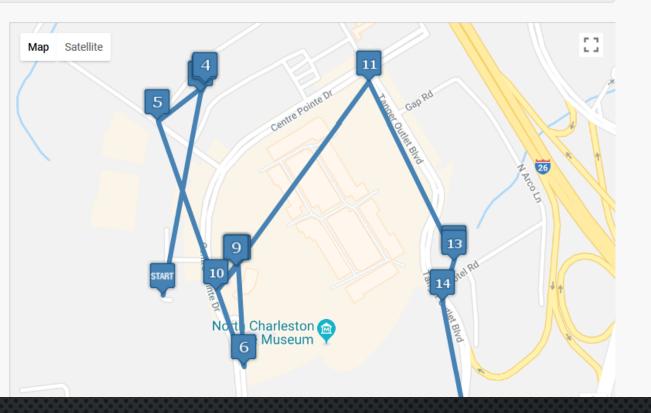
		96996666666666			
Asset	Engine (hours)	Idle (hours)	Odometer (miles)	Fuel Used (gallons)	CO2 Emissions (kg)
Ford Expl (357042064460018)	296	-	9,702	-	-
Ford F350 (359804080536297)	128	-	14,581	-	-
Grove RT765E-2	443	-	-	492	-
Link-Belt 298 HSL	* 1,513	* 318	-	* 3,417	*34,662
Link-Belt ATC-3210	1,839 * 2,871	1,239 * 1,998	17,970	2,391 * 3,689	24,258 *37,423
Link-Belt HTC-86100	213	97	4,245	1,422	-
Link-Belt RTC-80150 Series II	* 980	* 542	-	* 2,865	*29,065
Link-Belt RTC-8080 Series II	* 3,065	* 1,843	-	* 5,927	*60,128
Link-Belt TCC-1400	* 1,355	*2	-	* 2,217	*22,487
Mack Semi truck (359739077501351)	18,340	158,669,168	626,985	94,585	-
Manitex Boom truck (359739077597318)	8,070	-	86,683	21,641	-
Manitowoc MLC300	2,886	-	-	1,428	-

		ID Number	Name
5	•	Truck - 1	Ford Expl
		Truck - 2	Ford F350
B		65 Ton	Grove RT765E-2
		Lattice Crawler - 1	Link-Belt 298 HSL
5	4	All Terrain - 1	Link-Belt ATC-3210
5	-	100 Ton	Link-Belt HTC-86100
	A	150 Ton RT	Link-Belt RTC-80150 Series II
P	4	80 Ton RT	Link-Belt RTC-8080 Series II
B	•	140 Ton	Link-Belt TCC-1400
B		Semi - 1	Mack Semi Truck
P	۶	Boom Truck - 1	Manitex Boom Truck
P		330 Ton	Manitowoc MLC300



WHERE ARE MY COMPANY ASSETS?

« < Page 1 of	12 > »		<i>b</i> →
Date/Time	Heading	Speed (mph)	Address
5/22/2018 11:16 PM	G	0	4875 Tanger Outlet Blvd, North Charleston, SC 29418, USA
5/22/2018 11:14 PM	Я	20.6	4855 Tanger Outlet Blvd, North Charleston, SC 29418, USA
5/22/2018 10:24 PM	G	0	4855 Tanger Outlet Blvd, North Charleston, SC 29418, USA
5/22/2018 10:24 PM	*	7.9	4855 Tanger Outlet Blvd, North Charleston, SC 29418, USA
5/22/2018 10:23 PM	×	13.1	4840 Tanger Outlet Blvd, North Charleston, SC 29418, USA
5/22/2018 10:22 PM	ĸ	10.6	4959 Centre Pointe Dr, North Charleston, SC 29418, USA
5/22/2018 10:21 PM	•	0	4959 Centre Pointe Dr, North Charleston, SC 29418, USA
5/22/2018 10:18 PM	G===	0	4959 Centre Pointe Dr, North Charleston, SC 29418, USA
5/22/2018 10:17 PM	*	5.0	4959 Centre Pointe Dr, North Charleston, SC 29418, USA

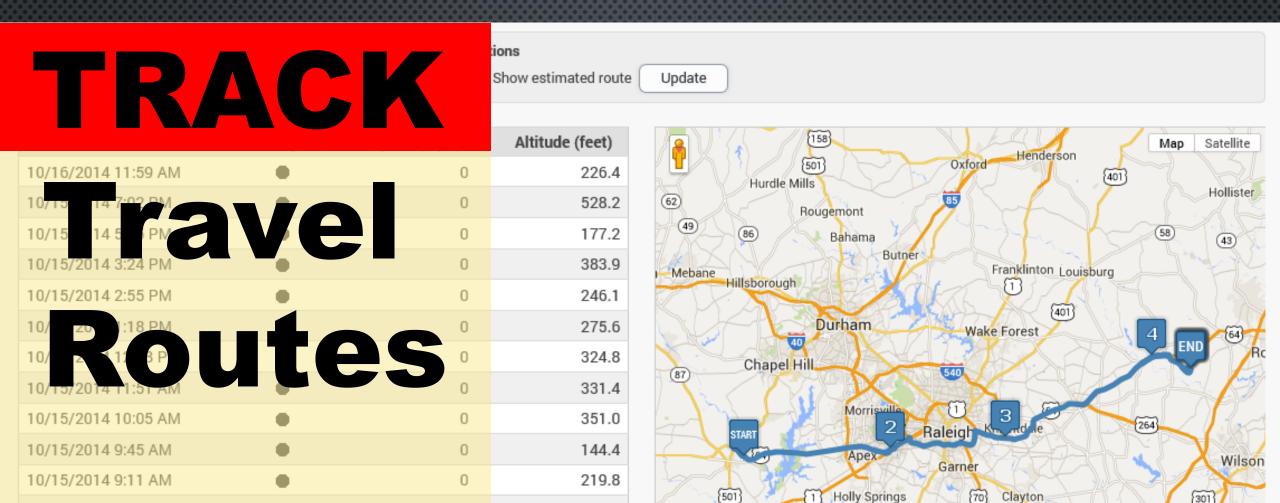


WHY IS MY ASSET OUT UNTIL 11:16 PM

FIND

QUICKLY FIND THE ASSETS LOCATION

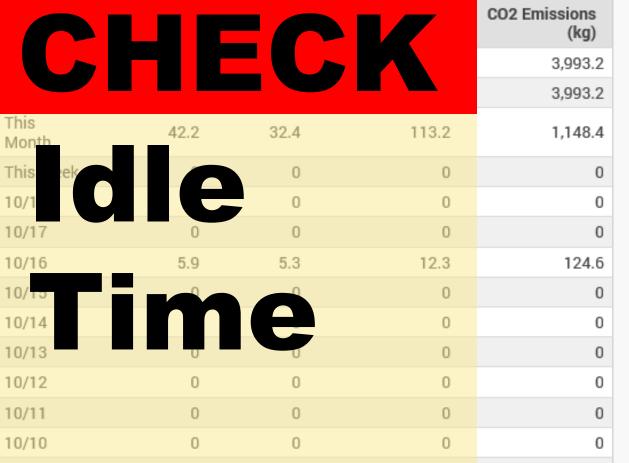
WHEN WILL MY ASSET GET TO THE JOB ?

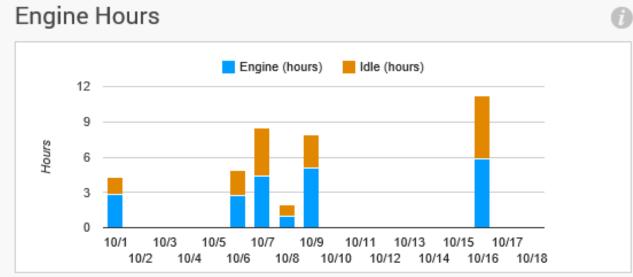


CHECK

CHECK ACTUAL OPERATING TIMES

WHY IS MY ASSET USING SO MUCH FUEL?



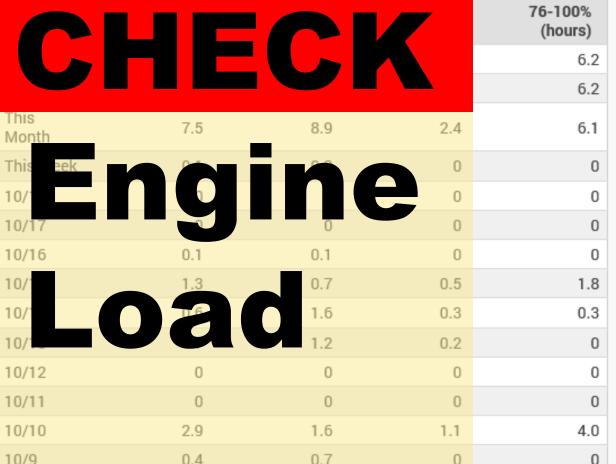


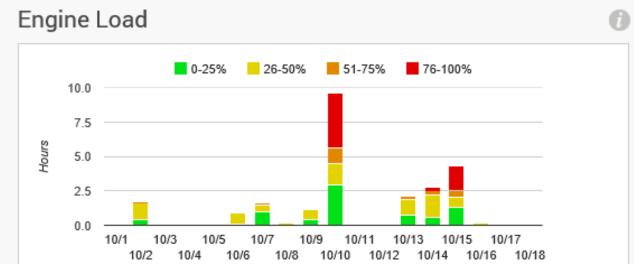




A

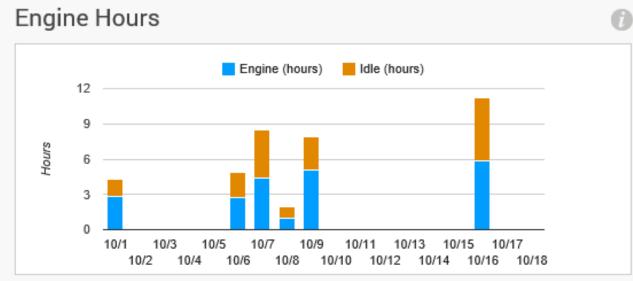
WHY IS MY ASSET USING SO MUCH FUEL?





WHY IS MY ASSET USING SO MUCH FUEL?





Fuel Used



A

DIAGNOSE

When there is an issue with the crane quickly diagnose it without having to send a technician out first

DO YOU REALLY NEED TO WAIT FOR A SERVICE TECH WHEN THERE IS AN ISSUE? With most telematic systems you can begin troubleshooting without waiting for a service tech!

iCran	eTr <u>ax</u>	Info	rmation	Training	Support	Logout	Admin				Powered by
	۹ 🗅	<i>8</i> E		0 · Q	· • •	S S	X 🦉	*			
Link-Be	It HTC-	86100								Telematics Fle	eet Map CraneSTA
		escopic), GPS Ur	nit ID #849454							Select an a	asset ~
Summary	Positions	Maintenanc	e Data	Dashboard D	iagnostics Faul	ts Unit Data					
Engine F	RCL Boom	DM1									
From	То										2
5/31/2018		Uţ	pdate								
« « P	age 1 of 2	> >>									
Date	Details	Engine Speed (rpm)	Boost Pressure (psi)	Oil Pressure (psi)	Coolant Temperature (F)	Battery Voltage (Volts)	Percent Torque (Percent)	Fan Speed % On (Percent)	Travel Speed (mph)	Average Fuel Rate	Ambient Temperature (F)
6/7/2018 2:47:56 PM	Details	700	1	24	176	14	13	0	0	0	77.1
6/7/2018 1:47:56 PM	Details	1,202	2	36	177.8	14	13	0	0	0	73.3
6/7/2018 10:47:56 AM	Details	980	3	33	177.8	14	24	0	0	0	71.3
6/7/2018 9:47:56 AM	Details	0	0	0	183.2	12.7	0	0	0	0	70.8
6/4/2018 3:05:27 PM	Details	700	1	24	176	13.95	13	0	0	0	67.5
6/4/2018 2:05:27 PM	Details	1,415	16	36	177.8	14	52	0	42	0	68.4
6/4/2018 11:05:27 AM	Details	700	3	26	181.4	14	13	0	0	0	63

GO RIGHT TO THE DIAGNOSTIC PAGE

Definitions included on this database are reprinted with permission from SAE J1939 Copyright © SAE International. Further use or distribution is not permitted without permission from SAE International.

« « Page 1 of 4 »			
Date	SPN	FMI	Description
6/7/2018 6:51 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
6/6/2018 8:22 AM	10405	31	Unknown SPN (10405) Condition Exists
6/6/2018 7:31 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
6/5/2018 8:44 AM	10405	31	Unknown SPN (10405) Condition Exists
6/5/2018 6:51 AM	24100	31	Unknown SPN (24100) Condition Exists
6/5/2018 6:48 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
6/4/2018 10:50 AM	10405	31	Unknown SPN (10405) Condition Exists
6/4/2018 10:45 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
6/1/2018 6:40 AM	10405	31	Unknown SPN (10405) Condition Exists
6/1/2018 6:11 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
5/30/2018 6:45 AM	10405	31	Unknown SPN (10405) Condition Exists
5/30/2018 6:16 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
5/25/2018 6:17 AM	111	18	Engine Coolant Level 1 Below Normal Range; Moderately Severe Level
E /0 / /0010 7:00 ANA	10405	01	Halmann ODN (10405) Condition Erists

DM1 DIAGNOSTICS

LINK-BELT'S PULSE SYSTEM WILL BURST TRANSMIT LMI DATA TO ICRANETRAX EVERY 10 SECONDS FOR 10 MINUTES

	3/4/2014 1:47 PM	3/4/2014 1:47 PM	3/4/2014 1:47 PM	3/4/2014 1:47 PM	3/4/2014 1:47 PM	3/4/2014 1:46 PM		
	Details	Details	Details	Details	Details	Details		
Live Data								
Load on Hook	1,586	1,597	1,571	0	1,610	1,587		
Load Capacity	44.320	44.320	44.320	0	44.320	44.320	000000000000	999999999999999
Load Radius			3/4/2014 1:47 PM	3/4/2014 1:46 PM				
Total Radius			Details	Details	Details	Details	Details	Details
Boom Angle	Message Area Overload		0	0	0	0	0	0
Boom Head Angle	ATB		0	0	0	0	0	0
_	Bypass		0	0	0	0	0	0
Boom Length	Invalid Configuration		0	0	0	3	0	0
Boom Reel Length	Rigging Mode		0	0	0	0	0	0
Swing Angle	Travel Mode		0	0	0	0	0	0
	Manual Mode		0	0	0	0	0	0
Head Height	Do Not Retract Boom		0	0	0	1	0	0
Head Pressure	Boom Length Alarm		0	0	0	0	0	0
Ded Deserves	Min Boom Angle Alarm		0	0	0	0	0	0
	Max Boom Angle Alarm		0	0	0	0	0	0
	Height Alarm		0	0	0	3	0	0
	Radius Alarm		0	0	0	0	0	0
	Swing Angle Alarm		0	0	0	0	0	0
	Defined Area Alarm		0	0	0	0	0	0
	FLTW Alarm		0	0	0	1	0	0
	RCL Incompatibility		0	0	0	0	0	n

icranetrax	Information		pport Logout	Admin	Ċ.	Cran	eSī
Grove RT765E-2		≝ C	∎• 🗳 🖋	🔮 😰 🥏	*	Telematics Fleet Map Cranes	STAR
	Maintenance Data	Dashboard Unit D	ata				
RCL/LMI and Dashboard Date/Time 6/1/2018 12:01:55 PM	Report LMI Override Off			6/1/2018 1	2:01 PM Eastern	Rigging Code 090505	
6/1/2018 11:55:16 AM 6/1/2018 11:25:16 AM 6/1/2018 11:25:06 AM 6/1/2018 11:25:05 AM	Crane Dashboard Crane Dashboard Anti-Two-Block Occurred LMI Override On			1 Par	ts of Line (Hoist #2)	Crane Speed Not Present Offroad Indicator	
6/1/2018 11:25:05 AM 6/1/2018 11:25:05 AM 6/1/2018 9:14:45 AM 6/1/2018 9:14:35 AM	Safe Load Crane Dashboard Anti-Two-Block Occurred		36.1 ft Boom		ts of Life (Hoist #2)	Boom Shorting PlugJib Up Bypass	
6/1/2018 9:14:34 AM 6/1/2018 9:14:34 AM 6/1/2018 7:19:40 AM	LMI Override On Safe Load Crane Dashboard		4.5 °			 Load Limiter LMI Override LMI: Normal Conditions 	
6/1/2018 7:19:30 AM 6/1/2018 7:19:29 AM 6/1/2018 7:19:29 AM 5/31/2018 10:31:40 AM	Anti-Two-Block Occurred Safe Load LMI Override On Anti-Two-Block Occurred	13,007	7 lbs ctwt	2,646 lbs 7,716 lbs Capacity			
<pre></pre>				0.1 ° Swing Angl 31.5 ft Load Rad		0 10 20 30 40 Wind Speed	 50
			0% / 0% Front Outri 0% / 0% Rear Outri			0 mph	

∕₳

WHAT ELSE CAN TELEMATICS DO FOR YOU?

PREDICTIVE MAINTENANCE

iCraneTrax	Information	Support	Logout	Admin		
WHEN	bôt	NEP) CHA	NGE OL	
All Crane Rental Con Phoenix MTG, GPS Unit ID #630801 Summary Positions Data	rp - Link-Bel	t ATC-3210 HYD nostics Unit Da	RAU	LIC OI	an asset	
Summary				Last Known	Location 11/3/2014	12:25 PM
On-Highway Engine				A State Rd	231 Old Courthouse Road, Wa	rsaw, NC 28398, X
Odometer Engine Hours		627.7 n 54.2 h			USA	
Fuel Used	_	80.1 g		1	The	- "Ad
CO2 Emissions		812.4 k		[1911]	B F Grady Rd	
Average Fuel Foonomy		20 n	ppg	- Fast	Breth	N. N.
Hydraulic oil l	nours				184.0	hours
Hyd oil % life i	remaining				91.0	Percent
wind on and (1 1 10 1001 4					and b
Engine Oil Life Remaining		63.0 P		Sales	Servi	ice
Hydraulic oil hours		184.0 h				
Hyd oil % life remaining		91.0 P		Link Belt	Link Belt	
Wind Speed (11/3/2014 12:25 PM)		9.0 m	ipn		Change	ny service distributor

HOW MANY HOURS ARE REALLY ON THE WINCH DRUMS?

		Boom	Front						
Ð	0	Hoist (hours)	Winch (hours)	ffer ırs)	CTWT Mode (hours)	Operating Distance Latching Boom (feet)	Operating Distance Full Power Boom (feet)	Front Winch Activation (each)	Rear Winch Activation (each)
Total	Tatal	10.0	14.0	0	0	14,507.0	0	3,694.0	1,114.0
This (opr	Total	16.0	14.0	0	0	14,507.0	0	3,694.0	1,114.0
Year This Month	This Year	16.0	14.0	0	0	0	0	0	0
This Week	This			0	0	1,760.0	0	980.0	4.0
1/1	Month	0	0	0	0	0	0	0	0
10/31				0	0	592.0	0	220.0	3.0
10/30	This	2.0	4.0	0	0	175.0	0	324.0	1.0
10/29	Week	3.0	4.0	0	0	310.0	0	87.0	0
0/28				0	0	341.0	0	149.0	0
10/27	11/1	0	0	0	0	342.0	0	200.0	0
10/26	10/31	1.0	0	0	0	0	0	0	0
10/25	,	1.0	2	0	0	469.0	0	142.0	0
10/24	10/30	1.0	2.0	0	0	277.0	0	133.0	0

IS BOOM HOIST AND SWING LUBRICATION REALLY DUE?

		ŀ	oom loist ours)		ont nch urs)	Rear Winch (hours)	(h	Swing ours)	Bo Telesco (hou	-	H Luff (hou	_	CTWT Mode (hours)	L
٦	Fotal		18.0		17.0	5.	0	11.0		12.0		0	0	
	ſhis ∕ear	18.0		17.0		5.	0	11.0	12.0		0		0	
11/	/6	0	0	0	1.0	0	0	0	309.0		0	9	3.0 (0
11/	/5	1.0	1.0	0	0	1.0	0	0	310.0		0	25	8.0 1.0	0
11/	/4	1.0	1.0	0	1.0	0	0	0	310.0		0 21		1.0 1.0	0
11/	/3	0	1.0	0	0	0	0	0	471.0		0	15	0.0 4.0	0
11/	12	0	0	0	0	0	0	0	0		0		0	0

ICraneTrax

ICRANETRAX TELEMATICS WAS DESIGNED TO MAXIMIZE ALL OF LINK-BELT'S PULSE DATA, MANITOWOC'S CRANESTAR DATA AND AFTERMARKET TELEMATICS DATA.

WHAT ARE THE DIFFERENCES BETWEEN TELEMATICS SYSTEMS?

AFTER-MARKET SYSTEMS

Telematics

Location

advanced

operational

diagnostic

More

data

Some

data

Basic

Mid-level

Advanced

Location data

Advanced operational

and some diagnostic

CAN bus information



Basic

Basic operational information

Location

OEM Installed

WITH LINK-BELT'S PULSE TELEMATICS.... YOU OWN YOUR DATA!

You decide who sees your data.

Link-Belt Customer Signup

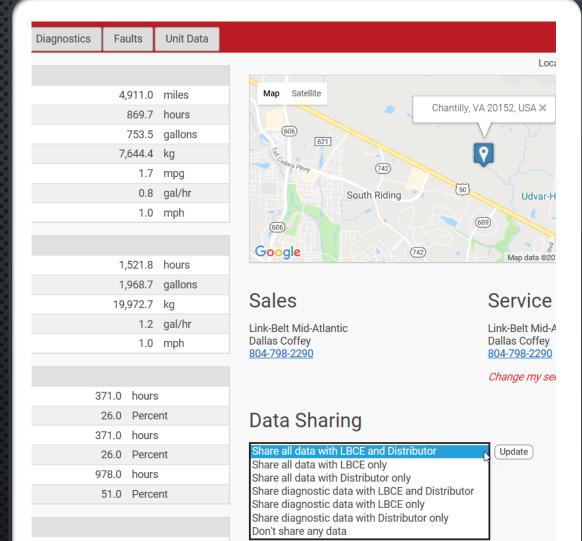
Enter your crane's serial number or GPS unit ID:

Would you like to share data with LBCE and your distributor?

Share all data with LBCE and DistributorShare all data with LBCE onlyShare all data with Distributor onlyShare diagnostic data with LBCE and DistributorShare diagnostic data with LBCE onlyShare diagnostic data with LBCE onlyShare diagnostic data with Distributor onlyShare diagnostic data with Distributor onlyDon't share any data

Distributor Link-Belt Owner

IF YOU DECIDED NOT TO SHARE AT THE BEGINNING, NO BIG DEAL YOU CAN EASILY CHANGE IT BACK!



S.

BENEFITS OF SHARING DATA

- SERVICE TECHNICIANS CAN MORE QUICKLY ACCESS YOUR DATA TO HELP GET YOUR CRANE BACK TO WORK AGAIN,
- DEALERS CAN MONITOR YOUR OPERATING TIMES SO THEY CAN MAKE SURE THEY HAVE THE PARTS YOU NEED ON HAND WHEN YOUR SERVICE IS DUE.
- The engineers for the OEM CAN MONITOR FAULTS AND PERFORMANCE OF THE MODEL AND MAKE INFORMED IMPROVEMENTS TO KEEP YOUR CRANE WORKING, INCREASING IT'S PRODUCTIVITY AND YOUR BOTTOM LINE.



LOTS OF DATA POINTS, NOT JUST THE STANDARD

Free for the first 18 months

Connected to the engine and can monitor the entire health of the engine including DM1 codes to help quickly diagnose any possible issues

Connected to the Pulse system to monitor how the crane is being operated, operating hours, and to help diagnose set up issues with the crane

Built in reports like % of service remaining, % of Hydraulic oil life remaining, CO2 emissions, Fuel Rate, etc.

MANITOWOC'S CRANESTAR TELEMATICS....

LOTS OF DATA POINTS, NOT JUST THE STANDARD Connected to the engine and you can monitor the entire health of the engine

> Connected to the LMI to monitor how the crane is being operated, operating hours, LMI Override, and if Anti two block occurred.

> > Built in reports like Coolant Temperature, Fuel Rate, etc.

WHAT'S THE FUTURE OF TELEMATICS?

- 2 WAY COMMUNICATION BETWEEN THE ASSET AND THE OWNER
- LIVE FIRMWARE UPDATES FROM THE OEM
- ADVANCED REPORTING FEATURES
- ADVANCED PREDICTIVE MAINTENANCE
- ELD/ ELOG INTEGRATION
- MORE SOFTWARE INTEGRATION
- New Crane standards
- INCREASED COMMUNICATION WITH THE ASSET

iCraneTrax data doesn't go away

Available for lifetime of crane

Most telematics programs store for only 6 months

WHAT IS ICRANETRAX

- IS A CLOUD BASED WEB APPLICATION THAT CAN HELP MANAGE YOUR DAY TO DAY OPERATION IN OUR SECURE PRIVATE CLOUD.
- How secure are we, our main servers are located in the federal reserve building under 24/7 armed guard. It goes through a 1.6 million dollar audit to make sure it is up to the latest security protocols.

WHAT ELSE CAN ICRANETRAX DO FOR YOU?

- CUSTOMER MANAGEMENT
- SALES AND APPOINTMENT MANAGEMENT
- POTENTIAL JOB MANAGEMENT
- QUOTING AND INVOICING
- DOCUMENT MANAGEMENT
- DISPATCH
- WORK ORDERS
- Lots and lots of reports
- INTEGRATED TELEMATICS

TO LEARN MORE ABOUT ICRANETRAX

VISIT <u>WWW.ICRANETRAX.COM</u> OR TO LEARN ABOUT OUR OTHER PRODUCTS VISIT <u>WWW.A1ASOFTWARE.COM</u> THANK YOU.