









Petroleum giant in the Gulf pilots a RF-based CABLE TRACKING SYSTEM

Monitors remote installations without security manpower

Automated location tracking and mapping in real-time

Automatic live video recording of theft, call alert to administrator and live voice call recording

Stolen cables continue to be tracked with live information



INSIDE: Key Requirements Solution Implementation Working Benefits

TECHNOLOGY

Solution: Asset tracking solution

Hardware: Strada™ Video Camera for live video streaming

Method: Location tracking via Tracking device

Integration Platform:

Application: Essen RFID's Cable Tracking System Database: SQL Server

Systems Integrator: Essen RFID

For further details contact: Essen RFID 24-B, Jolly Maker II Nariman Point Mumbai 400021 India www.essenrfid.com









KEY REQUIREMENTS:

Petroleum Development Oman is the premier hydrocarbon exploration and production company in the Sultanate of Oman. It explores oil fields and develops them into productive assets by drilling wells and constructing and operating various hydrocarbon treatment and transport facilities. Its production machinery is spread over vast open areas of desert, with heavy power requirements that are supplied through expensive power cabling. Since these power cables passing through remote locations are vulnerable to theft, the company required a solution that could track these cables from a remote location.

Main challenges:

- Need for accurate identification of cable location passing through remote desert areas.
- Difficulty in catching thieves since no information is available in tracking the theft at remote locations.
- Enabling capture of intruders so that this acts as a deterrent against crime.
- Quick tracking of theft is important so that stolen material can be recovered.

SOLUTION:

Essen RFID offered a specialized solution based on its Strada[™] tracking device in order to remotely track cables. Strada[™] devices are fitted along various sections of cable. Any attempt to disconnect the power cable before theft triggers a camera that starts video recording at that location. The tracker simultaneously sends an alert call to the system administrator and also connects that call to live audio recording from that location. Since the GPS coordinates of the tracker are known, the theft location is instantly ascertained.

IMPLEMENTATION:

The tracking system deploys multiple Strada[™] tracking devices that are mounted on the cables along the various cable routes. Video cameras are utilized for live video streaming.

The Cable Tracking System is developed through .NET technology and uses SQL Server as the back-end database.

WORKING:

Tracking information is obtained from every power cable passing through remote locations, as follows:

- Strada [™] tracking devices are assigned to the power cables.
- Emergency alerts are generated on vibration of the tracking devices.
- Starts a video recording at the cable location and sends a voice call to admin.







3. Generate alert call from remote location: As soon as theft is attempted, the Strada[™] device sends an alert call to the system administrator. The alert call automatically connects to live voice call recording when the cable is moving.



4. View the location of the stolen cable on the map: The cable tracking system displays the exact location of the stolen cable on a map. This enables the administrator to provide live tracking information regarding direction, location and distance of stolen cable to the police.



Application Flow:

Tracker Master: All Strada[™] tracking device details are saved in the Tracker Master. These include device ID, alert contact number, line colour for drawing path, icon image for mapping, etc.

Tracker Master							
Indexer Plaster							
Tracker Device ID	3110502416						
Emergency Number	+96899099554						
Line Color	BlueViolet						
loon		Browse					
Tracker ID	67	Upload					
Submit Reset							
ID TRACKER_DEVI	CE_ID Emergency_No	ICON	LINE_COLOR	CREATED_BY	CREATED_DATE	MODIFIED_B1	MODIFIED_DATE
> 67 3110502416	+96899099554	marker_blue.jpg	BlueViolet	admin	11/19/2012 1:39:49 PM	admin	12/4/2012 10:52:51 AM
> 68 3110502419	919821571464	Map-Maker Maker Outside-Chartreuse-32.png	Red	admin	11/19/2012 1:40:52 PM	admin	12/3/2012 3:30:57 PM
> 69 3110502420	+96899099554	maker_blue.jpg	Turquoise	admin	11/27/2012 5:04:20 PM	admin	12/4/2012 10:49:13 AM

FSSF







Cable Master: All cable details with their codes are saved in the Cable Master.

	ISTEM						
Tracker	Region	Cable	Mapping Modules	Dashboard			A My Account + Logo
Cable Det	tails						
Cable Code							
Cable Reman	*	002	CABLE C	ODE Tracker Device	D VEH ICON VEH LINE COLOR		
Cable ID	0	002	> 0002	3110502420	maker_blue.jpg Turquoise		
	3		> 0002	3110502418	maker_blue.jpg BlueViolet		
Submit	Reset						
ent	ie_id cable_c	ode Cabl	e_remarks Tracker_co	unt CREATED_	BY CREATED_ON	MODIFIED_BY	MODIFIED_ON
2 1	0001	Cable 0	2	admin	10/19/2012 10:11:35 AM	admin	10/19/2012 10:11:54 AM
	0.000		<u>^</u>	arg man	THINKY IS VAU AS I'M		
		ny Conversion Da	vices Put. Ind., Marshai, INDIA	mm attentid.com	Al richts reserved.		
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Region Master: Regions are drawn on the map and saved in the Region Master.

CABLE TRAC	CKING SYSTEM	
	Tracker Region Cable Mapping Modules Dashboard	A My Account + Logout
	Region Master	
	Region Name GuestHouse Stat Stop	
	Region Latitude 22.32750166666667	
	Region Longitude 56.45821666666667	
	Region inner Radius 70 Draw	Total .
	Region Outer Radius 125 Draw	
	Region 10 1006	
	Submit Rest	Map data 82012 Google - Terms of Use
	REGION_ID REGION_LAT REGION_LON REGION_INNERRADIUS REGION_OUTERRADIUS REGION_CREATED_BY REGION_CREATED	EATED_AT REGION_MODIFIED_BY REGION_MODIFIED_AT
	2 19.925473333333 72.822048333333 10 25 JOLLY admin 11/27/2012 4 MAKEP 2 admin 11/27/2012 4	4:45:13
powered by	→ 3 19.043458 72.871871 300 700 Sion admin 4MM	11/45:35 admin AM
ZIKADA	▶ 1003 18.926493 72.819048 25 100 NCPA OPP admin 1128/2012 1	1:01:03 admin 11/28/2012 1:44:16 PM

Cable and Tracker Mapping: Each cable can have multiple tracking devices

Tracker Region	Cable Mapping Modul	es Dashboard		Account + Logo
	_	_	_	
Cable and Tracke	er Mapping			
Cable Name	C002	CIDI E CODE Tooker Device ID 30		
Tracker Device ID	3110502416	COD2 3110502420 make	er_blue.jpg Turquoise	
ID	1007	> C002 3110502416 mate	r_blue.jpg BlueViolet	
	1001			
Submit Reset	Delete			
	MAP_CAB_VEH_ID C	ABLE_CODE TRACKER	DEVICE_ID	NP_CAB_ID MAP_VEH_ID
> 4	C001	3110502419	1	68
> 0	C002	3110502420	3	69
> 1007	C002	3110502416	3	67







attached to it depending on its length. All devices affixed to a single cable are mapped with each other. When a cable is selected from the list, the operator will get device details if any tracking device is mapped and also ascertain which other tracking devices need to be mapped.

Region and Tracker Mapping: This is used for mapping tracking devices with regions. If many devices are placed in a single region, this module allows the operator to determine the number of tracking devices used in any particular region.



Cable and Mobile Mapping: A cable has multiple tracking devices attached to it, with one device for each section of cable. If a theft is attempted, an auto call is sent out to an emergency number. This module allows the operator to input a mobile device ID against any particular cable. The same mobile ID gets automatically applied to all the Strada[™] tracking devices that are mapped with this cable.

	Track	ur 👘	Region	Cable Map	ping Modules	Dashboard			Account + Logout
c	able	and	Mobile Map	ping					
	Cable Name Mobile Device ID ID Submit Reset		e 10 983 4	0002 v 9892542196 4		TRACKEG_DEVICE_ID MOBILE_I > 3110502480 +0000000564 > 3110502420 +66000000564		BIL€_10 20554 20554	
		sino	Mobile Device	D CABLE_C	DDE CABLE	_ID CREATED_B	Y CREATED_ON	MODIFIED	BY MODIFIED_ON
	>	1	212212	C001	1	admin	10/19/2012 10:15:20 AM	a dmin	10/10/2012 10:15:28 AM
	5	4	9892542196		4	admin	11/28/2012 12:20:38 PM	aumin	10/18/2012 10:10:44 AM

Mobile Alert SMS Setting: Mobile numbers are added here for sending SMS





alerts. When a thief leaves a region carrying a section of cable along with its associated StradaTM device, this device sends a SMS alert to those numbers.

CABLE TRACKING SYSTEM										
	Tracker	Region	Cable	Mapping Modules	Dashboard			Account + Logou	ι	
					_			_		
	Mobile Ale	rt SMS sel	tting							
	NAME Mobile Numbe IS Active ID	Jayesh +9689272869 1	7							
	Submit	Reset	Delete SR_NO	_	MOBILE_NO	NAME	_	IS_ACTIVE		
	>	1		+96892728697		Jayesh	1			
		3		+96997315604		Shiv	1			
	>	4		+96899777820		Balushi	1			

Master Dashboard: This displays the physical location of all Strada[™] tracking devices on the map. Movement of all devices is displayed on a single screen.





Cable Dashboard: This is useful for a cable-wise summary. When a cable is





selected, all mapped tracking devices for that cable are displayed on the screen. When a device is selected, if it is moving then its path is drawn on the map and its current physical location gets known.

Historical Dashboard: This maps the movement of a tracking device between two dates selected by the operator.



BENEFITS:

- Efficient and accurate tracking of current location of power cable.
- Live video recording if attempt to disconnect power cable.
- Automatic simultaneous alert call to administrator.
- Quick identification of theft location on the map.
- Accurate trapping of theft location with distance, direction and speed.
- · Cost-effective operations in remote unpopulated areas.

LINKS:

Hardware:

STRADA™

Video Camera