

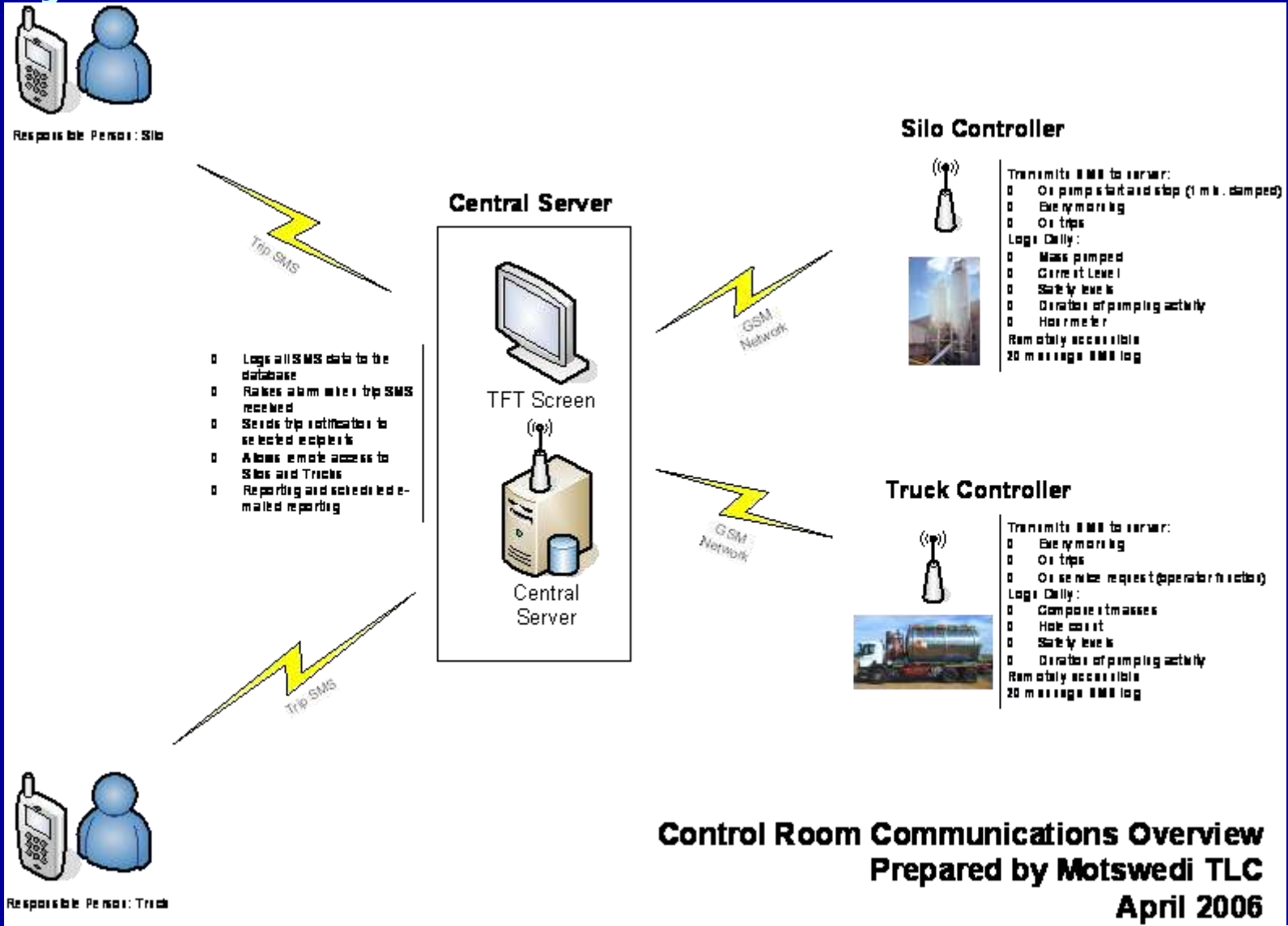
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# Remote Asset Monitoring System



ISV/Software Solutions

# System Communications Overview

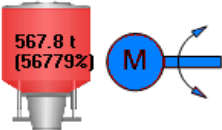
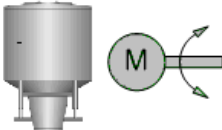
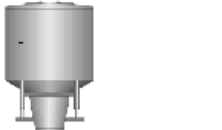
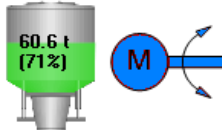
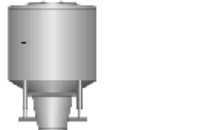
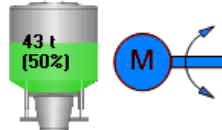

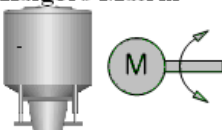

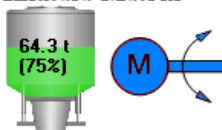

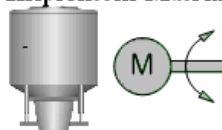

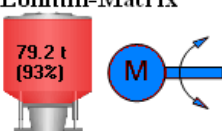







**Control Room Communications Overview**  
**Prepared by Motswedi TLC**  
**April 2006**

# Main Screen

File Database Help

Silos Trucks Tankers

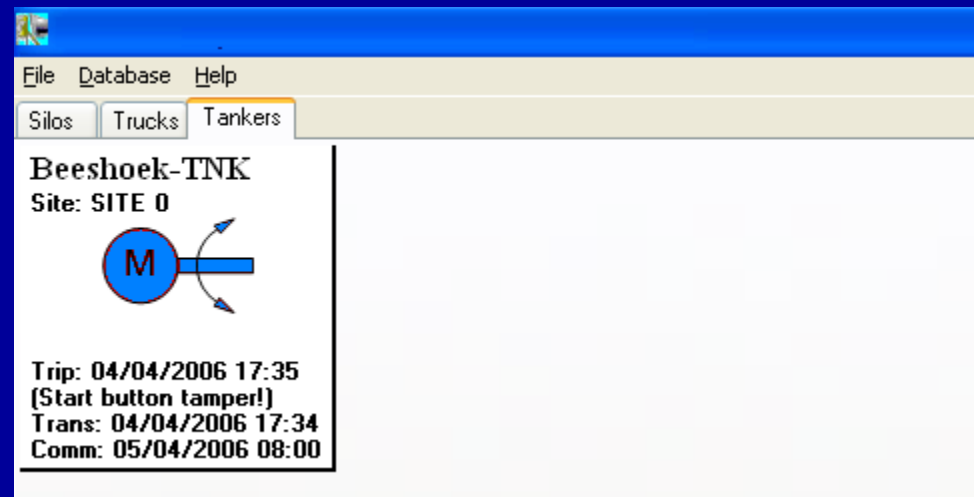
<b>Beeshoek-BSK MTX</b>  567.8 t (56779%) Trip: 11/04/2005 18:02 (Stator Temp: 234.5 °C) Trans: - Comm: -	<b>Beeshoek-Matrix</b>  Trip: - Trans: - Comm: -	<b>Beeshoek-PPAN</b>  Trip: - Trans: - Comm: -	<b>Foskor-Matrix</b>  60.6 t (71%) Trip: 07/10/2005 07:04 (Pres 1: 78.8 kPa) Trans: 11/10/2005 06:38 Comm: 10/10/2005 16:00	<b>Foskor-PPAN</b>  Trip: - Trans: - Comm: -	<b>Isibonelo-Matrix</b>  43 t (50%) Trip: 11/10/2005 14:56 (Pres 1: 12.7 kPa) Trans: 06/10/2005 12:41 Comm: 11/10/2005 14:55
<b>Isibonelo-PPAN</b>  Trip: - Trans: - Comm: -	<b>Kalgold-Matrix</b>  Trip: - Trans: - Comm: -	<b>Kalgold-PPAN</b>  Trip: - Trans: - Comm: -	<b>Khutala-Matrix</b>  64.3 t (75%) Trip: 11/10/2005 07:17 (Product Temp: 75 °C) Trans: 11/10/2005 09:08 Comm: 10/10/2005 16:00	<b>Khutala-PPAN</b>  Trip: - Trans: - Comm: -	<b>Klipfontein-Matrix</b>  Trip: - Trans: - Comm: -
<b>Klipfontein-PPAN</b>  Trip: - Trans: - Comm: -	<b>Lommin-Matrix</b>  79.2 t (93%) Trip: 23/10/2005 06:30 (Pres 1: 169.8 kPa) Trans: 23/10/2005 06:51 Comm: 11/10/2005 15:08	<b>Lommin-PPAN</b>  Trip: - Trans: - Comm: -	<b>MMS 1-Matrix</b>  Trip: - Trans: - Comm: -	<b>MMS 1-PPAN</b>  Trip: - Trans: - Comm: -	<b>MMS 2-Matrix</b>  Trip: - Trans: - Comm: -
<b>Quarries-Matrix</b>  Trip: - Trans: - Comm: -					

Edit Database Clear Alarm

Signal Strength 56%

# Asset Monitoring/Display

- Various Asset categories
- Representation with or without graphics.
- Customisable list of monitored parameters.
- Trip conditions monitored and displayed



The screenshot shows a software window with a menu bar (File, Database, Help) and tabs for 'Silos', 'Trucks', and 'Tankers'. The 'Trucks' tab is active. The main display area shows a table of asset data:

Asset Name	Trip	Parameters	Comm
Isibonelo-724	Trip: -	Holes Pumped: 0 Engine hours: 0	Comm: -
Beeshoek-454	Trip: 30/06/2005 14:15 (BPX Pres: -249.7 kPa)	Holes Pumped: 0 Engine hours: 0	Comm: 30/06/2005 14:11
Khutala-730	Trip: 12/04/2005 18:02 (BPX Prod T: 345.6 °C)	Holes Pumped: 28 Engine hours: 3456	Comm: 12/04/2005 18:00
Khutala-731	Trip: -	Holes Pumped: 0 Engine hours: 0	Comm: -

# Trip Condition

- Trips indicated visually and audibly.
- Trips acknowledged and cleared by entering Staff Code.
- Ensures correct action is taken.

The screenshot displays the 'Monitoring System Demo' application. The main window has a menu bar with 'File', 'Database', and 'Help'. Below the menu are tabs for 'Vehicles', 'Trucks', and 'Tankers'. The main area is divided into a grid of vehicle status cards. Each card shows the vehicle name, latitude and longitude, a photo of the vehicle, and trip details. The 'Beeshoek-Demo V' card is highlighted in red, indicating an active trip. The 'Beeshoek-Matrix' and 'Beeshoek-RXT301' cards show trip details for 07/04/2006 16:39. The 'Khutala-Matrix' and 'Khutal' cards show trip details for 11/10/2005 07:1. An 'Alarms' dialog box is open, showing a list of alarms with 'Beeshoek-Demo V' checked. A 'Verification' dialog box is also open, prompting for a staff number, with 'fc123' entered. The 'Verification' dialog has 'OK' and 'Cancel' buttons. The 'Alarms' dialog has a green checkmark and 'OK' button at the bottom.

**Monitoring System Demo**

File Database Help

Vehicles Trucks Tankers

**Beeshoek-Demo V**  
Lat: -26  
Long: 28  
Trip: 07/04/2006 16:39  
[Over-rev: 4603.5 rpm]  
Trans: -

**Beeshoek-Matrix**  
Lat: -26  
Long: 28  
Trip: -  
Trans: -  
Comm: -

**Beeshoek-RXT301**  
Lat: -26  
Long: 28  
Trip: 07/04/2006 16:39  
[Over-rev: 4603.5 rpm]

**Khutala-Matrix**  
Lat: -26  
Long: 28  
Trip: 11/10/2005 07:1

**Khutal**  
Lat: -26  
Long: 28

**TLC Alarms**

Acknowledge the following alarms:

- Beeshoek-Demo V

**Verification**

Enter staff number:

fc123

OK Cancel

OK

# Asset Database

The screenshot displays the TLC Database application interface. The main window shows a list of silos with columns for Silo Name, Description, Component, Capacity (ton), High Warning Level, and High Trip Level. A 'New Silo' dialog box is open, allowing for the creation of a new silo entry.

**Database Silo List:**

Silo Name	Description	Component	Capacity (ton)	High Warning Level	High Trip Level
KHU MTX	Matrix	Matrix	85	90	95
LMN MTX	Matrix	Matrix	85	85	90
FOS MTX	Matrix	Matrix	85	90	95
KLP MTX	Matrix	Matrix	85	90	95
MID1 MTX	Matrix	Matrix	85	90	95
MID2 MTX	Matrix	Matrix	85	90	95
KAL MTX	Matrix	Matrix	85	90	95
QAR MTX	Matrix	Matrix	85	90	95
KHU AN	PPAN	Prill	50	90	95
LMN AN	PPAN	Prill	50	90	95
FOS AN	PPAN	Prill	50	90	95
KLP AN	PPAN	Prill	50	90	95
MMS1 AN	PPAN	Matrix	60	90	95
KAL AN	PPAN	Prill	50	90	95
ISI MTX	Matrix	Matrix	85	90	95

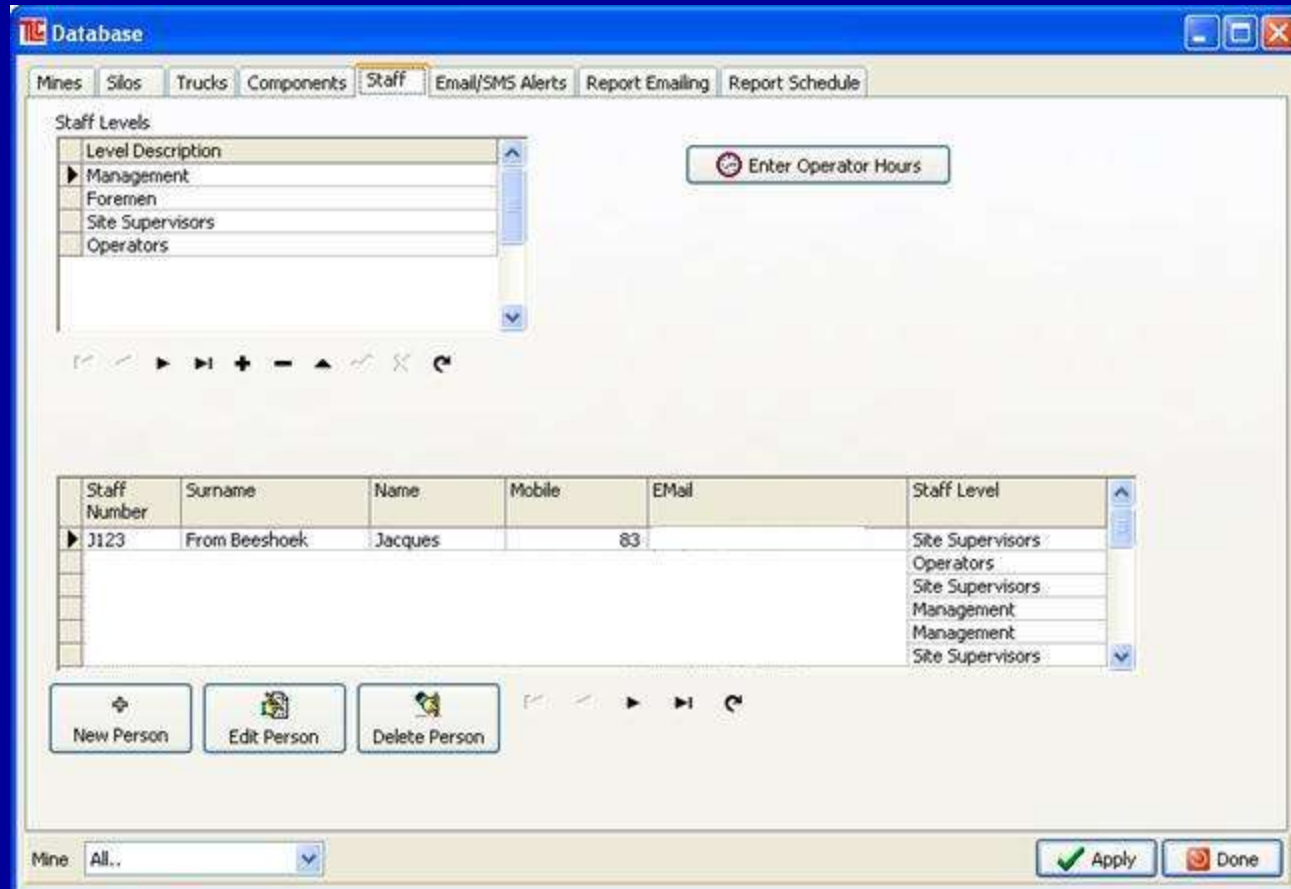
**New Silo Dialog Box Fields:**

- Mine: Beeshoek
- Component: Prill
- Silo Name: BHK AN
- Description (Max 8 characters): PPAN
- Mobile Number: 987
- Capacity (ton): 50
- Low Warning Level (%): 30
- Low Trip Level (%): 10
- High Warning Level (%): 90
- High Trip Level (%): 95
- Re-Order Level (%): 50
- Target Level (%): 50

Buttons: New Silo, Edit Silo, Delete Silo, OK, Cancel, Apply, Done.

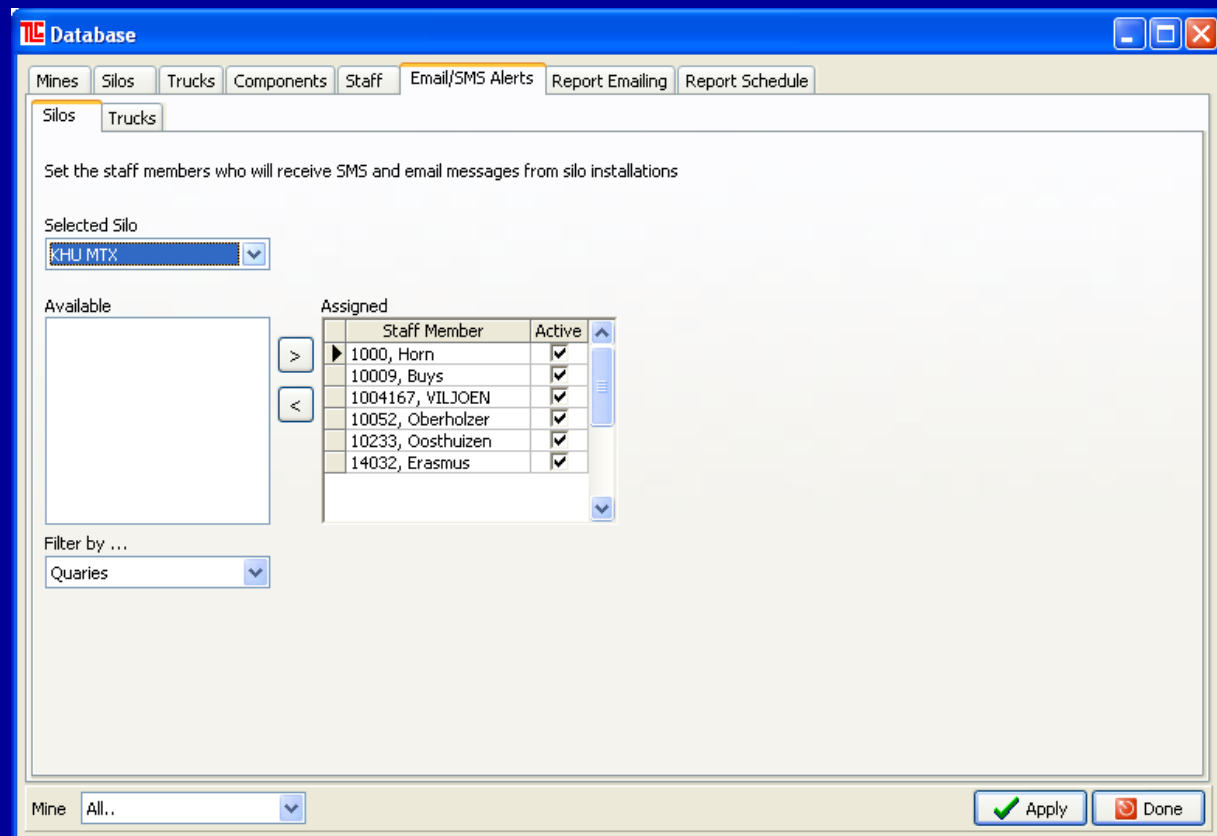
# Staff Database

- List of staff members.
- Contact details allow :
  - SMS notifications of trips.
  - Automated e-mailing of reports



# Trip Notification Recipients

- Select Staff members to receive trip notifications.
- Customisable for each asset.





# Reports and Schedules

- Select who should receive what reports.
- Customisable each report's e-mail schedule.

The screenshot displays the 'TLC Database' application interface. The top menu bar includes 'Mines', 'Silos', 'Trucks', 'Components', 'Staff', 'Email/SMS Alerts', 'Report Emailing', and 'Report Schedule'. The 'Report Schedule' tab is active, showing a 'Staff Level' dropdown set to 'All..'. Below this is a table with columns for various report categories and checkboxes for staff selection.

Staff Number	Staff Name	Trip Investigation-Trucks	Trip Investigation-Silos	Site Stock	Silo Pump Performance	Silo Safety System Trip	Truck Performance	Operator Performance	Maintenance Scheduling
1123	From Beeshoek	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FC123	Costella	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1000	Horn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14032	Erasmus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10233	Oosthuizen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BC123	Cousins	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ba001	Botha	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10052	Oberholzer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1004167	VILJOEN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1001	Trollip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10008	Potgieter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10001	Nel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10005	De Jager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10009	Buys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10067	Crane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The bottom window shows the 'Report Schedule' configuration table:

Report	Schedule	Last Sent
Trip Investigation-Trucks	None	
Trip Investigation-Silos	None	
Site Stock	Each Day	2005/06/30 12:52:42
Silo Pump Performance	Each Day	2005/10/11 02:03:19
Silo Safety System Trip		
Truck Performance		
Operator Performance		
Maintenance Scheduling		

# Report Examples

1 of 14    83%    Total:152    100%    152 of 152

**System Report**

## Silo Safety System Trip Report

**Print Date:** 2006/04/05  
**For Period:** 2004/04/05 to 2006/04/05

Silo	Date and Time	Channel	Level	Acknowledge		Corrective Action Number	Preventative Action Number
				Time	Surname		
Lonmin-Matrix	19/08/2005 14:34	Product Press2	96.1	21/08/2005 14:39	Costella		
Lonmin-Matrix	19/08/2005 14:42	Product Press	96.4	21/08/2005 14:45	Costella		
Lonmin-Matrix	19/08/2005 15:34	Product Temp	71	24/08/2005 07:24	Oosthuizen		
Khutala-Matrix	22/08/2005 12:02	Product Press	57.8	24/08/2005 12:03	Oosthuizen		
Khutala-Matrix	22/08/2005 12:08	Stator Temp	212	24/08/2005 12:10	Oosthuizen		
Khutala-Matrix	22/08/2005 12:20	Product Press2	62.8	24/08/2005 12:50	Oosthuizen		
Lonmin-Matrix	22/08/2005 11:48	Product Press	133.5	25/08/2005 13:03	Costella		
Lonmin-Matrix	24/08/2005 08:25	Start Button Tamper		24/08/2005 08:29	VILJOEN		
Khutala-Matrix	24/08/2005 09:41	Product Press2	38.6	24/08/2005 09:44	VILJOEN		
Khutala-Matrix	24/08/2005 10:15	Product Press	39.8	24/08/2005 10:30	Oosthuizen		
Khutala-Matrix	24/08/2005 17:27	Product Press2	189.7	25/08/2005 07:55	VILJOEN		
Khutala-Matrix	26/08/2005 08:14	Product Press2	164.7	26/08/2005 10:35	Oosthuizen		
Lonmin-Matrix	27/08/2005 14:58	Stator Temp	61	28/08/2005 08:05	Oosthuizen		
Khutala-Matrix	27/08/2005 20:51	Product Press	102.7	28/08/2005 08:05	Oosthuizen		
Lonmin-Matrix	29/08/2005 12:41	Product Press2	187.0	29/08/2005 14:44	Oosthuizen		
Khutala-Matrix	29/08/2005 14:54	Product Press	39.6	29/08/2005 14:59	Oosthuizen		
Khutala-Matrix	29/08/2005 14:53	Product Press	168.8	29/08/2005 14:59	Oosthuizen		
Lonmin-Matrix	30/08/2005 07:59	Product Press2	158.4	30/08/2005 08:06	Oosthuizen		
Lonmin-Matrix	30/08/2005 08:43	Product Press2	188.7	30/08/2005 08:49	VILJOEN		

Page 1 of 14

# Report Examples

The screenshot shows a web browser window with a blue title bar and standard navigation buttons. The page content is a report titled 'Silo Pump Performance Report' under the heading 'System Report'. The report includes a 'Print Date' of 2006/04/06 and a 'For Period' of 2004/04/06 to 2006/04/06. The main data is presented in a table with columns for 'Silo', 'Transaction Date', 'Duration', and 'Mass Dispersed'. The table is organized into sections for 'Site 1', 'Site 2', 'Site 3', and 'Site 4', each with a 'Totals' row. The browser's status bar at the bottom shows '1 of 4' pages, a zoom level of '100%', and a total of 2312 items out of 2323.

System Report

## Silo Pump Performance Report

Print Date: 2006/04/06

For Period: 2004/04/06 to 2006/04/06

Silo	Transaction Date	Duration	Mass Dispersed
<b>Beeshoek-BSK MTX(BSK MTX)</b>			
<b>Totals:</b>		<b>00:00:00</b>	<b>0.00</b>
<b>Site 1</b>			
	04/04/2006 11:06	00:03:36	0.60
	04/04/2006 11:06	00:03:36	0.60
	04/04/2006 11:51	00:08:16	0.70
	04/04/2006 12:03	00:07:08	0.60
<b>Totals:</b>		<b>00:25:51</b>	<b>2.50</b>
<b>Site 2</b>			
	21/09/2005 14:13	00:15:14	13.50
<b>Totals:</b>		<b>00:15:14</b>	<b>13.50</b>
<b>Site 3</b>			
	06/10/2005 08:13	00:00:00	0.30
	06/10/2005 09:49	00:00:00	0.20
	06/10/2005 10:23	00:00:00	0.60
<b>Totals:</b>		<b>00:00:00</b>	<b>1.10</b>
<b>Site 4</b>			
	24/08/2005 16:39	00:00:03	0.10
	24/08/2005 16:39	00:00:03	0.10
	24/08/2005 16:39	00:00:03	0.10
	24/08/2005 17:38	00:10:01	1.40

# Report Examples

The screenshot shows a web browser window with a blue title bar and a standard toolbar. The page content is a report titled 'System Report' and 'Site Stock Report'. It includes a print date of 2006/04/05 and a period from 2004/04/05 to 2006/04/05. A table follows with three columns: 'Silo', 'Mass Filled (kg)', and 'Mass Dispensed (kg)'. The table lists five sites and a grand total. The browser's status bar at the top shows '1 of 1', 'Total: 2310', '100%', and '2310 of 2310'.

System Report

## Site Stock Report

**Print Date:** 2006/04/05

**For Period:** 2004/04/05 to 2006/04/05

Silo	Mass Filled (kg)	Mass Dispensed (kg)
Site 1	4.40	2.50
Site 2	670.40	13.50
Site 3	306.60	1.10
Site 4	1,401.90	117.40
Site 5	1,557.50	769.10
<b>Grand Total:</b>	<b>3,940.80</b>	<b>903.60</b>

# System Specifications

- Designed to run on Windows XP or 2000.
- Uses MS SQL Server MSDE database (no additional licensing required).
- Remote monitoring systems:
  - Embedded microprocessors.
  - Communications by SMS and dial-up (cellular network coverage required).

# Remote System Specifications

- Two models available.
- Both available with LCD interface and watchdog.
- Model TLC-R001
  - 11x 24V Digital inputs (PNP/NPN configurable).
  - 4x 4-20mA powered inputs.
  - 2x RTD temperature inputs.
  - 2x 24V Counter inputs (PNP/NPN configurable).
  - 4x 24V Open-collector digital outputs.
  - 4x  $\pm 10V$  Analogue outputs.
- Model TLC-R002 (Truck Controller)
  - 16x 24V Digital inputs (PNP/NPN configurable).
  - 16x 4-20mA powered inputs.
  - 8x 24V Counter inputs (PNP/NPN configurable).
  - 16x 24V Open-collector digital outputs.
  - 16x  $\pm 10V$  Analogue outputs.
  - 2x  $\pm 0-20mA$  Analogue outputs.



# Contact Details:

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