

NRW Reduction Measures of **TSS**

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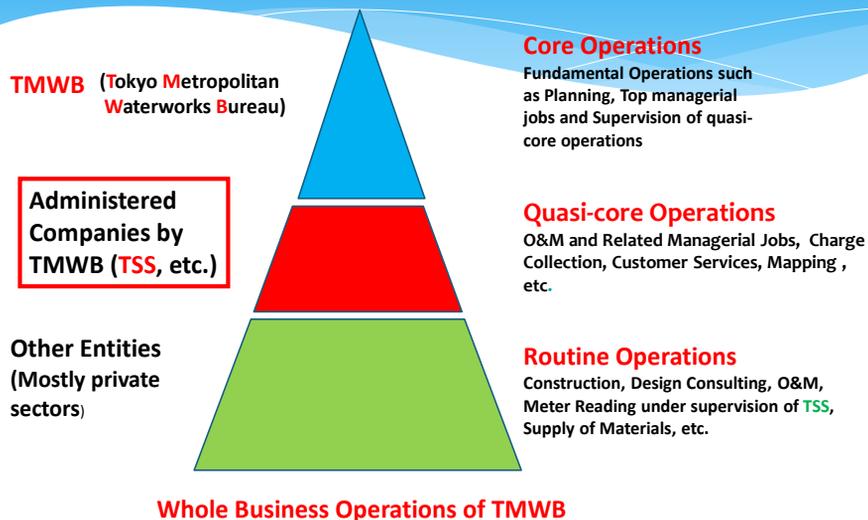
- *Introduction of **Tokyo Suido Services (TSS)**
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- *Future business development

TSS Company Profile

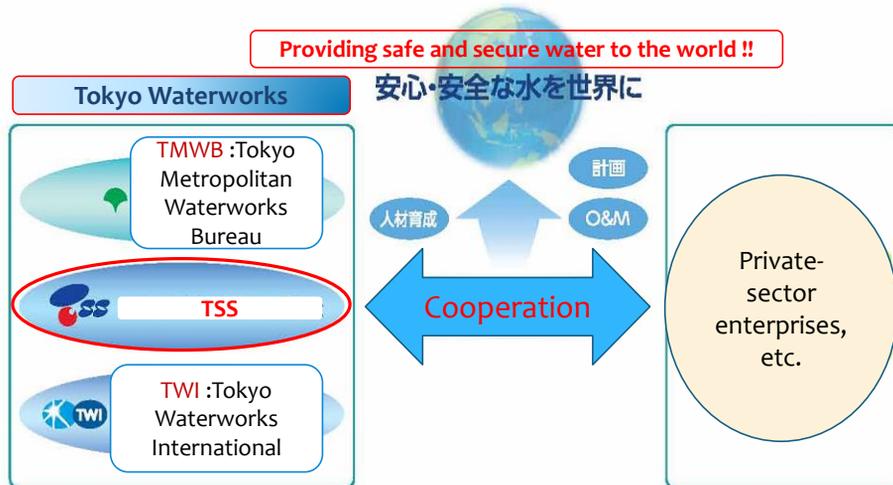
- **Capital:** 100 Million yen (≐980,000US \$)
- **Stockholders:**
 - TMWB (51%)**
 - Kubota Corporation (19%)
 - Kurimoto Ltd. (10%)
 - Sompo Japan Insurance Inc. (5%)
 - Mizuho Bank, Ltd. (4.95%)
 - Other financial agencies (10.05%)
 - (Total: 8 entities)
- **President:** Dr. Atsushi Masuko
(Former Director General of TMWB)
- **Number of staff:** about 1,500 persons

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Positioning of TSS (Integral Business Operation System)



***Int. National Contribution Business Scheme** by Tokyo Waterworks and Private sector enterprises, etc.



NRW Reduction Technology of TSS

TSS has abundant experience in NRW reduction measures in not only Tokyo Waterworks but also other water utilities including overseas countries.

TSS is proud of its technology to reduce NRW, which was proven by the results of NRW reduction measures as follows:

*NRW rate in Tokyo, 3.3% (leakage rate: 2.0%) as of JFY2013

*TSS is succeeded NRW rate reduction by pilots project in some Asian countries.

*TSS established TSS-TESCO BANGKOK (TTB) Co., Ltd. in Thailand and Tokyo Waterworks International Taipei in 2012 to mainly implement NRW reduction measures.

Case Study in Thailand



Case Study in Thailand

Phayathal Pilot Study

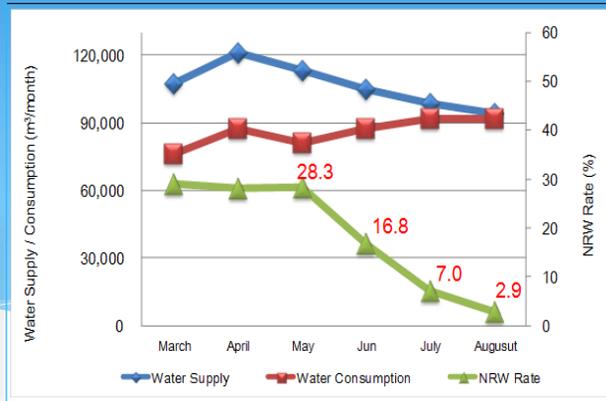
Carry out NRW measures in TSS and six subcontractors (1 DMA)

Result : Leakage ⇒ 21 places

Defective meter ⇒ 52

Test construction of corrugated stainless steel to service pipe ⇒ 10 sites

NRW rate 28% ⇒ 3%



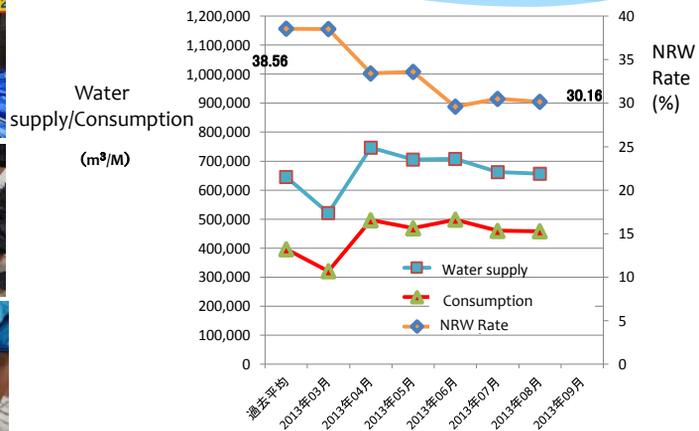
Suksawat Pilot Project

Case Study in Thailand

- Private contract with the local corporation
- Carry out NRW measures in TSS, subcontractors and local company
- Scale (7DMA) : Total pipe lengths ⇒ 76km

Number of service connections ⇒ 7700case

NRW Rate 39% ⇒ 30%



Comparison between Phayathai Pilot Study and Suksawat Pilot Project

Item	Phayathai Pilot Study	Suksawat Pilot Project
Purpose of NRW reduction measures	Test Survey ignoring economic basis	Ordinary Operations on economic basis
Operation area	1 DMA	7 DMAs
Leakage survey times	About 2.5 times	About 1.3 times
Actual operation term at site	2 months	4 months
Number of leakage survey staff at site	3 persons (tentatively 4)	4 persons
Leak detection conditions	Slightly difficult among whole branch office areas	Very difficult (low water pressure, deeply buried pipes)
Result (NRW reduction rate)	About 25% decrease	About 9% decrease

Future Plan in Thailand

- Increasing water pressure (Planning by MWA)
- NRW reduction measure is significant task



• Next project is currently under discussion

Scale : about 6 ODMA

Length of pipe ⇒ 1,500km, Number of service connections ⇒ 150000cases, NRW Rate ⇒ about 30%

Term : about 5years

Contents : • NRW survey base on TS leak checker ⇒ Next slide

- Pipeline replacement which leakage occur frequently (Adopt DCIP and corrugated stainless steel pipe)
- Target pressure more than 15m
- Target NRW rate ⇒ about 15%

“TS Leak Checker”

Development purpose

- Find leakage easily
- Find leakage automatically
- Create data base automatically

**Simple handling !
Find leakage only in 2 seconds**



Case Study in Taiwan



Case Study in Taiwan

《historical Aspect》

- ◆ Long term relationship between Taiwan and TMWB/TSS
- ◆ Especially severe earthquake occurred in 1999 ⇒ increasing water leakage
⇒ improvement suggestions by JWWA and TMWB
- ◆ Build a relationship of trust ⇒ develop to business expansion

Business Development

① Plumbing and fitting training in Taiwan

Training Course

- Pipe Design
- Pipe Laying
- Construction Management etc.



② Local production of corrugated stainless steel pipe

- Full-scale Adoption by Taipei Water Department
⇒ Sep. 2008 : Local production start



Case Study in Taiwan

③ Conclusion of MOU to local company

NRW business corporation with No.2 consulting company in Taiwan

④ Carry out NRW reduction pilot project with Taiwan Water Corporation

- Pipeline replaced using DCIP and corrugated stainless steel pipe in Keelung city

(Pipeline length : about 2.5Km)

⇒After training course, local instruction and construction management carry out about one month

Result NRW rate : 40%⇒4%

- Implement pilot project for NRW reduction measures in Taichung

(Pipeline length : about 2.5Km)

(No. of service connections : about 700case)

⇒setting DMA, leakage survey/repair, check meter, theft survey, etc.

Result NRW rate : about 47% ⇒24%



Future Plan in Taiwan

- NRW reduction measure
- Earthquake-resistant reinforcement



• Next project proposal

Coordination to collaborative projects

Coordination to project formation based on MOU

Future business development

TSS as a member of Tokyo Waterworks is developing international contribution business - **especially NRW reduction measures** - around an Asian region not only Thailand and Taiwan but Myanmar, India and Malaysia, etc.

Thank you for your kind attention!

TSS will efficiently
provide secure
water to the world.

