







Solution Authors

**City Gas Automation
&
Cashless Station operations**

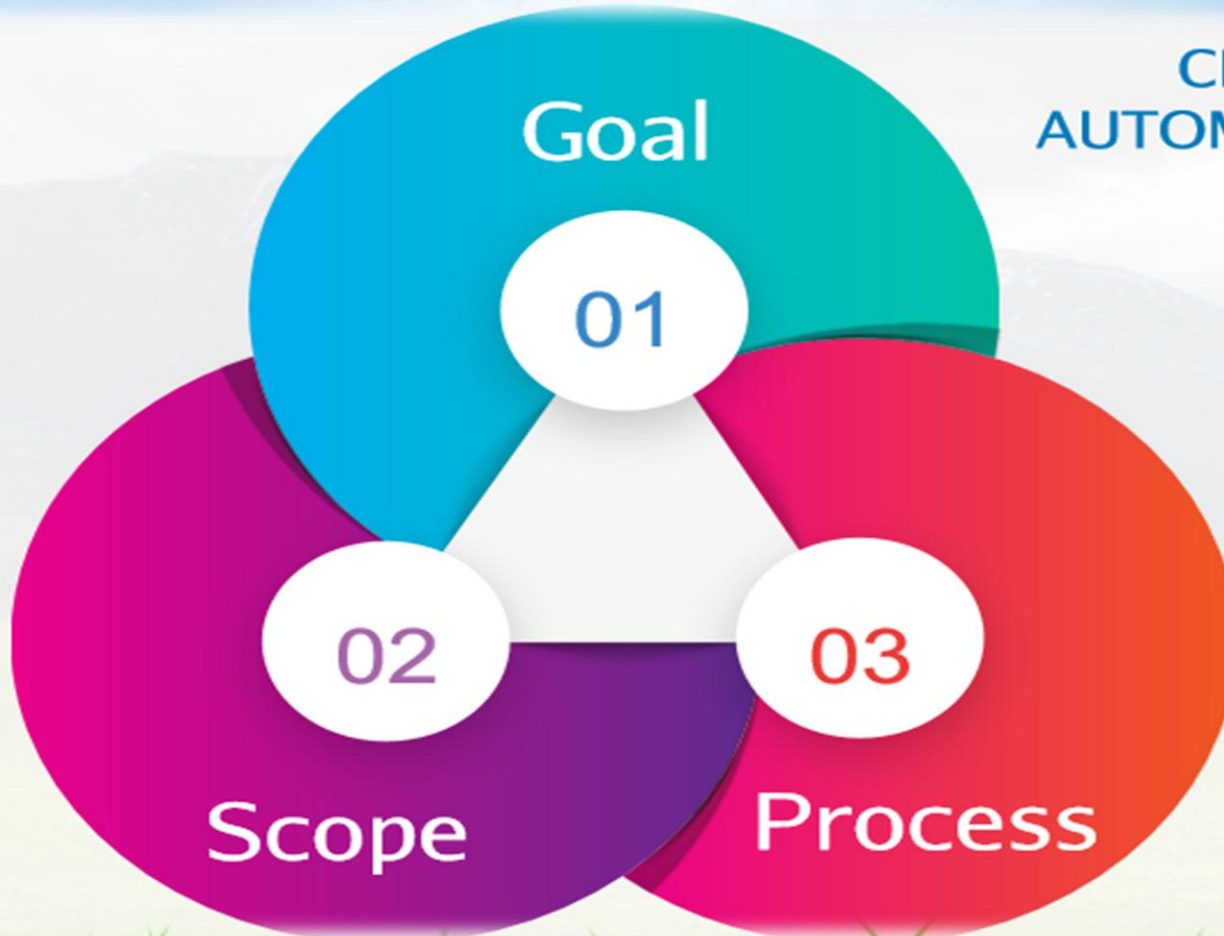


Solution Authors

AUTOMATION OF CGD OPERATIONS

-  We on inception of a new CGD offer complete automation of entire CGD operations which include Data Analysis from City Gate Metering to all station skids and at Point of Sale (POS).
-  We also offer HMI /SCADA for compressors in order to monitor 24 hrs the Maintenance and safety operations of the compressors.
-  We provide accurate and compensated data from metering unit of industrial and commercial connections for billing which sizably reduces the cost of manual data collection.
-  We have complete solution for PNG data logging, telemetry to provide our clients with all data for functioning, metering and billing of domestic connections.

CNG Automation

















CNG
AUTOMATION

GOAL

- ⚙️ Compilation of Data
- ⚙️ Transmission of Data (Logging)
- ⚙️ Analysis of Data
- ⚙️ Maintain History
- ⚙️ Elimination of manual error
- ⚙️ Management of Data
- ⚙️ Generation of report
- ⚙️ Decision facilitation

SCOPE

-  Measurement of total gas purchase and sale.
-  Re-conciliation of gas transmission and sale.
-  Safety functionality over entire gas transmission.
-  Data collection and Logging.
-  Forecourt Management.
-  Logistics Management.
-  Cost Analysis.

-  Sale Reconciliation and Analysis.
-  Equipment operation data.
-  Rate change control.
-  Remote Alarm and Shutdown.
-  Forecourt cashless transaction.
-  Customer smart relation.
-  Export of Data and Report to financial and other ERP.

PROCESS

- ☀ Entire stated scope to be automated.
- ☀ Process by combination of wired and wireless devices.
- ☀ Involves GSM/GPRS/RF Ethernet and other process.
- ☀ Use of Compatible Software
- ☀ Piecemeal addition for expansion.

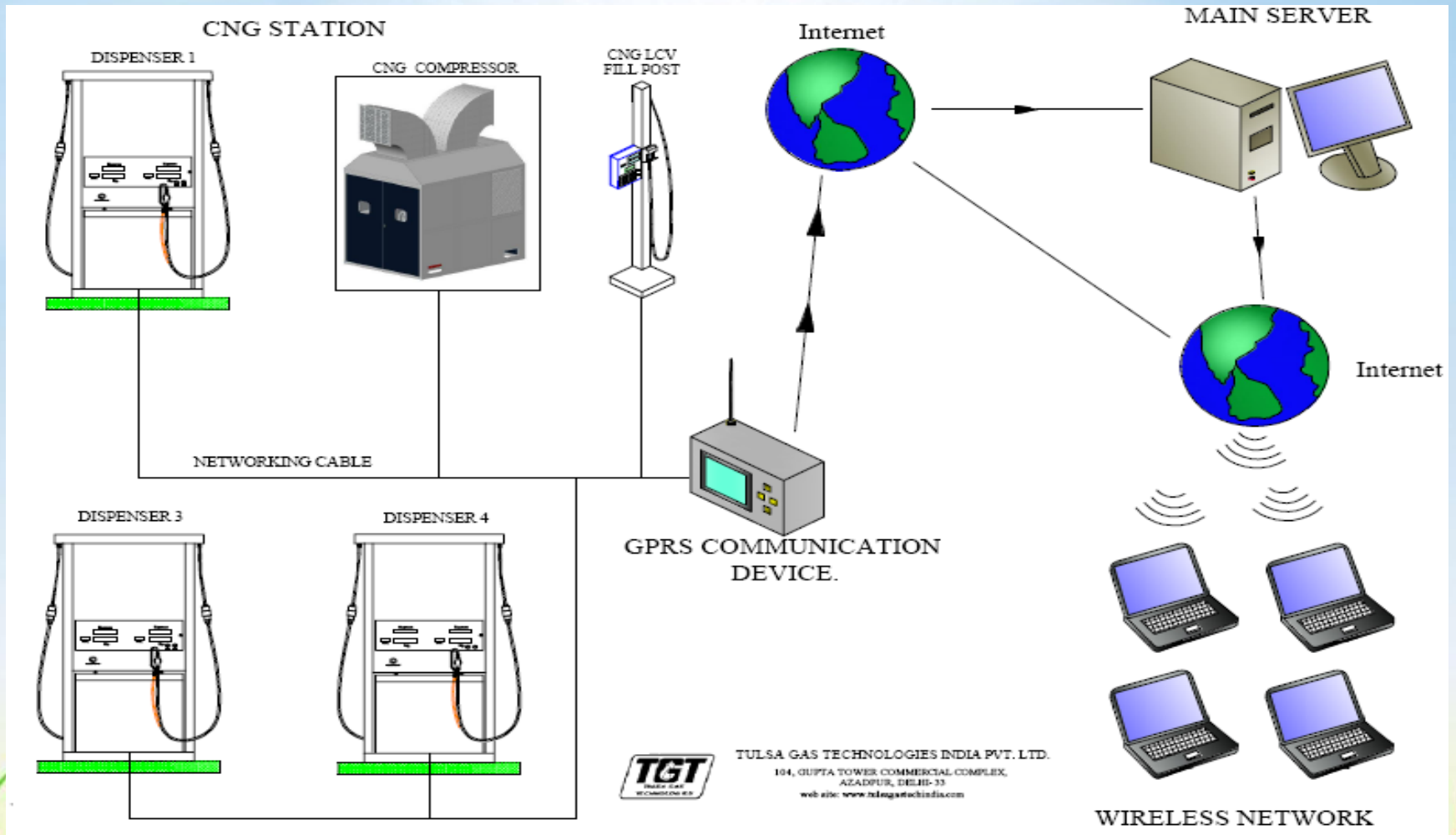


Solution Authors

COVERAGE

- ☂ City Gas Metering
- ☂ Industrial and commercial PNG
- ☂ Domestic PNG
- ☂ District Regulation Stations – DRS
- ☂ Pressure Skid/Compressor/ Dispenser
- ☂ LCV Fill Post

REAL TIME AUTOMATION – SCHEMATIC LAYOUT










Solution Authors

REQUIREMENT

HARDWARE:-

-  WI-ONE
-  GCL
-  RTU
-  Router and SIM
-  Server

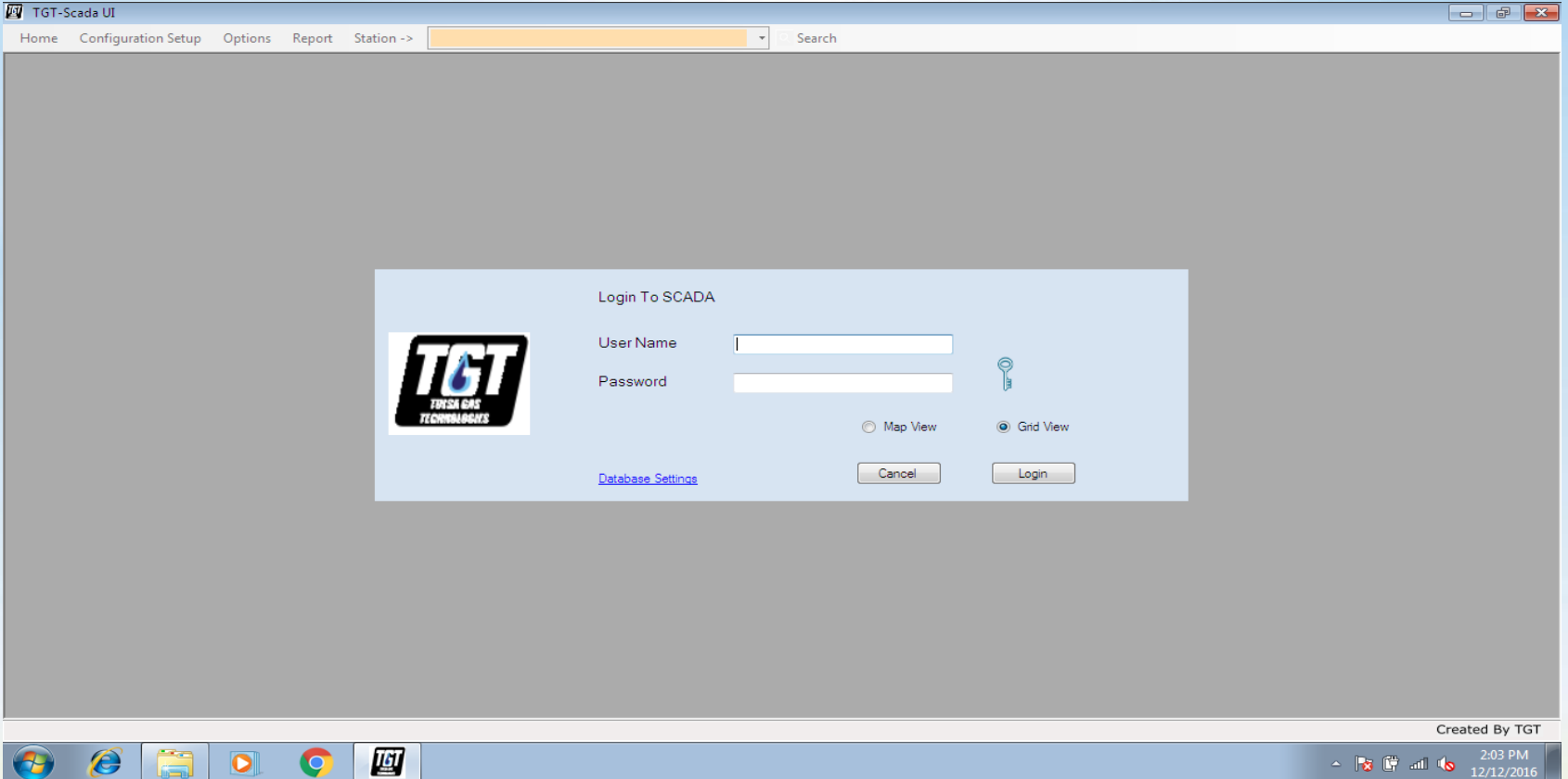
SOFTWARE:-

-  Station Automation
-  IMR&AMR
-  SQL
-  CAL
-  Crystal report

OPERATING SYSTEM:-

-  Windows

Login To Automation Software



The screenshot shows a Windows desktop environment with a taskbar at the bottom. The taskbar includes icons for Windows, Internet Explorer, File Explorer, a media player, Google Chrome, and the TGT application. The system tray shows the time as 2:03 PM on 12/12/2016. The main window is titled "TGT-Scada UI" and has a menu bar with "Home", "Configuration Setup", "Options", "Report", and "Station ->". A search bar is located to the right of the menu bar. The main content area is a light gray rectangle containing a login dialog box. The dialog box is titled "Login To SCADA" and features the TGT logo on the left. It has two input fields: "User Name" and "Password". To the right of the "Password" field is a key icon. Below the input fields are two radio buttons: "Map View" (unselected) and "Grid View" (selected). At the bottom of the dialog are two buttons: "Cancel" and "Login". A blue link labeled "Database Settings" is located below the "User Name" field. The text "Created By TGT" is visible in the bottom right corner of the window.


TGT-Scada UI

Home Configuration Setup Options Report Station -> Search

TGT
TULSA GAS
TECHNOLOGIES

Login To SCADA

User Name

Password 

Map View Grid View

[Database Settings](#)

Created By TGT

2:03 PM
12/12/2016



Solution Authors

EXPLANATION ABOUT STATION AUTOMATION SOFTWARE

- ☁ SCADA software is a Data analyzer .
- ☁ enter *username* and *password*
- ☁ Data from both side(Side-1 and Side-2) of all CNG dispenser's Transaction with time and date.
- ☁ Real time gross sale
- ☁ CNG Stations wise
- ☁ Dispenser wise
- ☁ Dispenser Side wise(side-1 and side-2 or both)
- ☁ Daily Sale Report
- ☁ Weekly Sale Report
- ☁ Month Sale Report
- ☁ Yearly Sale Report

Live View Snapshot

**REAL TIME
GROSS SALE**

TGT-Scada UI - [Live Details]

Home Configuration Setup Options Report Station -> Select Station Search

Live View

Total Amount (INR) : 175539.43 Total Quantity (Kg) : 4248.13 Total Mfm (Kg) : 4246.51

--- Nagalpur CNG St Sales (INR) :175539.43 Qty (Kg) :3892.3 Mfm (Kg) :3890.7	l...ons Shamlaji CNG St Sales (INR) :0 Qty (Kg) :355.83 Mfm (Kg) :355.81	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :
sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :	sgl cng Sales (INR) : Qty (Kg) : Mfm (Kg) :

Created By : Tulsa Gas Technologies Pvt. Ltd.



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Station Report Snapshot

TGT-Scada UI - [Live Details]

Home Options Report Station -> Select Station Search

Live View Station View

Welcome To Nagalpur CNG St

Live View Total Amount (INR) : 610342.07 Total Quantity (Kg) : 13808.89 Total Mfm (Kg) : 8230.1

Transaction No	Dispenser ID	Side	Amount	Quantity	Pressure	Totalizer Amount	TzA Diff	Totalizer Quantity	TzQ Diff	Mass Flow Meter	Mfm	Transaction Date	Rate
91446	102	side1	237.79	5.38	196.1	218955.02	845.97	718900.73	19.14	1.08	0	12/12/2016 2:03 PM	0
91448	102	side2	309.4	7	198.1	630105.81	309.4	194933.38	7	981407.1	7	12/12/2016 2:03 PM	0
91449	103	side1	343.87	7.78	197.1	294967.21	343.87	519238.1	7.78	1.56	0	12/12/2016 2:05 PM	0
91447	103	side2	76.02	1.72	192.1	913502.98	76.02	400274.86	1.72	278585.9	1.7	12/12/2016 2:03 PM	0
91381	101	side1	212.16	4.8	191.1	478190.1	212.16	572181.6	4.8	429461.63	4.8	12/12/2016 1:09 PM	0
91379	101	side2	291.72	6.6	199.1	699688.09	291.72	396106.27	6.6	636011.4	6.6	12/12/2016 1:08 PM	0

Refresh

Created By TGT



Dispenser Report Snapshot

TGT-Scada UI - [Live Details]

Home Configuration Setup Options Report Station -> Search

Live View Station View **Dispenser View**

From To Side

Dispenser

Dispenser No	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Amount	Quantity	Pressure	Totalizer Amount	TzA Diff	Totalizer Quantity	TzQ Diff	Mass Flow Meter	Mfm	Transaction Date
91762	27	28	29	30	1	2	3	49.06	1.11	101	700172.06	49.06	396117.22	1.11	636022.35	1.11	12/12/2016 4:47 PM
91760	4	5	6	7	8	9	10	94.14	2.13	200.1	700123	94.14	396116.11	2.13	636021.24	2.13	12/12/2016 4:46 PM
91644	11	12	13	14	15	16	17	19.89	0.45	216.1	700028.86	19.89	396113.98	0.45	636019.11	0.45	12/12/2016 3:53 PM
91641	18	19	20	21	22	23	24	25.63	0.58	206.1	700008.97	25.63	396113.53	0.58	636018.66	0.58	12/12/2016 3:52 PM
91639	1	2	3	4	5	6	7	236.47	5.35	193.1	699983.34	236.47	396112.95	5.35	636018.08	5.35	12/12/2016 3:52 PM
91611			101		side2			58.78	1.33	196.1	699746.87	58.78	396107.6	1.33	636012.73	1.33	12/12/2016 3:40 PM
91379			101		side2			291.72	6.6	199.1	699688.09	291.72	396106.27	6.6	636011.4	6.6	12/12/2016 1:08 PM
91375			101		side2			320.89	7.26	202.1	699396.37	320.89	396099.67	7.26	636004.8	7.26	12/12/2016 1:06 PM
91371			101		side2			194.48	4.4	197.1	699075.48	194.48	396092.41	4.4	635997.54	4.4	12/12/2016 1:04 PM
91365			101		side2			319.56	7.23	197.1	698881	319.56	396088.01	7.23	635993.14	7.23	12/12/2016 1:02 PM
91357			101		side2			230.72	5.22	193.1	698561.44	230.72	396080.78	5.22	635985.91	5.22	12/12/2016 12:59 PM
91350			101		side2			37.12	0.84	212.1	698330.72	37.12	396075.56	0.84	635980.69	0.84	12/12/2016 12:57 PM
91349			101		side2			305.86	6.92	197.1	698293.6	305.86	396074.72	6.92	635979.85	6.92	12/12/2016 12:56 PM
91342			101		side2			1.32	0.03	27	697987.74	1.32	396067.8	0.03	635972.93	0.03	12/12/2016 12:54 PM
91339			101		side2			196.24	4.44	203.1	697986.42	196.24	396067.77	4.44	635972.9	4.44	12/12/2016 12:53 PM
91332			101		side2			339.89	7.69	193.1	697790.18	339.89	396063.33	7.69	635968.46	7.69	12/12/2016 12:51 PM
91323			101		side2			301.88	6.83	191.1	697450.29	301.88	396055.64	6.83	635960.77	6.83	12/12/2016 12:48 PM
91311			101		side2			298.35	6.75	152.1	697148.41	298.35	396048.81	6.75	635953.94	6.75	12/12/2016 12:46 PM
91305			101		side2			108.73	2.46	155.1	696850.06	108.73	396042.06	2.46	635947.19	2.46	12/12/2016 12:43 PM
91299			101		side2			331.5	7.5	197.1	696741.33	331.5	396039.6	7.5	635944.73	7.5	12/12/2016 12:40 PM
91294			101		side2			99	2.24	127	696409.83	99	396032.1	2.24	635937.23	2.24	12/12/2016 12:38 PM

Today: 12/12/2016

Navigation: <Start < Previous 1 / 6 Next > Last > All Records Per Page 22



Solution Authors

WEEKLY JMR REPORT

--- Nagalpur CNG St Dispenser -101 Side A

Sr.No.	Date	Location	Disp. No	Side	Totalizer			Mass Flow Meter		
					Opening	Closing	Difference	Opening	Closing	Difference
1	4/8/2017	Nagalpur	101	A	725528.63	727215.8	1687.17	582808.66	584495.83	1687.17
2	4/9/2017				727215.8	728099.11	883.31	584495.83	585379.14	883.31
3	4/10/2017				728099.11	731031.07	2931.96	585379.14	588311.1	2931.96
4	4/11/2017				731031.07	733812.63	2781.56	588311.1	591092.66	2781.56
5	4/12/2017				733812.63	735439.67	1627.04	591092.66	592719.7	1627.04
6	4/13/2017				735439.67	737156.3	1716.63	592719.7	594436.33	1716.63
7	4/14/2017				737156.3	737156.3	0	594436.33	594436.33	0
8	4/15/2017				737156.3	737156.3	0	594436.33	594436.33	0
Total Sales In Kg at Dispenser - 101 Side A for the period of 8th to 15th of this month							11627.67	Total	11627.67	

--- Nagalpur CNG St Dispenser -101 Side B

Sr.No.	Date	Location	Disp. No	Side	Totalizer			Mass Flow Meter		
					Opening	Closing	Difference	Opening	Closing	Difference
1	4/8/2017	Nagalpur	101	B	560263.94	562019.5	1755.56	800169.07	801924.63	1755.56
2	4/9/2017				562019.5	562849.05	829.55	801924.63	802754.18	829.55
3	4/10/2017				562849.05	566382.84	3533.79	802754.18	806287.97	3533.79
4	4/11/2017				566382.84	569172.91	2790.07	806287.97	809078.04	2790.07
5	4/12/2017				569172.91	570214.77	1041.86	809078.04	810119.9	1041.86
6	4/13/2017				570214.77	571509.4	1294.63	810119.9	811414.53	1294.63
7	4/14/2017				571509.4	571509.4	0	811414.53	811414.53	0



Solution Authors

All Station Sales Report

TGT-Scada UI - [Reports Details]

Menu Configuration Setup Options Report Station -> Select Station Search

All Station Report

From Date: 4/1/2017 To Date: 4/14/2017 Search

SAP CRYSTAL REPORTS

Main Report

All Stations Sales Report

TGT
TULSA GAS TECHNOLOGIES

Report Date 4/14/2017

Dispenser : 101 Zone : SGL CNG Station : SGL Nagalpur CNG St

Date : 4/9/2017 12:00:00 AM

Invoice No	Time	Side	Rate	Amount	Quantity	Totalizer Qty.	M.F.M Total	M.F.M. Sale	Pressure
Date : 4/9/2017 12:00:00 AM									
331755	15:22	side1	0	339.6	7.53	728099.11	585379.14	7.53	188.1
331753	15:21	side1	45.09	99.83	2.21	178422.82	178463.43	2.22	187.84
331752	15:19	side2	0	261.58	5.8	562849.05	802754.18	5.8	206.1
331751	15:19	side1	0	133.49	2.96	728091.58	585371.61	2.96	195.1
331747	15:18	side1	0	72.61	1.61	728088.62	585368.65	1.61	118
331744	15:16	side2	0	284.58	6.31	562843.25	802748.38	6.31	201.1
331739	15:14	side2	0	99.22	2.2	562836.94	802742.07	2.2	115
331738	15:14	side1	0	123.57	2.74	728087.01	585367.04	2.74	187.1
331735	15:12	side2	0	286.38	6.35	562834.74	802739.87	6.35	202.1
331733	15:12	side1	45.09	106.68	2.36	178420.62	178461.21	2.36	173.42
331730	15:10	side2	0	151.53	3.36	562828.39	802733.52	3.36	203.1
331724	15:07	side2	0	292.24	6.48	562825.03	802730.16	6.48	193.1
331723	15:07	side1	0	142.51	3.16	728084.27	585364.3	3.16	191.1
331718	15:04	side2	45.09	124.31	2.75	135332.45	1710463	2.75	145.58
331717	15:04	side1	0	225.95	5.01	728081.11	585361.14	5.01	180.1

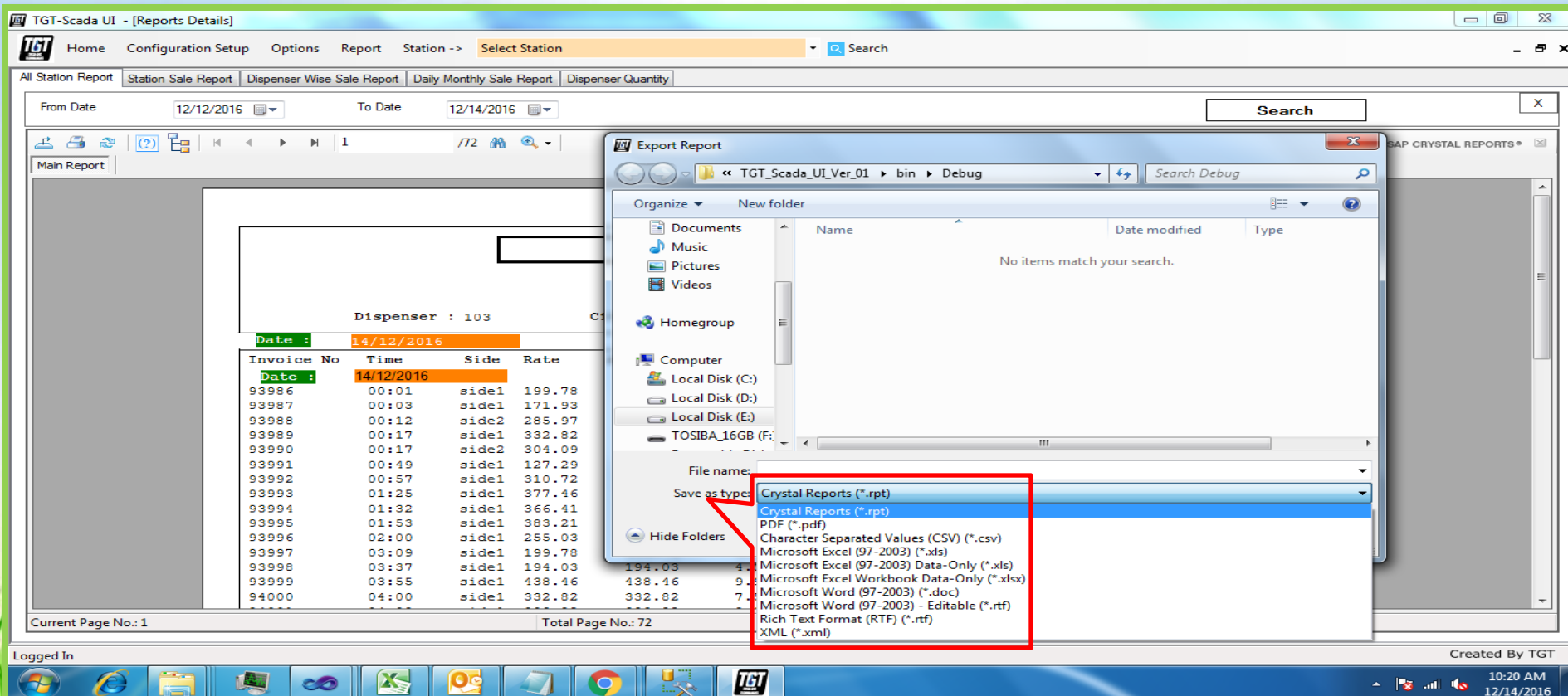
Current Page No.: 1 Total Page No.: 1+ Zoom Factor: 100%

Created By: Tulsa Gas Technologies Pvt. Ltd.

1:48 PM 4/14/2017

Export Report Format

- User can download the report in different format and save the file in any directory/drive in computer.
- Can export the report to any authorized person, existing Financial ERP or for any other purpose.



The screenshot displays the TGT-Scada UI interface. The main window shows a report for 'Dispenser : 103' with a date range from 12/12/2016 to 12/14/2016. The report content includes a table with columns for Invoice No, Date, Time, Side, and Rate. An 'Export Report' dialog box is open, showing the file name 'Crystal Reports (*.rpt)' and a list of available export formats. A red box highlights the 'Crystal Reports (*.rpt)' option in the 'Save as type' dropdown menu.

Invoice No	Date	Time	Side	Rate
93986	14/12/2016	00:01	side1	199.78
93987	14/12/2016	00:03	side1	171.93
93988	14/12/2016	00:12	side2	285.97
93989	14/12/2016	00:17	side1	332.82
93990	14/12/2016	00:17	side2	304.09
93991	14/12/2016	00:49	side1	127.29
93992	14/12/2016	00:57	side1	310.72
93993	14/12/2016	01:25	side1	377.46
93994	14/12/2016	01:32	side1	366.41
93995	14/12/2016	01:53	side1	383.21
93996	14/12/2016	02:00	side1	255.03
93997	14/12/2016	03:09	side1	199.78
93998	14/12/2016	03:37	side1	194.03
93999	14/12/2016	03:55	side1	438.46
94000	14/12/2016	04:00	side1	332.82



Solution Authors

COMPRESSOR SUCTION INPUT REPORT

Compressor Suction Output Report

City: KUNDALI Station: FACTORY Compressor: Compressor 1 Date: 5/26/2015 Search

Report

SAP CRYSTAL REPORTS*

Main Report

COMPRESSOR SUCTION INPUT REPORT

Print Date :- 7/29/2015
Report Date :- 5/26/2015
Compressor :- Compressor 1

City :- KUNDALI Station :- FACTORY

Shift Wise Sales

Shift 1	86.44
Shift 2	1663.99
Shift 3	0

Daily Sales

Day -1	0 Kg
Day -2	0 Kg
Day -3	0 Kg
Day -4	0 Kg
Day -5	0 Kg
Day -6	0 Kg
Day -7	0 Kg
Day -8	0 Kg
Day -9	0 Kg
Day -10	0 Kg
Day -11	0 Kg
Day -12	0 Kg
Day -17	0 Kg
Day -18	0 Kg
Day -19	0 Kg
Day -20	0 Kg
Day -21	0 Kg
Day -22	0 Kg
Day -23	0 Kg
Day -24	0 Kg
Day -25	0 Kg
Day -26	1750.43 Kg
Day -27	225.79 Kg
Day -28	0 Kg

Monthly Sales

JANUARY	0 Kg
FEBRUARY	0 Kg
MARCH	0 Kg
APRIL	0 Kg
MAY	1976.22 Kg
JUNE	0 Kg
JULY	0 Kg



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COMPRESSOR GAS DISCHARGE OUTPUT REPORT

Compressor Gas Discharge Report

City: KUNDALI Station: FACTORY Compressor: Compressor 1 Date: 5/26/2015 Search

Report

SAP CRYSTAL REPORTS*

Main Report

COMPRESSER GAS DISCHARGE OUTPUT REPORT

Print Date :- 7/29/2015
Report Date :- 5/26/2015
Compressor :- Compressor 1

City :- KUNDALI Station :- FACTORY

Shift Wise Sales

Shift 1	87.85
Shift 2	1699.73
Shift 3	0

Daily Sales

Day -1	0 Kg
Day -2	0 Kg
Day -3	0 Kg
Day -4	0 Kg
Day -5	0 Kg
Day -6	0 Kg
Day -7	0 Kg
Day -8	0 Kg
Day -9	0 Kg
Day -10	0 Kg
Day -17	0 Kg
Day -18	0 Kg
Day -19	0 Kg
Day -20	0 Kg
Day -21	0 Kg
Day -22	0 Kg
Day -23	0 Kg
Day -24	0 Kg
Day -25	0 Kg
Day -26	1787.58 Kg

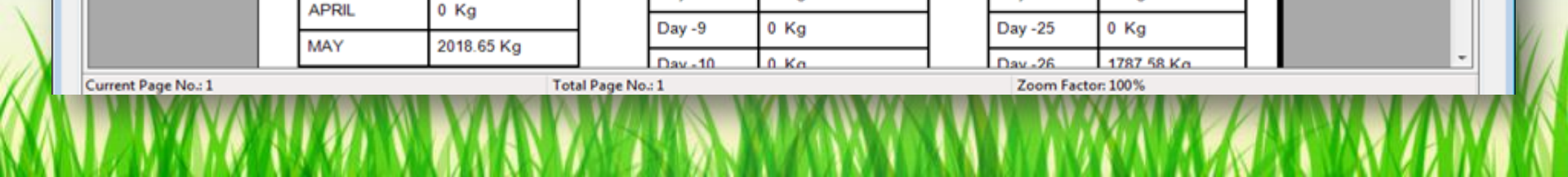
Monthly Sales

JANUARY	0 Kg
FEBRUARY	0 Kg
MARCH	0 Kg
APRIL	0 Kg
MAY	2018.65 Kg

Current Page No.: 1

Total Page No.: 1

Zoom Factor: 100%





Solution Authors

GAS RECONCILIATION REPORT ON DAILY BASIS

Reconciliation / Gas Loss Report Month Day

City: KUNDALI Station: FACTORY Date: 5/26/2015 Month Day Search Excel

SAP CRYSTAL REPORTS*

Main Report

Reconciliation/Gas Loss Report

City :- KUNDALI Station :- FACTORY

Print Date :- 7/29/2015
Report Date :- 5/26/2015
Compressor :-

location	Month / Day	comp. suction A	comp discharge B	differenc e of mfm C	lcv sales D	disp sales E	comp loss %	forecast loss %	station loss %
FACTORY	01	0	0	0	0	0	NaN	NaN	NaN
FACTORY	02	0	0	0	0	0	NaN	NaN	NaN
FACTORY	03	0	0	0	0	0	NaN	NaN	NaN
FACTORY	04	0	0	0	0	0	NaN	NaN	NaN
FACTORY	05	0	0	0	0	0	NaN	NaN	NaN
FACTORY	06	0	0	0	0	0	NaN	NaN	NaN
FACTORY	07	0	0	0	0	0	NaN	NaN	NaN
FACTORY	08	0	0	0	0	0	NaN	NaN	NaN
FACTORY	09	0	0	0	0	0	NaN	NaN	NaN
FACTORY	10	0	0	0	0	0	NaN	NaN	NaN



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MONTHLY SALES

GAS CONSUMPTION DATA LOGGER

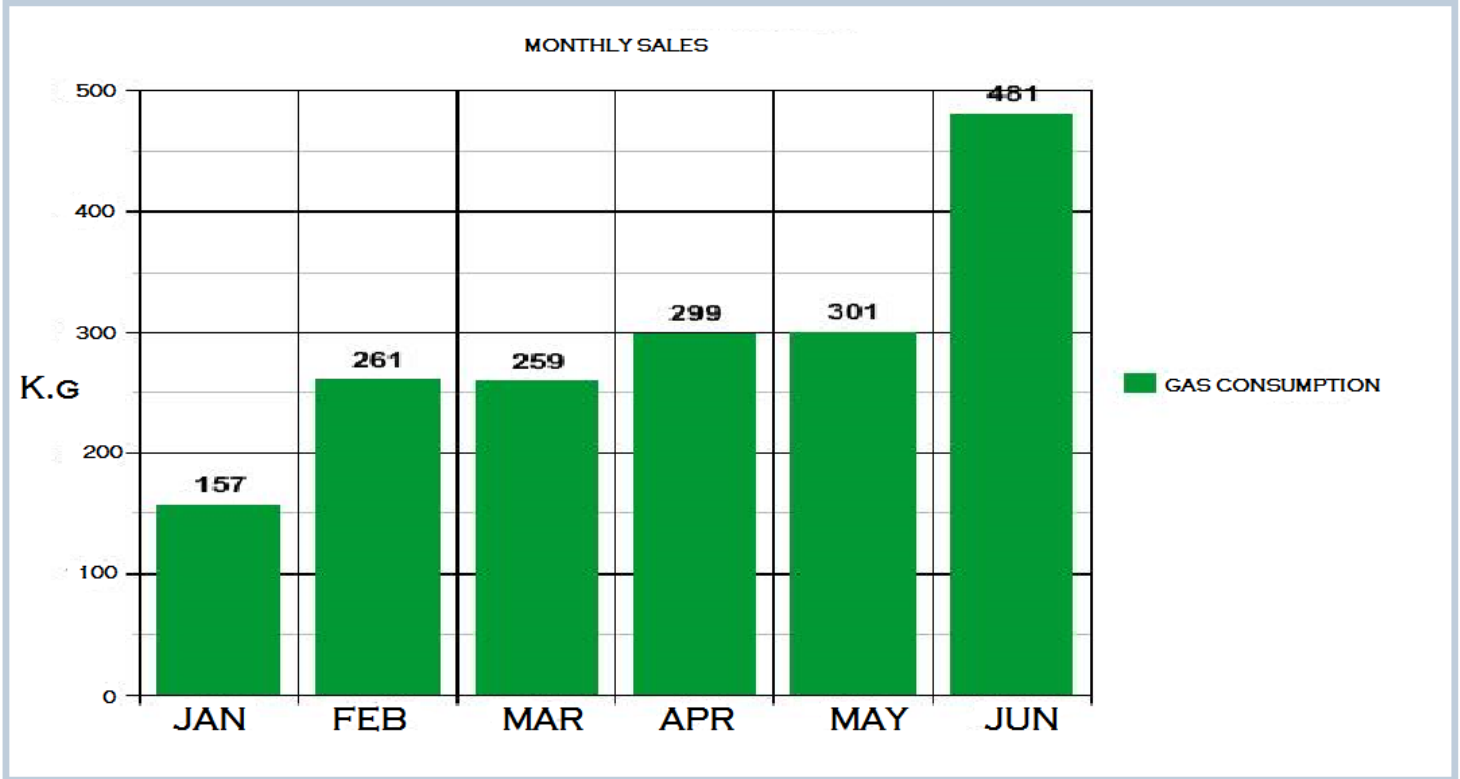
Home Configuration Setup

- Location
- Select -
 - Rohini Sector 11
 - Rohini Sector 6
 - Kundli TGT
 - kundli

test

City Map Location Details Record Details Graph Details

View Type Bar Graph



Logged In

Total Sales : 356 [12]



3:33 PM
7/30/2016



Solution Authors

DAILY SALES

GAS CONSUMPTION DATA LOGGER



Home Configuration Setup

Location

- Select -

- Rohini Sector 11
- Rohini Sector 6
- Kundli TGT
- kundli

test

City Map Location Details Record Details Graph Details

View Type

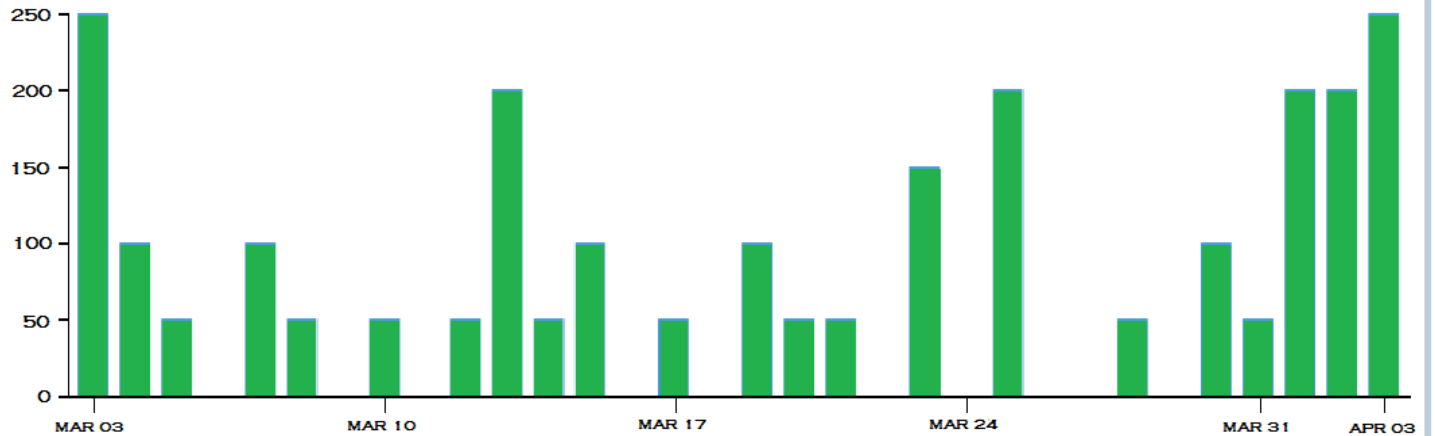
Bar Graph

GAS STATION : ROHINI SECTOR 11

DAILY SALES

GAS CONSUMPTION

K.G



Logged In

Total Sales : 356 [12]



3:33 PM
7/30/2016

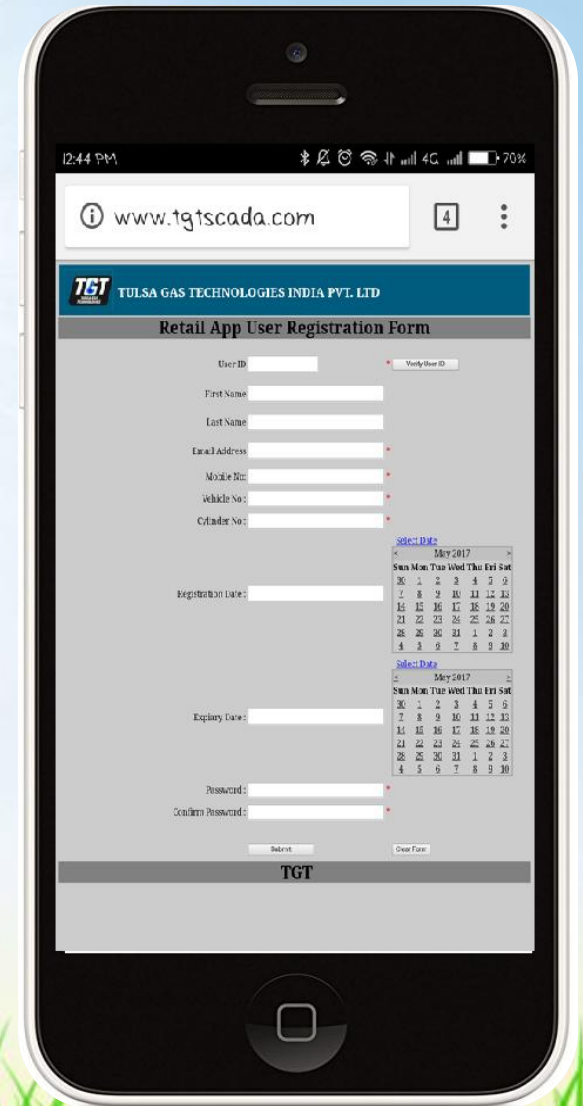


CNG SMART AND SAFETY PHONE APP WITH CASHLESS TRANSACTION






New User Registration

- 📍 Download App from Google play store
- 📍 Register by clicking on **NEW USER:**
- 📍 Provide following info
 - i. User id
 - ii. First name
 - iii. Last name
 - iv. Email Address
 - v. Mobile number
 - vi. Vehicle number
 - vii. Cylinder number
 - viii. Registration Date
 - ix. Expiry Date
 - x. Enter Password and confirm password
- 📍 Enter **SUBMIT** and user gets successfully registered with CGD's Customer Database
- 📍 User also gets user id and password to the registered email address .
- 📍 After KYC verified user can use this APP.



Verification Department

-  Customer have to go verification department with relevant KYC .
-  After verified the KYC ,verification department provide a barcode tag to customer .
-  Customer should paste the barcode tag inside the vehicle .

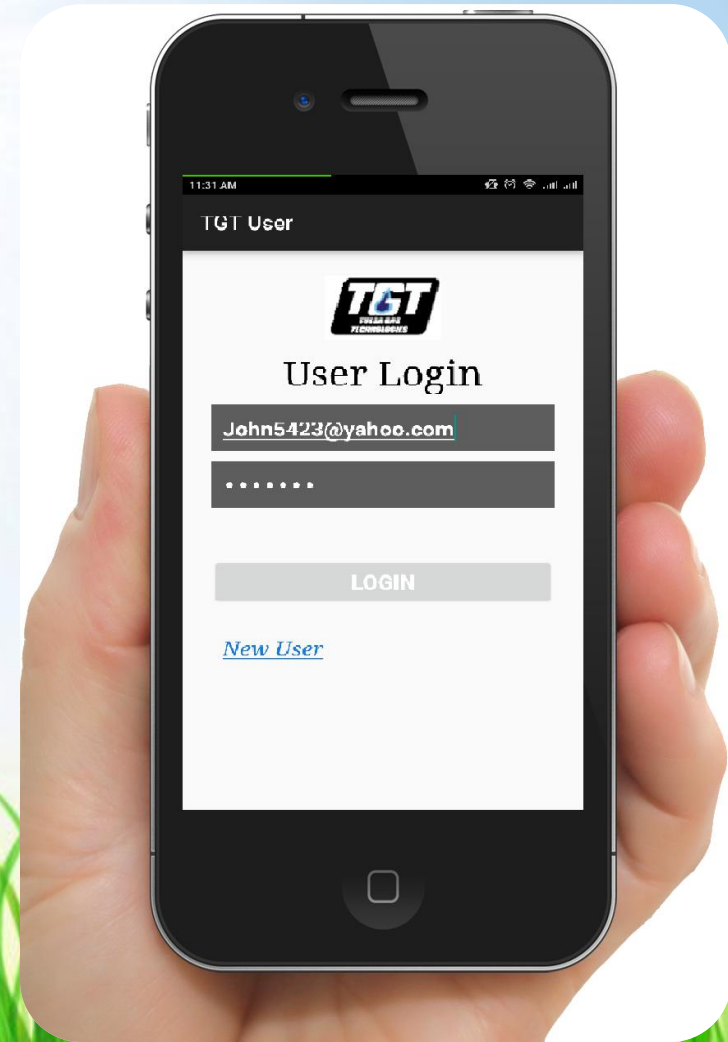


How to use APP

📍 Tap on App Icon on Phone

📍 Login Page appears

📍 Press login



Trace Current Location

- 📍 User can see the own current location as well as nearest CNG station's by clicking **LOCATE STATION**.
- 📍 And then select the CNG station which is nearest from his current location.
- 📍 The navigator directs the user to the selected station.
- 📍 Otherwise user can click on **SKIP** and go to the Vehicle Cylinder safety interface page.



Cylinder Verification

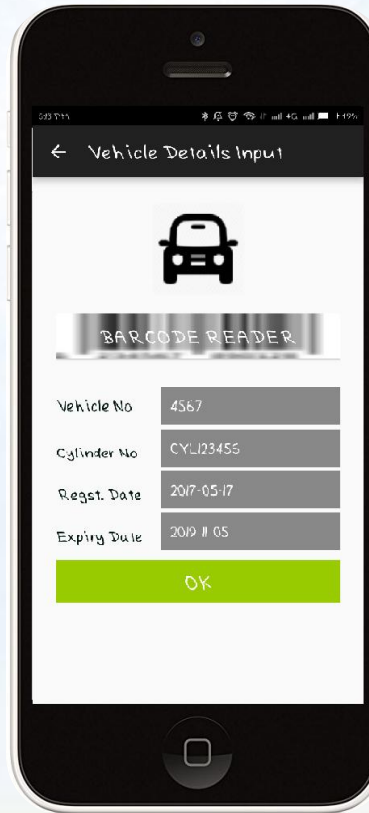
- Registered customer should click on the barcode reader to scan the barcode tag which is paste into the vehicle.
- After scanned tag customer know the cylinder validity .
- If cylinder validity is valid then customer move to next level i.e. Dispenser start page.
- If cylinder validity expired then customer do not having authentication to start the dispenser .



Fetch Cylinder Detail from Vehicle Barcode Tag



Barcode SCAN



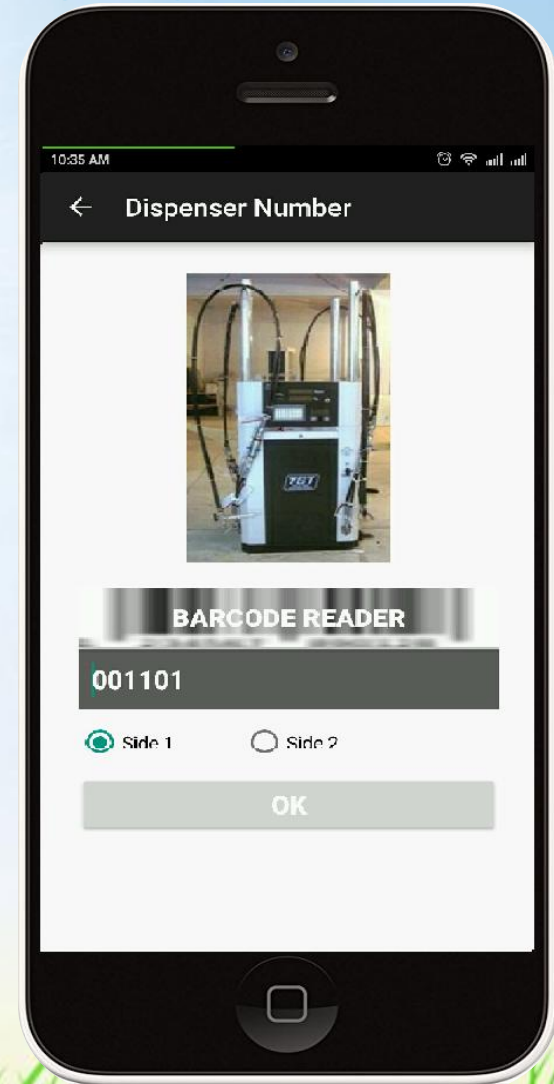
Valid



Expired

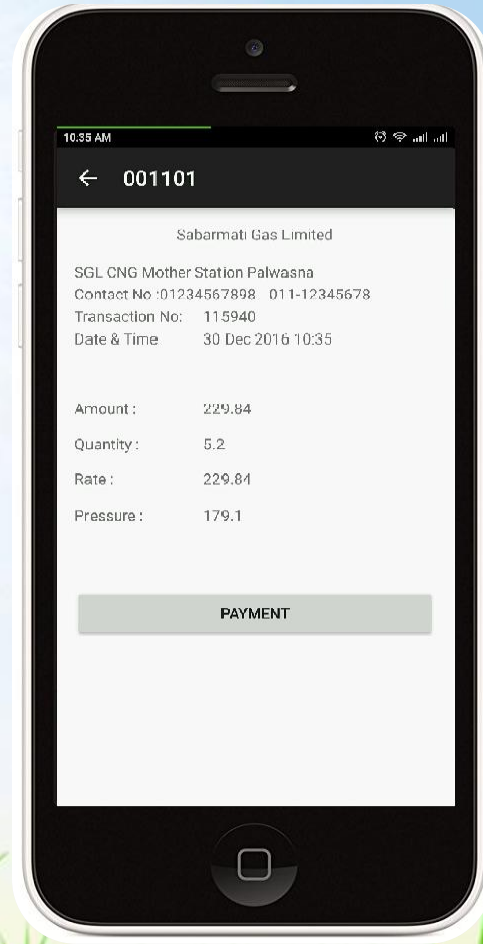
Dispenser Start Command

- 📍 Now customer click on Dispenser Barcode to start the dispenser .
- 📍 App fetch the details from the database(server).
- 📍 Finally server give authentication to start the dispenser .



Transaction Detail

- 📍 On communication is established- gas filling takes place.
- 📍 On completion of transaction following Data is visible on the user's phone
 - i. CNG station name
 - ii. Transaction number
 - iii. User Vehicle registration Number
 - iv. Date and Time
 - v. Amount
 - vi. Quantity
 - vii. Rate
 - viii. Pressure



Payment Mode

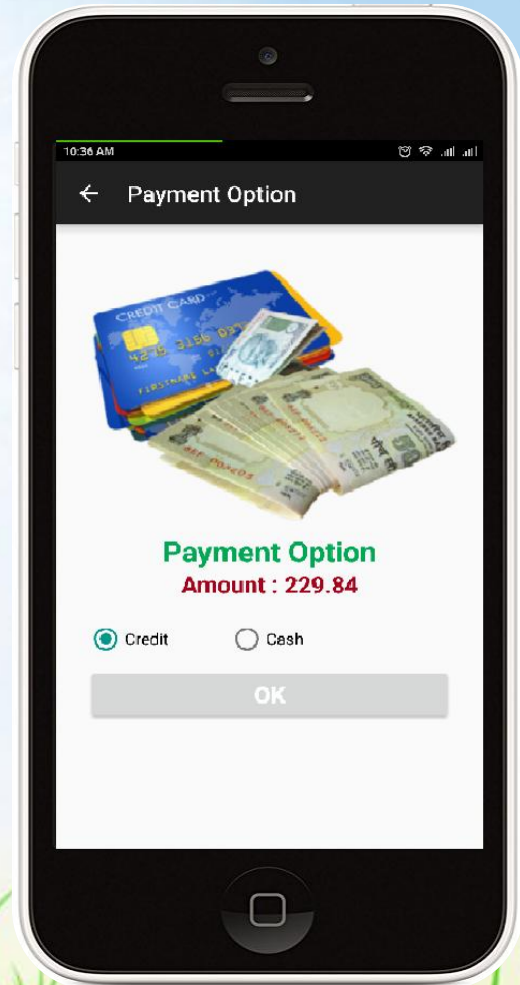
- 📍 On confirmation of transaction user taps for payment option
- 📍 User Has two options



Credit



Cash



Online Mode

- 📍 Online mode is easy to pay via net banking, payment engines or different cards.
- 📍 User can select the bank card from which they have to pay.
- 📍 After filling the required fields and security details user can complete the transaction.
- 📍 Automatic bill receipt of transaction at registered email address.

