



2nd Customer Satisfaction and Technical Performance survey of the Rope Pump "ROVAI" made by Ideas at Work

April 2009

BACKGROUND

In September 2006 Ideas at Work(IaW) started with manufacturing the Cambodian version of the Rope Pump, called ROVAI. This was done with an award of the WorldBank DM2006. During the project period our partner Resource Development International (RDI) did most project installations in Kien Svay district, Kandal province.

In February 2008, after 13 months of installing pumps a first survey was carried out to get user feedback and technical performance of the pumps. Global Positioning Satellite (GPS) coordinates were taken for each of the 40 surveyed pumps along with their unique pump ID number.

This new survey repeated the work done in February 2008 with the same families.

METHOD:

This 2nd study was done in 2 parts:

- a customer satisfaction
- a technical performance survey

GPS coordinates made sure we surveyed the same pumps and same families again and check on wear rate of the pistons and rope as well as user satisfaction feedback for comparison.

The interview took 30 minutes and at the same time the technical performance check was carried out.

Surveyors:

- HUY Dara, interviewer
- HUNG Soeun, IaW technical staff

No. of interviews/pumps: 40



Survey area: Kandal Province, Kien Svay district:

- Daun Sar village (10 respondents)
- Robos Angkanh village (18 respondents)
- Prek Thom village (12 respondents)

Period: April 2009

KEY RESULTS FROM THE SURVEY

General information

All pumps were installed between 13 and 37 months ago. The interviewees were using the pump for an average of 20 months. At two of the household a disabled person is also operating the pump successfully.

We are aware that all surveyed pumps are model "RP-5", our first production model. In 2006 mayor improvements were made to the RP-5 which resulted in the, currently produced, RP-6.

User Satisfaction results

Of the 40 pumps visited, 39 were in good working order and used on a daily basis. The not-working-one didn't technically fail but wasn't used due to bad well water quality (high content of nitrates).

- 100% of the families said they rated their satisfaction of the pump as "good" to "very satisfied"
- All users said they were are satisfied with the flow rate
- 98% of the people rate the pump as 'reliable' to 'very reliable'
- 60% of the pumps are used by single households, 18% of pumps are used by 2 families, 22% of the pumps are used by 3-5 families
- When asked about benefits of the pump people mentioned:
 - faster water collection
 - children can use the pump
 - easier for domestic gardening
 - easier laundry, cleaning, showering



Technical Performance results

61% of families with a Rovai pump said that they had carried out some maintenance either once a month or more often. However they considered that maintenance is mainly oiling the bearing.

The survey team found that 55% of the pumps had no evidence of oil being recently applied to the bearings (dry state). Not applying oil makes the handle harder to turn and is usually much noisier.

- 98% of the people rate the pump reliable to very reliable
- Average flow rate was 30 liter/minute, done with 31 handle turns
- The piston size varied between 27,6mm and 28.8mm
- 27% of the pumps needed to have their rope replaced and that message was conveyed to the pump owner



- 61% of the people say their pump has been looked after every 1-4 weeks, but still 7% never looks after the pump
- 18 of the 40 pumps had clear signs of oil on the bearing, showing signs of recently done maintenance

18 families have experienced a repair moment which in 50% of the case they repaired themselves. 10 ropes broke and 4 pistons were replaced. Users still rely heavily on RDI's presence for maintenance and repair. Although the pump owners found the repair cost were acceptable; only 8% recalls that spares can be bought at village stores.

COMPARISON 1st AND 2nd SURVEY

	2008	2009
satisfied with Rovai pumps worth the money	100% yes:39p	100% yes: 40 p
average flow rate per minute	34ltr	30ltr
max/min flow rate per minute	27-45ltr	34-48ltr
piston size	27.6- 28.8mm	27.6-28.8mm
says do maintenance once a month or more often (oiling)	62%	61%
says never to look after pump		7%
survey team saw evidence of oiling the bearing	40%	45%
relied on RDI for maintenance and repair	100%	95%
says can change rope themselves	30%	
says know where to buy rope/pistons	0%	8%

CONCLUSIONS

The performance of the pump was considered to be acceptable and no major concerns identified when the ROVAL is used on shallow wells.

In general it appears that the pistons do not show any measurable signs of wear. This was unexpected however it is regarded as very good news. This has proved that the pistons will certainly last much more than two years in the majority of domestic situations. Also the rope is lasting longer than expected, only 10 ropes have been replaced, while we expected that annual replacement would be required.

There was a slight improvement in the number of users making the effort to oil the bearings compared with the last survey. This may have been due to our or RDI staff informing users that this should be done during the last survey but this couldn't be verified.

Almost nobody knows where to get spare parts. Also it is unclear if the pump owners are trained to do the simple repairs as rope and piston change. Like last year, the interviewees still rely on RDI for spare parts and repairs.

This is not the situation in IaW work area of Kampong Chhnang where all buyers maintain the pump themselves and know where spare parts can be bought. It could highlight that once people have got used to relying on RDI to do the maintenance then it would be hard to change this.

NOTES

Areas identified for improvement as a result of this survey are almost the same as last year:

- Conduct survey also in Kampong Chhnang province, where IaW set up a distribution channel for Rovai Pumps.
- More focus on transferring maintenance skills to the buyer/owner. It was hoped that the users of the RDI work area would replace parts themselves as and when necessary. This would have helped to demonstrate how easy it was for users to make minor repairs themselves.
- Better attention on buyer's/owner's understanding of the maintenance requirements especially checking the rope, pistons also why, how and when to apply oil. (This is in the ROVAI operation and maintenance manual in Khmer which features simple drawings is provided with every ROVAI pump).
- Greater focus of RDI on where the parts can be bought in Kandal; all installers need to check which nearby markets has spare rope, PVC end cap(piston) and share this with users.
- Greater promotion of spare parts kit and self reliance of buyer.

The image shows a handwritten survey form titled "ROVAI user satisfaction survey - Part 1" dated April 2009. The form is filled out with the following information:

- Date of survey:** 11/04/09
- Survey carried out by:** [Handwritten name]
- Village/Community:** Kandal
- Pump ID:** 1
- Name Respondent:** [Handwritten name]
- Are you the buyer or user of pumps, or both:** [Handwritten "Both"]
- Disabled (tick at respondent):** [Handwritten "None"]
- Age:** [Handwritten "35"]
- Gender:** [Handwritten "Male"]
- When did you start using this pump?:** [Handwritten "11 months ago"]
- How many families use this pump?:** [Handwritten "2 families"]
- Do any disabled people use this pump?:** [Handwritten "No"]
- Overall, how would you rate the quality of the pump?:** [Handwritten "Very good"]
- Are you satisfied with the design of the pump?:** [Handwritten "Very satisfied"]
- What improvements should we make so that your pump is better for you?:** [Handwritten "None"]
- Are you satisfied with the flow rate of the pump?:** [Handwritten "Satisfied"]

Annex 1: Customer satisfaction questionnaire

Annex 2: Technical performance survey form

Annex 3: Summary of technical data




Annex 4: Summary user satisfaction data

Annex 1. Customer Satisfaction survey form

ROVAI user satisfaction survey – part 1

	Date of survey March/April 2009
	Survey carried out by	
	Province	Kandal
	Community	
	Village	
	Pump ID	
	Name Respondent	
	Are you the buyer or user of pump, or both	1. Buyer 2. User 3. Both
	Disabled (look at respondent)	yes/no arms or hands, other.....
	Age	
	Gender	1. Male 2. Female
	PUMP	
1	When did you start using this pump?months ago
2	How many families use this pump?	1. 1 family 2. 2 families 3. 3-5 families 4. 6-10 families 5. >11 families
3	Do any disabled people use this pump?	yes/no <i>If yes make separate answers to questions to get feedback from them on Q5&6?</i>
4	Overall, how would you rate the quality of the pump?	1. Excellent 2. Very good 3. Good 4. Poor 5. Very poor
5	Are you satisfied with the design of the pump?	1. Very satisfied 2. Satisfied 3. Neutral 4. Dissatisfied 5. Very dissatisfied
6	What improvements should we make so that your pump is better for you?	in design: in performance:
7	Are you satisfied with the flow rate of the pump?	1. Very satisfied 2. Satisfied 3. Neutral 4. Dissatisfied 5. Very dissatisfied
8	Before, you had an open well or a pond and collected water with rope and bucket. What other extra benefits do you feel you have by using the ROVAI pump?	<input type="checkbox"/> Don't know <i>probing, more than 1 answer possible</i> <input type="checkbox"/> Faster water collection <input type="checkbox"/> Easier cooking, cleaning, laundry <input type="checkbox"/> Easier showering <input type="checkbox"/> Easy for vegetable garden Other

MAINTENANCE		
9	When was the last time it was looked after?	1. <1 week ago 2. 1-2 weeks 3. 1 month ago 4. 2-3 months 5. 4-6 month 6. never
10	What item was looked after?	<i>more than 1 answer possible</i> <input type="checkbox"/> Rope <input type="checkbox"/> Piston <input type="checkbox"/> Oil the barring Other.....
11	If not you, who does look after Rovai pump?	<i>more than 1 answer possible</i> <input type="checkbox"/> Me (or my family) <input type="checkbox"/> Village Chief <input type="checkbox"/> Water and Sanitation User Group member Other.....
12	Is the amount of time you spend on maintaining the pump acceptable?	1. Acceptable 2. Neutral 3. Too long
SATISFACTION RATE		
13	How would you rate the reliability of the pump?	1. Very reliable 2. Reliable 3. Somewhat unreliable 4. Very unreliable
14	Is collecting water easier or harder than before?	1. Now much easier 2. A little easier 3. No difference, the same 4. A little more harder now 5. Now it is much harder
15	Was the pump worth the money?	I paid : \$ or riel 1. Yes 2. No, why not.....
16	What type of information did you receive when the pump was installed?	<input type="checkbox"/> No information was given <input type="checkbox"/> Don't know <i>only probe after letting them come with first answer</i> <input type="checkbox"/> On cleaning? <i>what was said?</i> <input type="checkbox"/> On maintenance? <i>what was said?</i> <input type="checkbox"/> On repair? <i>what was said?</i> <input type="checkbox"/> On children playing? <i>what was said?</i> <input type="checkbox"/> Animal dung? <i>what was said?</i> Other.....
REPAIR		
17	Has your pump ever broken down?	1. Yes, how many times..... 2. No, go to Q22
18	What was broken?
19	Who repairs the pump?
20	Was it easy to fix your pump?	1. Easy 2. Neutral

		3. Difficult
21	Did you think the costs of repairing the pump was....?	I paid: \$ or riel 1. High 2. Acceptable 3. Low
22	If the rope needs replacing; where would it be bought?	<i>do not lead answers but if people don't know tell them to go to hard ware store</i> 1. Village Shop 2. Hard ware store at market 3. Don't know Other place.....
23	If the pistons needed replacing in the future where would they be bought or made?	<i>do not lead answers but if people don't know tell them to go to hard ware store</i> 1. Village Shop 2. Hard ware store at market 3. Don't know Other place
24	If there is a major breakdown (welding) who would repair it?	<i>do not lead answers but if people don't know tell them to go to hard ware store</i> 1. Village Shop 2. Technician in village 3. Don't know Other place.....
	OTHER PUMPS	
25	Would you say that the ROVAI pump is easier or harder to use than other pumps you have used?	1. ROVAI is easier 2. The same 3. ROVAI is harder (go to Q26)
26	What kind of pump did you use before?	
	 VN6	 TARA
	OTHER	
	 AFRIDEV	
28	Do you have any recommendations or comments regarding the ROVAI pump?	<i>Interesting quotes of people:</i>

Annex 2. Technical survey form:

Rovai technical survey form – part 2

Items to prepare and take with you on the survey:

- a) Tape measure, b) vernier, c) GPS, d) pen paper, e) marker pen, f) 20ltr bucket, stop watch

កាលបរិច្ឆេទ

(Date):.....

GPS: N, E,

Elv.....

(Pump ID No.)

អ្នកណាធ្វើ (Survey carried out by):

Details of installation

1a] Is the Rovai installed on:

Hand dug well , Tube well , Pond well

1b] When was the pump installed?

Month..... Year

2] កំពស់ទឹកក្នុងអណ្តូងពេលមិនទាន់ប្រើប្រាស់

What is the Static depth of well?

Measured, Estimated

3] ជំរៅអណ្តូង

What is the depth of well (full depth)

Measured, Estimated

4] What is the depth of guide box?

Measured, Estimated

Maintenance, condition & performance

5] Evidence of oil recently applied to the bushes:

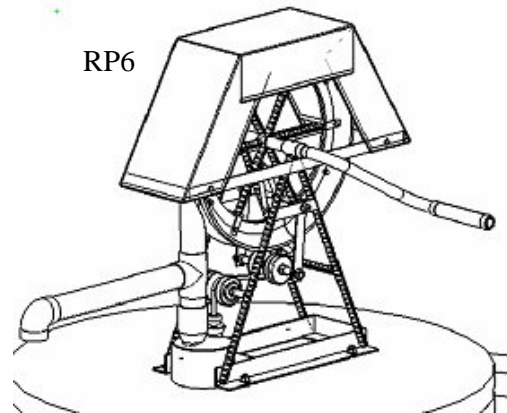
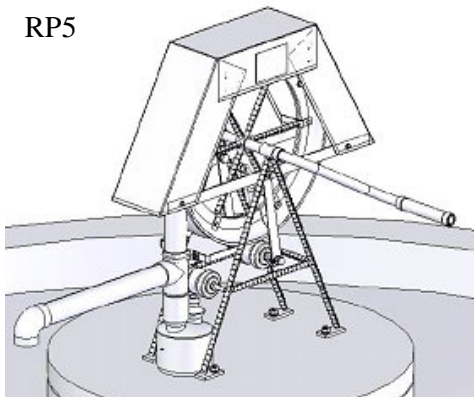
Yes , no

6] What is the condition of the rope?

Replace , acceptable , good

7] Are there signs of rust on the pump?

None , some , a lot



Performance

8] If pump is not working tick box:

9] Flow rate test

Use a 20ltr bucket and put this next to the Rovai, prepare a stop watch and get ready to count how many times the user turns the handle, start turning and then put bucket under outlet only when full flow has started. Stop counting time and No of turns when the 20ltr bucket is full.

លេខរៀង (No)	ប៉ុន្មានវិនាទី ២០លីត្រ Time to fill 20ltr (seconds)	រវៃប៉ុន្មានដំ No. of handle turns
Test		

10] Piston size

Using verniers measure 5 pistons at random and write the size down in table below

Piston No	1	2	3	4	5	Total	Average (=total/5)
Insert size (mm)							

Annex 3: Summary of technical data

Technical Survey Summary

When was the pump installed? (months)	
<i>Average installation period (months)</i>	19.9
<i>Longest installation period (months)</i>	37
<i>Newest installation period (months)</i>	5
What is the Static depth of well?	
<i>Average Static depth of well (meters)</i>	2.8
<i>Longest Static depth of well (meters)</i>	4.5
<i>Newest Static depth of well (meters)</i>	1
What is the depth of well (full depth)	
<i>Average depth of well (meters)</i>	6.5
<i>Longest depth of well (meters)</i>	12
<i>Newest depth of well (meters)</i>	4
What is the depth of guide box?	
<i>Average depth of guide box (meters)</i>	6
<i>Longest depth of guide box (meters)</i>	11.5
<i>Newest depth of guide box (meters)</i>	3.7
Evidence of oil recently applied to the bushes	
<i>Evidence of oil applied to bearings</i>	45
<i>No evidence of oil applied to bearings</i>	55
What is the condition of the rope?	
<i>Replace</i>	27.5
<i>Acceptable</i>	72.5
<i>Good</i>	0
Are there signs of rust on the pump	
<i>None</i>	0
<i>Some</i>	40
<i>A lot</i>	60
If pump is <u>not</u> working tick box:	
<i>Working</i>	97.5
<i>Not working</i>	2.5
Flow rate test	
<i>Average flow rate (L/min)</i>	30
<i>Max flow rate (L/min)</i>	48
<i>Min flow rate (L/min)</i>	34.2
No. of handle turns	
<i>Average No. of handle turns to fill 20l bucket</i>	31
<i>Max No. of handle turns</i>	35
<i>Min No. of handle turns</i>	27
Piston size	
<i>Average piston size of surveyed pumps (mm)</i>	28
<i>Max average piston size (mm)</i>	28.8
<i>Min average piston size (mm)</i>	27.58

Annex 4: Summary user satisfaction data

User Satisfaction Survey summary		%
No.	Interviewee: user and owner of pump?	
	User & Owner	98
	User only	2
	Gender	
	Male	33
	Female	67
1	When did you start using the pump?	
	<5 months	2
	6-12 months	5
	13-24 months	73
	25-37 months	20
2	How many families use the pump?	
	1 family	60
	2 families	18
	3-5 families	22
	6-10 families	0
	>11 families	0
3	Do any disabled people use this pump?	
	Yes	5
	No	95
4	Overall, how would you rate the quality of the pump?	
	Excellent	3
	Very Good	77
	Good	20
	Poor	0
	Very poor	0
5	Are you satisfied with the design of the pump?	
	Very Satisfied	23
	Satisfied	70
	Neutral	7
	Dissatisfied	0
	Very dissatisfied	0
6	Improvements suggested (17 respondents)	
	in Design	
	in Performance	<u>reduce tight 2x, less noise 2x, reduce rust 6x, others 7x</u>
7	Are you satisfied with the flow rate of the pump?	
	Very Satisfied	28
	Satisfied	68
	Neutral	4
	Dissatisfied	0
	Very dissatisfied	0
8	What other extra benefits do you feel you have by using the Rovai pump?	
	Don't know	2
	Faster water collection	32
	Easier cooking, cleaning, laundry	29
	Easier showering	29
	Easy for vegetable garden	8
9	When was the last time it was looked after?	
	<1 week ago	5
	1-2 weeks	33

	1 month ago	23
	2-3 months	20
	4-6 months	12
	Never	7
10	What item was looked after?	
	Rope	22
	Piston	8
	Oil the barring	63
	other	7
11	If not you, who does look after Rovai pump?	
	Me (or my family)	93
	Village Chief	0
	Water and Sanitation User Group member	0
	Other	7
12	Is the amount of time spent maintaining pump acceptable?	
	Acceptable	98
	Neutral	2
	Too long	0
13	How would you rate the reliability of the pump?	
	Very reliable	33
	Reliable	65
	Somewhat unreliable	2
	Very unreliabl	
14	Is collecting water easier or harder than before?	
	Now much easier	75
	A little easier	23
	No different, the same	2
	A little more harder now	0
	Now it is much harder	0
15	Was the pump worth the money?	
	Yes	100
	No, why not	0
16	What type of information did you receive when the pump was installed?	
	No information was given	8
	Don't know	17
	On cleaning	32
	On maintenance	15
	On Repair	20
	On children playing	8
	Animal dung	0
17	Has your pump ever broken down?	
	Yes, how many times.....	
	No	
18	What was broken? (18 respondents)	
	Rope	56
	Piston	22
	Others	22
19	Who Repairs the pump? (15 respondents)	
	Me (or my family)	53
	Other (RDI)	47
20	Was it easy to fix your pump? (15 respondents)	
	Easy	60
	Neutral	33
	Difficult	7
21	Did you think the costs of repairing the pump was....?	

	(13 respondents)		
		High	0
		Acceptable	23
		Low	62
		no expense	15
22	If the rope needs replacing; where would it be bought?		
		Village shop	2
		Hard ware store at market	7
		Don't know	5
		Other place (RDI,.....)	86
23	If the pistons needed replacing in the future where would they be bought or made?		
		Village shop	0
		Hard ware store at market	4
		Don't know	5
		Other place (RDI,.....)	91
24	If there is a major breakdown (welding) who would repair it?		
		Village shop	0
		Technician in village	7
		Don't know	4
		Other places (RDI, laW.....)	89
25	Would you say that the ROVAI pump is easier or harder to use than other pumps you have used?		
		Rovai is easier	93
		The same	7
		Rovai is harder	0
26	What kind of pump did you use before?		
		VN6	100
		TARA	0
		AFRIDEV	0
27	Do you have any recommendations or comments regarding the ROVAI pump?		