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September 2012

# 1. Software overview

**Truckman.NET** is a terminal automation system for monitoring, controlling and managing the truck loading process in oil terminals. **Truckman.NET** is an upgrade of the TruckManager software and is currently installed and operating at several oil terminals.

Truckman.NET consists of the following basic subsystems:

- Loading management system
- Isle automation system

and the following optional subsystems:

- Additives subsystem
- Interface to SAP
- Tank Gauging Software
- SCADA subsystem for monitoring and control of station pumps and valves.
- Terminal gate and truck weighing
- Deliveries and customs clearance
- Central monitoring and control

#### 1.1 Loading management system

The Loading management system provides the following basic functionality for managing the truck loading process:

- Entry and management of loading orders
- Printing of loading orders
- Print out of bill of lading. The bill of lading is customizable according to user requirements
- Configuration of LCUs and system parameters
- Management of products and additives
- Management of truck driver database
- Management of companies database
- Management of trucks and compartments database
- Management of users and access levels

- Daily reports, balances and access to historical data
- Management of users

#### 1.2 Isle Automation System

The Isle Automation System provides the basic functionality for automating and supervising the truck loading process. The Isle Automation System has the following characteristics:

- Supports loading isles of either bottom loading or top loading with LCUs such as Accuload II, Accuload III, Masterload II, Petrocount, ISOIL VEGA and Contrec.
- Controls truck driver access to loading Isles and entry of fuel quantities. An optional interface with Badge Reader Systems can be used for truck driver access.
- Provides a graphical overview (mimic diagram) of isles and trucks
- Provides an Emergency Shut Down (ESB) and LCU disable function
- Alarm logging and handling
- Event logging and printing
- Automated self checks of loading data consistency (constant cross check of totalizers and bills of lading)
- Detailed reports and statistics

#### 1.3 Additives Subsystem

- Additive management
- Additive automation

### 1.4 Interface to SAP

- Import of loading orders from SAP
- Export of loading data to SAP

#### 1.5 Tank gauging software

- Interface with tank gauging system hardware (e.g. ENRAF) for on-line monitoring and display of tank levels, temperatures, densities and water levels
- Calculated Gross, Net and weight values of products in tanks based on tank strap tables
- Monitoring and handling of High, High-High, Low and Low-Low level alarms
- Graphical display (mimic diagram) of terminal tanks.
- Historical data base of tank measurements
- Trend charts of tank measurements
- Data reconciliation of measured and expected quantities based on delivery protocols and loading data

#### 1.6 SCADA subsystem

SCADA subsystem for monitoring and control of station pumps and valves:

- Overall station mimic display
- Automated startup and shutdown of product pumps based on current and expected loading orders
- Remote control of pumps and valves
- Interlocks
- Event and alarm monitoring
- User customizable station configuration

#### 1.7 Terminal gate and truck loading

- Registration of truck's arrival and departure times
- Entry and exit weighing
- Checking of actual weight against expected tare and gross weight from loading data.

#### 1.8 Delivery and customs clearance

- Management of terminal fuel tanks
- Entry and management of product delivery protocols
- Entry and management of customs clearance operations
- Product inventories and management of product surpluses or deficits
- Management and reporting on stocks and available quantities
- Checks of loading orders against available quantities

### 1.9 Central monitoring and control

Centralized access to the oil terminal operations from the company head offices. In detail, the head offices have access to the following data:

- LCU start and end totalizers
- Daily deliveries and loadings rundown
- Modifications of oil terminal LCU parameters
- Totalizer continuity cross check
- Alarm monitoring and handling

#### 1.10 Other features

- Interface with electronic weighing system
- Interface with badge readers
- Truck driver information panel
- Database mirroring and back up
- Interface with MS Excel for statistical analysis

# Sample Screens and Forms

## Loading Orders Form

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## Loading Isles Mimic Display

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### **Drivers Form**

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### **Trucks Form**

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### **Products Form**

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### Additives Form

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### LCUs Form

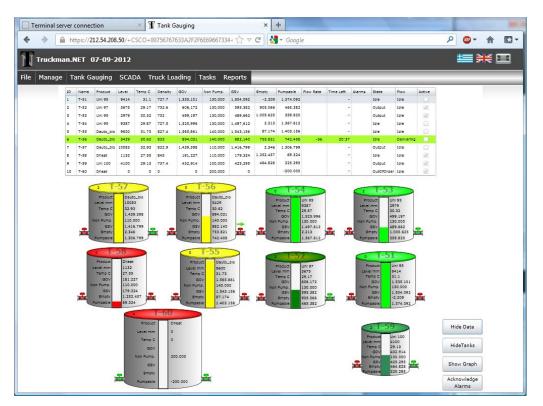
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	20	6.5	5	U +	Acc III *	405	3	<ul> <li>✓</li> </ul>		1	T-53 ¥	0	0		
	21	7.2	7	U +	Acc II 🔻	502	4	1	1	2	T-53 •	18591522	37630204		
	22	7.1	7	- Bd ▼	Acc II 🔻	501	4	1	1	1	T-55 ¥	22087818	57325938		
	23	7.4	7	SP -	Acc II 🔻	504	4	1	1	2	T-59 -	7886724	16929361		
	24	7.3	7	U Ŧ	Acc II 🔻	503	4	1	1	1	T-53 🔻	12962011	33228674		
	25	7.5	7	U -	Acc II 🔻	505	4			1	T-53 🔻	0	0		
	26	8.2	8	U -	Acc III 🔻	602	5	$\checkmark$	$\checkmark$	1	T-53 🔻	12962011	33228674		
	27	8.1	8	Bd ▼	Acc III 🔻	601	5	$\checkmark$	$\checkmark$	1	T-55 🔻	12962011	33228674		
	28	8.4	8	UC 🔻	Acc III 🔻	604	5	$\checkmark$	1	1	T-52 🔻	12962011	33228674		
	29	8.3	8	U -	Acc III 🔻	603	5	1	1	1	T-53 🔻	12962011	33228674		
	30	8.5	8	SP 🔻	Acc III 🔻	605	5	$\checkmark$	$\checkmark$	1	T-59 🔻	0	0		
	31	9.2	9	Bd ▼	Acc III 🔻	702	6	$\checkmark$	$\checkmark$	1	T-55 🔻	12962011	33228674		
	32	9.1	9	Dh 🔻	Acc III 🔻	701	6		$\checkmark$	1	T-58 🔻	12962011	33228674		
	33	9.4	9	Dh 🔻	Acc III 🔻	704	6		$\checkmark$	1	T-58 🔻	12962011	33228674		
	34	9.3	9	U •	Acc III 🔻	703	6	$\checkmark$	$\checkmark$	1	T-53 🔻	12962011	33228674		
	35	9.5	9	U -	Acc III 🔻	705	6	$\checkmark$		1	T-53 🔻	0	0		
							Save		Refresh						

## **Reports Form**

			3137322E323 🏠 🔻 C							•
Truckman.NET 07-	09-2012								<b>±</b> =	
Manage Tank Gaug	ng Truck Load	ling Reports								
07-09-2012 15 🕨										
DailyOrders				Dail	Orders					
		ID Truck	Driver	Time	Unl 95	D-HHO	D-ADO	GASOIL EX	GASOIL2	
TotalizersReport	A 1	Company: CORAL								
Period Report		1 EKB 2214	ΣΙΚΛΑΦΙΔΗΣ ΠΑΥΛΟΣ	06:57	8,946	0	19,156	0	0	
		3 EKB 1660	ΣΥΡΓΙΩΤΗΣ ΠΟΛΥΔΩΡΟΣ	07:37	7,432	0	10,311	0	0	
		5 EKB 3020	ΚΑΡΓΙΟΣ ΧΡΗΣΤΟΣ	08:10	3,864	0	28,248	0	0	
		Company: AVIN								
		2 100 2058	ΑΔΑΜΙΔΗΣ ΙΩΑΝΝΗΣ	07:21	15,460	0	17,352	0	0	
		4 EKE 1015	ΘΩΜΑΙΔΗΣ ΠΑΝΑΓΙΩΤΗΣ	07:50	2,278	0	17,591	0	0	
		6 EKA 7182	ΣΤΑΦΥΛΑΣ ΣΤΑΥΡΟΣ	08:33	17,024	0	10,108	0	0	
		Company: Ynooi								
		0	CORAL	00:00	20,242	0	57,715	0	0	
		0	AVIN	00:00	34,762	0	45,051	0	0	
			ό Σύνολο (1 item)							
		0		00:00	55,004	0	102,766	0	0	

#### Tank Gauging Subsystem

#### Tank Mimic Display



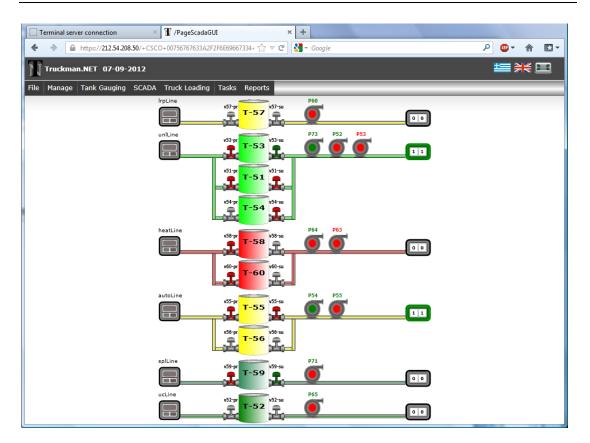
#### **Tank Graphs**



#### Tank Definition and Strap Table

П	erminal serv	er connecti	on	×	Tanks Defi	nition		× +									
÷	۵	https://212	2.54.208.50	)/+CSCO+0	0756767633/	A2F2F6E696	67334⊣ 🏠 🗢	ଙ୍କ 🚼 - G	oogle					٩	🚇 <del>-</del> 1	î I	<b>3</b> -
N	Truckma	n.NET 07	7-09-20	12											≝ ¥	(	3
File	Manage	Tank Gau	ıg <mark>i</mark> ng S	CADA T	ruck Loadir	ng Tasks	s Reports							_		_	
								Tanks List									
													Strap T	able			
	ID	Name	Product	Active	Scan	Туре	2	Roof	Weight	924		Strap Nun		evel	Volume		
	1	T-51	U	•	✓	Density	727.7		Base Vol	20300		1	18	875	301931		
	2	T-52	UC	•	1	Level	9414	Ma	ax Level	9400		2	38	884	625500		
	3	T-53	<u> </u>	•	<ul> <li>Image: A state of the state of</li></ul>	Temp			Volume			3		891	948888		
	4	T-54 T-55	<u> </u>	•	<ul> <li>✓</li> </ul>		1535101		KPlak			4		900	1272357		
	6	T-56	<u> </u>		√		1504092		Aplak			5		417 0692	1516579 1721841		
	7	T-57		•	<ul> <li>✓</li> </ul>							ľ	1	0002	1721041		
	8	T-58		•	~	Mass	1094528		Offset	0							
	9	T-59	SP	•	$\checkmark$	нн	9400			750							
	10	T-60	Dh	•	$\checkmark$		8900			800							
	10		<u> </u>	•		пэ	8900		LS	800		Add	l New	Dele	ete	_	
	10			•													
	10			• •													
	10																
			Save			Find	Add New	Delete R	efresh	Print	I4 4 Page	1 of :	1 🕨 🕅				

### SCADA Subsystem



fermin	al server	connec	tion	×	T Pag	eDeliveries	Page		×	+										
⇒	🔒 h	ttps://2	212.54.20	08.50/+CSC	O+00756	767633A2F2	F6E6966733	4+☆▼(	e 💡	🗧 🗝 Goog	le						Q	ab 🚽	⋒	
True	kman.	NET (	07-00	-2012														<b>1</b>		
Truc	kman.		07-09	-2012																
Man	age T	Fank G	auging	SCADA	Truck	Loading	Tasks R	eports	_	_	_	_	_	_		_	_	_		
		Delive	eries		(	Delivery Typ	e a	ctive 🔻	)	Protoco	47	7747			Date	28-08-201	2 15			
		Pro	otocol	Date 🔺	Tank	Product *	Net	Origin		Tan	с Т-!	54		Ŧ	Product	υ				
		473	7747	28-08-12	T-54	U	1.355.874	D		CA	٤ 📃				Bd	Net :	.355.874	J		
		473	7750	30-08-12	T-51	U	1.342.790	D				Get	Start	Ca	lculate Net	Get	ENd	)		
		473	7752	03-09-12	T-53	U	1.352.020	D		Start Tim	•	28/08	8/12 13	:27	End Time	28/08,	12 13:28			
		473	7754	04-09-12	T-54	U	1.306.610	D	:	Start Leve				754	End Level		9.413	]		
			7756	06-09-12			1.344.990		s	Start Tem			2	34,7	End Temp		32,3			
		473	7632	30-04-12		Dh	155.440		St	art Densi	3		73	82,8 E	nd Density		731,8	]		
				18-05-12		Dh	24.731			Start Ne	t		134.	739	End Net	-	.497.131			
				13-07-12		Dh	74		F	Add Delive	ry	Delet	e Deliv	ery	Edit Delivery	/	Print			
			7666	13-06-12		SP	501.103	-					Delive	ery Distri	butions			-		
		47	7731	10-08-12	1-59	SP	489.020			Compan	y C	Date	AC	Initial	Deliv.	Remain				
						I4 4 Pag	ge 1 d	of 3 🕨 🕨	J	MOTOR	DIL 2	8-08	Y	1.355.8	374		0 🔺			
					Compa	iny 🗌	AVIN OI	L 🔻	Į	MOTOR	DIL 3	1-08	Y	-905.8	74 -905.87	74	0			
		Pr 🔺	CT 🔺	Initial	Deliv.	Pending	Remain.	Διαθ.		AVIN OI	. 3	1-08	Y	905.8	905.87	74	0			
		U		1.000.000						MOTOR	DIL 3	81-08	Y	-100.0	000 -100.00	00	0			
		U	E		185.940	19.257	58.764	108.125		CORAL	3	81-08	Y	100.0	000 100.00	00	•			
		Dh	Y	24.805								Add		Delete		fer				
		SP	Y	20.700					0					oms Clea			A 0	_		
		SP	E	15.950	1.976						Date	AC Y	CT E	Deliv.	Remain. 905.8			0		
		Bd	Y	950.010	185.311	16 700	40.044	9 104.115	COF		1-08		E		100.00			0		
		Bd P9	E Y	354.148	185.311	16.703	48.019	104.115			1-08		E		70.0		32 38.36			
		P9	E	1.233	11				COF		3-09		E		280.00			0		
		EM	Y	1.235	11								-		200101	10010		-		
		EM	E	556	42								Add		Delete					

## Deliveries and Customs Clearance Form

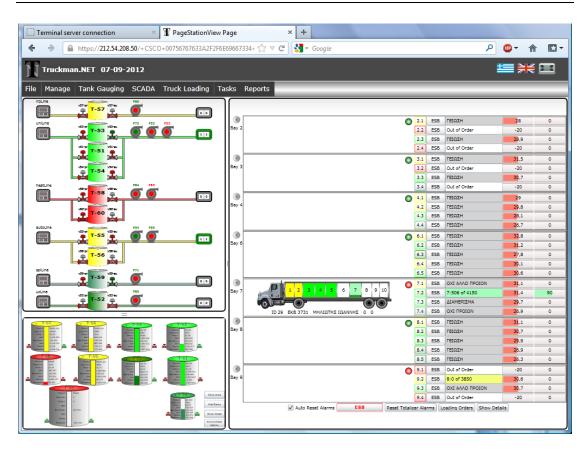
## Inventory Form

n.NE	т 07-	09-2012												<u>م</u> ±	
Tan	k Gaug	ing SCAI	DA Tri	uck Load	ling	Tasks Re	epo		-	_	-	-	_	-	
Inve	entory F	Protocols		Inve	ntory	31/08/1	2 •	Add Invento	ry )	Delete I	nventory		Finalize Inve	ntory	
т	ank ▲	Product	Protoco	l date		Net									
т	-51	U		31-0	8-12	1,501,319	•	Protocol			Date	31-0	8-2012	15	
т	-52	UC		31-0	8-12	681,416		Tank	T-52		Product	UC			
т	-53	U		31-0	8-12	163,837		CAR			Bd	<u> </u>	Net 681,4	16	
т	-54	U		31-0	8-12	1,496,555			G	et Start	ī —	C	alculate Net		
т	-55	Bd		31-0	8-12	1,627,525		Start Time	31/	08/12 14:4	в				
Т	-56	Bd		31-0	8-12	361,226		Start Level		4,23	6				
т	-57	Bd		31-0	8-12	1,412,836		Start Temp		32.	2		Save		
т	-58	Dh		31-0	8-12	180,245		Start Density		732.	5				
т	-59	SP		31-0	8-12	491,589		Start Net		681,41	5		Print		
Т	-60	Dh		31-0	8-12	0	-								
Inv	entory	Product Tota	als							Delive	eries				
Pro	duct 🔺	Measured	Calc	ulated	Fixed	Differ.		Protoco	Date	Tank	Product	Net	Origin		
s			0	0		0	0 4								
U		3,161,71	1 3,	109,814		0 51,89	7								
Dh		180,24	5	0		0	0								
D			0	0		0	0			Delivery Dis	stributions				
SP		491,58		490,714		0 87		Company	Date	AC I	nitial De	liv.	Remain.		
Bd		3,401,58		359,168		0 42,41	- 11								
UC		681,41		678,950		0 2,46									
N6			0 0	0			0 -								

#### Gate Form

			.54.208.50/+CSCO+00756767633A2F2F	0E090073344	M V V	C 60	ogie					
<u>л</u> т	uckn	nan.NET 07	/-09-2012									
le M	lanag	e Tank Gau	ging SCADA Truck Loading	Tasks Rej	ports		_	_				
						Gate						
	ID 🔻	Truck	Driver	Gate In	Tare	Gate Out	Gross	Net	Expected	Diff %	Check	
-	33	EKB 5320*	ΚΑΡΒΟΥΝΗΣ ΚΩΝΣΤ		0		0	0				-
-	32	EKA 8458	CR-ΚΑΠΕΤΑΝΗΣ ΚΩΝΣΤΑΝΤΙΝΟΣ		0		0	0				
	31	EKB 8966	ΣΩΤΗΡΟΠΟΥΛΟΣ ΝΙΚΟΛΑΟΣ		0		0	0				Tare
	30	EKB 8851	ΑΛΕΦΑΝΤΖΗΣ ΙΩΑΝΝΗΣ		0		0	0				
	28	EKB 8855-	ΧΟΝΔΡΟΠΟΥΛΟΣ ΠΑΝΑΓΙΩΤΗΣ		0		0	0				
.oad	29	EKB 3731	ΜΗΛΙΩΤΗΣ ΙΩΑΝΝΗΣ	09:33	14,160		0	0				
oad	27	EKA 9405-	ΚΛΕΙΑΣΟΣ ΓΕΩΡΓΙΟΣ	09:22	14,380		0	0				
Dut	26	ZKX 9541	CR-ΝΕΡΟΥΤΣΟΣ ΦΩΤΙΟΣ	09:05	13,180	09:36	34,600	21,420	21,560	6.49		
Dept	25	EKA 6500	CC-ZΩΓΡΑΦΟΣ ΣΩΤΗΡΗΣ	09:01	14,810	09:39	39,120	24,310	24,368	2.38	-	
Dept	24	EKA 8393	CC-ΠΑΠΑΝΙΚΟΛΑΟΥ ΝΙΚΟΣ	08:58	14,300	09:31	41,000	26,700	26,648	-1.95	-	
Dut	23	EKB 5994-	ΜΠΡΙΤΣΑΣ ΚΩΣΤ.	09:19	14,350		0	0				
Dut	22	EKA 4381	CR-ANTΩNIOY ΠΑΝΑΓΙΩΤΗΣ	08:31	18,590	09:24	42,900	24,310	24,492	7.43		Refresh
Dut	21	EKE 4380*	CR-ΑΛΕΞΑΝΔΡΟΥ ΚΩΝ/ΝΟΣ	08:16	14,910	08:57	39,840	24,930	24,949	0.76		
BOL	20	EKA 4479	CC-ΔΑΣΚΑΛΟΠΟΥΛΟΣ ΘΕΟΔΩΡΟΣ	08:08	18,250		0	0				Check
Dut	19	EKA 8499	CR-ΤΡΟΜΠΟΥΚΗΣ ΝΙΚΟΛΑΟΣ	08:05	17,870	08:43	38,600	20,730	20,874	6.90		
Dut	18	EKA 5165	CR-ΛΕΦΑΝΤΖΗΣ ΙΩΑΝΝΗΣ	07:58	18,440	08:46	40,600	22,160	22,275	5.16		Gate Report
Out	17	EKB 1700"	CR-ΜΠΟΣΓΑΝΑΣ ΓΕΩΡΓΙΟΣ	07:30	14,190	07:59	41,820	27,630	27,638	0.29		
Dut	16	EKA 2802	ΚΑΡΒΟΥΝΙΑΡΗΣ ΝΙΚΟΛΑΟΣ	07:37	14,820	08:06	41,680	26,860	26,868	0.30		Change Weigh
Dept	15	EKA 3617	CC-HALULI ARTUR	07:20	23,170	07:29	25,300	2,130	2,126	-1.88		Change Weigh
Dut	14	EKA 8509	CC-ΔΙΠΛΑΡΑΚΟΣ ΠΡΟΚΟΠΙΟΣ	07:04	14,390	07:36	42,480	28,090	28,133	1.53		
Dut	13	EKB 9090	CR-TPIANTOΣ ΑΛΕΞΑΝΔΡΟΣ	06:45	17,810	07:14	39,900	22,090	22,181	4.10		<ul> <li>Print BOL</li> </ul>

#### Station Overview



# References

Tuck Manager and Truckman.NET has been installed at the following sites:

Oil Terminal	Installed subsystems						
	Loadi ng MGM T	Isle Automation	Gate	Deliveries- Customs	Tank Manager	Invoices	SCADA
AVIN Ag. Theodori	YES	YES	YES	YES	YES	YES	YES
EKO Alexandroupoli	YES	YES	NO	NO	NO	NO	NO
BP Igoumenitsa	YES	YES	NO	NO	NO	NO	NO
BP Kalamata	YES	YES	NO	NO	NO	NO	NO
BP Heraklion	YES	YES	NO	NO	NO	NO	NO
BP Perama	NO	YES	NO	NO	NO	NO	NO
Shell Amfilochia	NO	YES	NO	NO	NO	NO	NO
Shell Chania	NO	YES	NO	NO	NO	NO	NO
RPI Rhodes	YES	YES	NO	YES	NO	YES	NO
RPI Alexandroupolis	YES	YES	NO	YES	NO	YES	NO
SUN Oil Chalkis	YES	YES	NO	YES	YES	NO	NO
KA Oil Almyros	YES	YES	NO	YES	NO	NO	NO
Cyclon Perama	YES	YES	NO	NO	NO	NO	NO
Coral SA Kavala	YES	YES	NO	NO	NO	NO	NO
Hellenic Fuels Mytilini	YES	YES	NO	NO	NO	NO	NO
Agean Alexandoupolis	YES	YES	NO	NO	NO	NO	NO