

OTT HYDROMET

Company Presentation



ABOUT YOUR SPEAKER



- ▶ Ashish Raval
- ▶ Vice President Global Projects & Tenders with OTT Hydromet
- ▶ 25+ Years of International Knowledge
- ▶ Specialization in providing Instrumentation, Communications & Software systems for Environmental & Industrial Applications
- ▶ MS in Electrical Engineering with Control Systems Back ground.
- ▶ Last 22 years spent primarily in Implementing Large Hydromet Systems in over 90 countries
- ▶ Over \$150M in Large Internationally projects executed over the past 20+ years
- ▶ E-mail: ashish@Sutron.com
- ▶ Mobile: 703-624-6957
- ▶ www.Sutron.com

Danaher

“Protecting the global water supply and ensuring environmental stewardship“

- » Danaher Water Quality Group
- » >\$ 2.0 B revenues



**Danaher –
A Sustainable Partner**

- Financial Stability
- Defined Processes
- Strict Compliance Regulations
- Worldwide representation

OTT Hydromet

Active worldwide – think global – act local

Serving all fields of hydrometry, meteorology, drinking water & wastewater to provide tailored solutions for every customer



- Over 572 years of experience
- Worldwide representation
- 550 associates worldwide
- \$125 M revenues

Add text

OTT HYDROMET BRANDS

Hydro

Met Science and Operation



Integrated in
Jul, 2015

Integrated in
Jan, 2016

Integrated in
Dec, 2017

**Loveland
USA**



Water Quality
Instrumentation

39 years of
multi-parameter
water quality
instruments

**Kempton
Germany**



Water Quantity
Instrumentation,
Global
Headquarters

144 years of
hydrological
instruments and
systems

**Sterling
USA**



Water Quantity
Telemetry
Meteorology
Air Quality
Instrumentation

42 years of real-time
data collection and
control products,
systems, software and
services

**Vienna
Austria**



Agro-Met
Telemetry
Instrumentation

24 years of
smart wireless
communication

**Fellbach
Germany**



Meteorology
Instrumentation

136 years of
meteorological
instruments and
sensors

**Delft
Netherlands**



Meteorology
Instrumentation

187 years of
meteorological
instruments and
sensors

*The common link of all companies in a rich history of providing
the highest quality of innovative products*

GLOBAL PROJECTS AND SYSTEMS

- Specializes in providing turn-key systems and projects globally.
- Truly *International* with worldwide & nationwide flood-warning systems

- Romania
- Sri Lanka
- India
- Caribbean
- Poland
- China
- Thailand
- Romania
- Singapore
- Africa
- Taiwan
- Australia
- South America (Brazil, Venezuela, Peru, Chile, Ecuador, Colombia)
- Central America
- Mexico
- Canada
- Vietnam
- Afghanistan



OTT Hydromet Application Areas

Hydrologic



Meteorologica



Tides &
Oceanic



Aviation
Weather



Air Quality



Geotechnical



EUMETSAT CERTIFIED TRANSMITTER - SATLINK3 –MODEL SL3-1



Released
Mar 2017

Satlink 3 Now Supports EUMETSAT's Meteosat **HRDCP** and **SRDCP** transmission format.

- Supports the new HRDCP format for use with either Meteosat-11 (0 deg) or Meteosat-8 (41.5 deg E used for the IODC)
- Supports SRDCP (100 bps) system for legacy system support.
- Single Platform supports Meteosat and GOES applications for flexibility and easy hardware management.
- Supports CGMS 100 bps 'International' channels (11).
- Onboard GPS provides very accurate transmission timing and very accurate transmit frequency (with typical errors of less than 5 Hz at UHF)
- Scheduled and Alert transmissions supported.
- Platform capable of handling most any future transmission format planned.

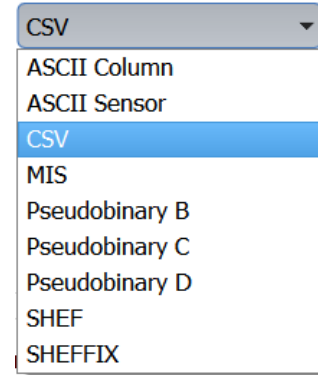


CE, FCC/ISED Certified and RoHS Compliant

EUMETSAT CERTIFIED TRANSMITTER - SATLINK3 –MODEL SL3-1

Satlink 3 offers **built in** transmit data formatting with extensive format support including:

- ASCII (column or sensor support)
- CSV
- Pseudo Binary B,C,D
- SHEF/SHEFFIX
- MIS



Sutron offers near unlimited **external** formatting capability using

- External Logger
Example: WMO **BUFR** Format available with Sutron9210/8310 logger family:
- Python Programming
Ability to create most any custom transmit format needed for the most demanding applications

Sutron exclusively offers **Python** Programming in SL3-1 and SL3-SDI-1 products with 3 fundamental functions:

1. - **Measurement** scripts are attached to any measurement (M1..M32) for post processing and control.
2. - **Transmission Formatting** scripts are attached to any telemetry (TX1..TX8) allowing the modification of the transmission data.
3. - **Tasks** scripts are independent, event based threads triggered by a scheduled timer, a button press, or other event.

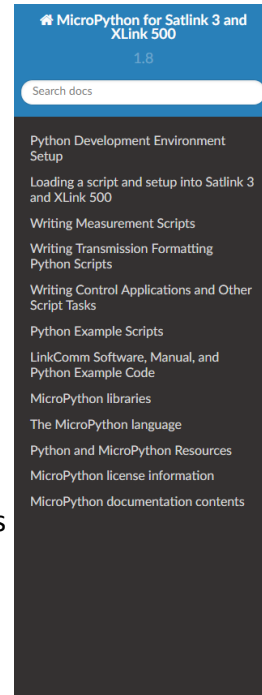
Sutron provides extensive on line customer support to assist the customer with *Python* Programming

<http://www.sutron.com/micropython/html/>

- Tutorials
- Code examples
- Libraries

Here are some example Python applications:

- - Water quality auto-sampler control
- - Custom transmission formats
- - Computing discharge and volume from a stage sensor
- - Interfacing to unique RS-232, RS-485, and SDI-12 sensors
- - Control applications
- - RS-232 displays



The screenshot shows the top portion of a web page titled "MicroPython for Satlink 3 and XLink 500" with version "1.8". It features a search bar and a navigation menu with the following items: Python Development Environment Setup, Loading a script and setup into Satlink 3 and XLink 500, Writing Measurement Scripts, Writing Transmission Formatting Python Scripts, Writing Control Applications and Other Script Tasks, Python Example Scripts, LinkComm Software, Manual, and Python Example Code, MicroPython libraries, The MicroPython language, Python and MicroPython Resources, MicroPython license information, and MicroPython documentation contents.

Docs »

Sutron Satlink 3 and XLink 500 MicroPython documentation

Welcome! This is the documentation for MicroPython v1.8.4, last updated 01 Oct 2018.

MicroPython runs on a variety of systems and each has their own specific documentation. You are currently viewing the documentation for **Sutron Satlink 3 and XLink 500**.

Sutron Satlink 3 and XLink 500 data loggers are capable of running user defined Python scripts in order to provide advanced features that go beyond the standard setup.

Here are some example Python applications:

- Water quality auto-sampler control
- Custom transmission formats
- Computing discharge and volume from a stage sensor
- Interfacing to unique RS-232, RS-485, and SDI-12 sensors
- Control applications
- RS-232 displays

There are 3 types of scripts: Measurement, Transmission Formatting and Tasks.

- **Measurement** scripts are attached to any measurement (M1..M32) for post processing and control.
- **Transmission Formatting** scripts are attached to any telemetry (TX1..TX8) allowing the modification of the transmission data.
- **Tasks** scripts are independent, event based threads triggered by a scheduled timer, a button press, or other event.

Tutorials and code examples

3 Versions of SL3 offering optimal solutions for all applications

1. Satlink 3 Logger
Ideal for full station capability including analog, digital, SDI sensors and python programmability
2. SL3-SDI-1
Ideal for stations with simple SDI sensors only and python programmability
3. SL3-XMTR-1
Ideal for use with external Data Logger were the transmit buffer is generated

SATLINK3 – SL3-1

(CE Certified)

Removable Terminal Blocks
5 separate blocks on each side

smart sensors; **RS-485\MODBUS**
Digital IO – TB, Wind Sensors ...etc

Two SDI-12 Slots
Independent SDI-12
connection.

Custom programming using
Python: Supports applications
beyond standard configuration,
transmissions and measurements.



GPS Receiver
Accurate time and position

24 Bit ADC for high resolution
analog (**Single Ended, Differential**
and **4-20mA**) signal
measurements.

WiFi
Easy and intuitive
configuration



Two Module Slots
Data transmission over Cell or Iridium
Or Programmable sensor voltage references

Satellite transmission
Data transmitted over Goes\EUMETSAT\INSAT...etc

Ideal for Hydro or Met applications requiring only SDI-12 sensors and Goes transmission

(CE Certified)

Python

Extended functionality, connect to external modems, cameras and displays.

Satellite transmission

Data transmitted over Goes\EUMETSAT\INSAT...etc

GPS Receiver

Accurate time and position

Removable Power

WiFi

Connect via PC, Phone or tablet

USB and RS232

Connect to PC

Two SDI-12 Slots
Independent SDI-12 connection.



SATLINK3 – SL3-XMTR-1

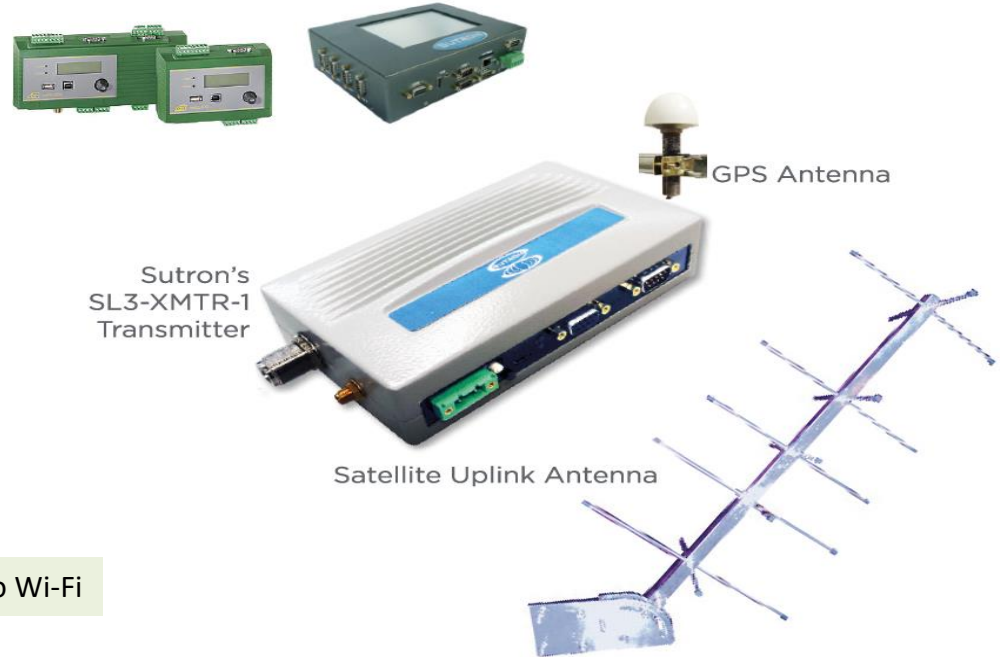
Application

A reliable and low-cost method of adding GOES satellite transmission capability to almost any data logger via RS232.

Data sent to sl3 using Command interface, SPC or through dummy logger configuration

Logger can periodically sync its clock with sl3-XMTR

OTT netDL, Sutron Xpert, XLite, 8310, etc. Datalogger (or other high power logger)



No Wi-Fi

Geostationary satellite systems (GOES / EUMETSAT / INSAT)

- Ideal for remote sites: canyons, swamps, mountain tops, etc...
- Suited for long-term records and applications not requiring real-time data or two-way communication

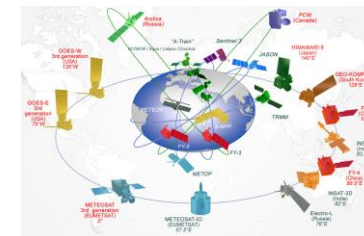
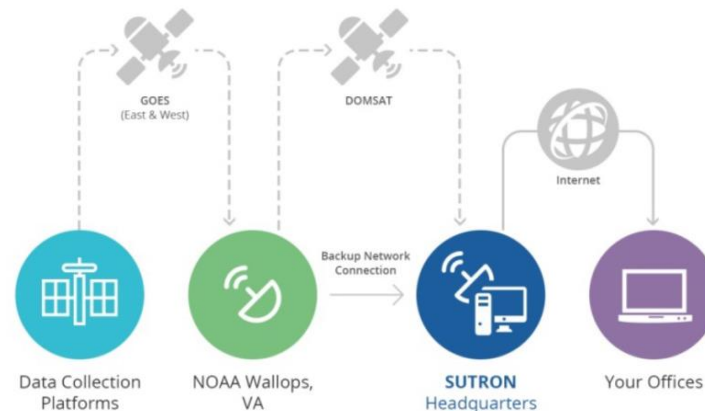
Pros:

- Reliable data transmission during major events, e.g., hurricanes or floods
- For most government and local organizations data transmission is free of charge
- Low power
- TDMA system provides a customer identified timeslot on a specific channel for scheduled transmissions
- Random channels set aside for Alarm transmissions

Cons:

- Low network bandwidth – limits amount of data transmitted
- Transmission window, typ. 10-secs at a defined time slot
- Does not have polar region coverage.

Active data transmission from a remote measurement station using the GOES network



Integrated Geo-stationary antenna with built-in GPS

- Transmits from a Data Collection Platform (DCP) to any Geostationary Satellite: GOES, METEOSAT, Himawari, FengYun ...etc
- Beamwidth wide enough to illuminate multiple satellites
- Built-in Active GPS antenna allows uninterrupted GPS signal reception, for precise time synchronization
- Waterproof, UV resistant enclosure with corrosion resistant aluminum mounting bracket with 316 stainless steel hardware for extreme meteorological conditions
- Minimal aiming required
- Gain less than a Yagi, requires more power.
- Shape prevents snow or debris build up



CE, FCC/ISED Certified and RoHS Compliant

Approved by USGS HIF

Spec Comparison Vs. Yagi and Competition

Parameter	GOE-ANT-GPS	Sutron Yagi (5000-0156-1)
Gain (dB)	5.2	10
3dB Beam Width	110deg	45deg
Frequency (MHz)	401-403	399.8 - 403.8
VSWR	1.5 max 2.0 max (GPS antenna)	1.5 max
Cable Connector	Type-N Female	Type-N Female
Polarization	Right Hand Circular	Right Hand Circular
Max Diameter of mounting pipe	U-bolt mount fits 1.0", 2.5" pipes Flexible hose slots allow for wider pipes	2.0"
Dimensions	Cylindrical – height 13.33" (33.86 cm) - diameter 6.41" (16.28 cm)	10.5 in. X 10.5 in X 43.3 in 27 cm X 27 cm X 110 cms
Weight	794 gms or 1.75 lbs	3.63 kg or 8 lbs
Operational Temperature	"-40C to +85C"	"-65C to +65C"

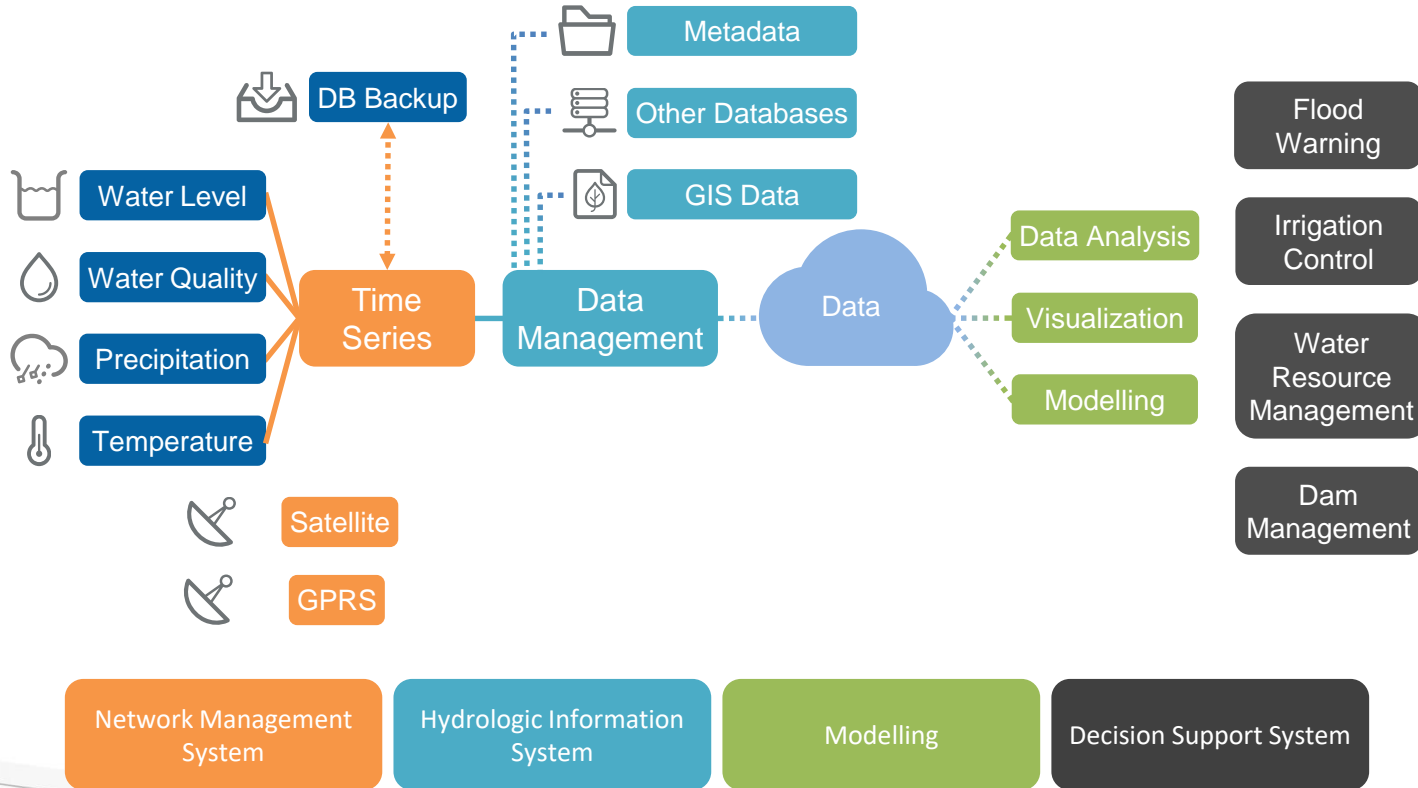
TELEMETRY OPTIONS COMPARED

	Geostationary Satellite	Cellular Mobile Networks	Iridium Satellite
Reliability	High	Depends on load/bandwidth	High
Two-way communication	--	Yes	Yes - latent
Data more often	With Hybrid solution	Yes	Yes
Alarms	With Hybrid solution	Yes	Yes
Bandwidth	Limited	High - Depends on plan	Limited
Operational Cost	Typically none	Low to Medium - Depends on amount of data	Low to High - Depends on amount of data
Latency - Delay receiving data	Medium	Low	Low
Service Availability	Global - remote	Depends on service provider and coverage	Global - remote
Transmission formats & protocols	Most common – SHEF, Pseudo Binary B	IP protocols: FTP, HTTP, HTTPS	Most common - Pseudo Binary D

- Contract for work and labour
- State of Sri Lanka
- System:
 - design, manufacture,
 - test, deliver, built (civil works)
 - install, commission, maintenance
- Spread over the whole island
 - Application note available on OTT homepage



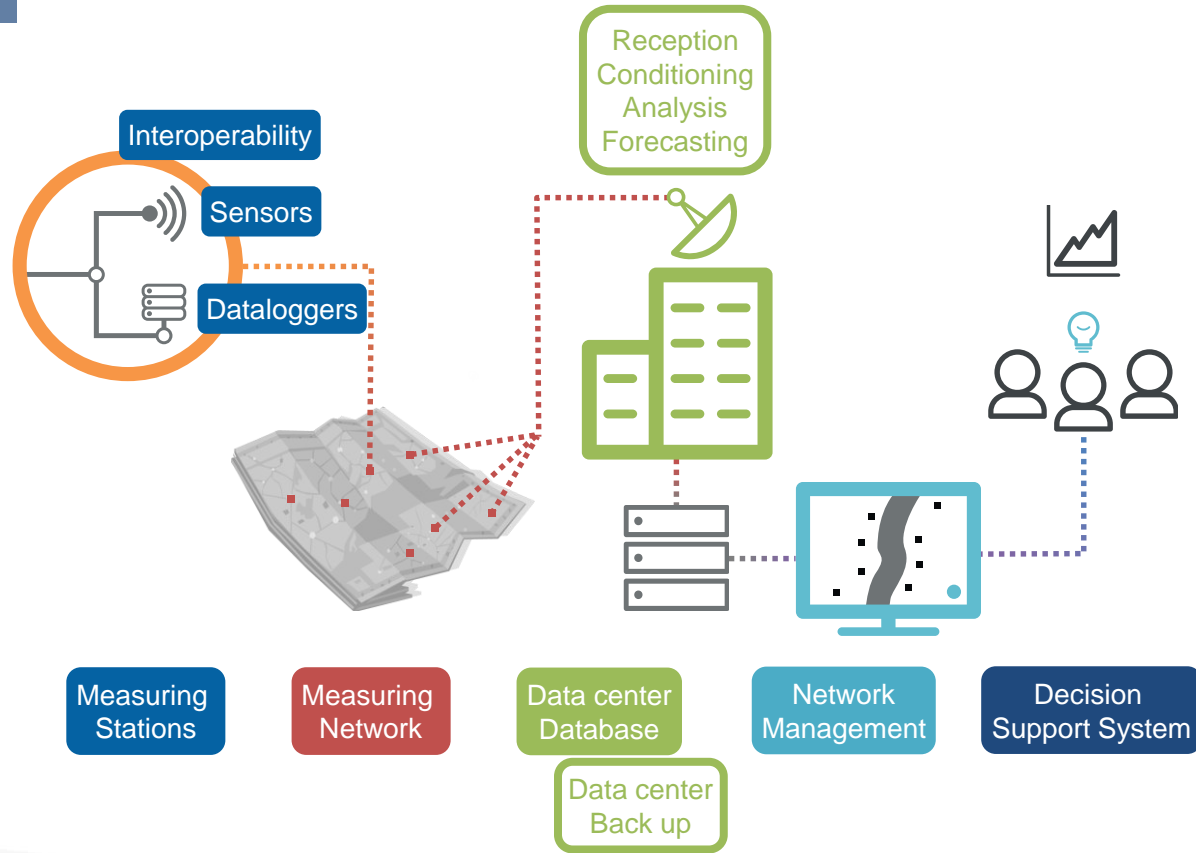
DATA FLOW



FIELD DESIGNS



DATA FLOW



CUSTOMER STATEMENT

„The Hydro – Meteorological Information System and Instruments installed are working reliably and fulfil our accuracy and durability requirements.“

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Dam Safety & Water Resources Planning Project (DSWRPP)

මහවිලි පාරිසරික හා පරිසර අමාත්‍යාංශය
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Ministry of Mahaweli Development and Environment
Ministry of Mahaweli Development and Environment

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No. 500, T.B. Jayah Mawatha,
Colombo 10

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No. 500, T.B. Jayah Mawatha,
Colombo 10



DSWRPP-2/GOODS/ICB/12

13.12.2017

To Whom it may concern

World Bank funded Dam Safety & Water Resources Planning Project under Ministry of Mahaweli Development and Environment – Sri Lanka having principal place of business at No.500, T.B. Jayah Mawatha, Colombo 10, Sri Lanka would like to inform that:

OTT Hydromet GmbH having its principal place of business at Ludwigstr. 16, 87437 Kempten, Germany, has successfully designed, manufactured, tested, delivered, installed our Hydro-Meteorological Information System comprising of 122 Monitoring Stations, Field Equipments, Communication Networks, Two Data Centers, Hydrological Databases and Analytical & Modelling Tools. The project included required civil works. For the 122 Stations, OTT Hydromet delivered the following main equipment, OTT netDL, OTT Meteosat and GPRS Telecommunication solution, OTT PLS, OTT Pluvio², OTT RLS, OTT SLD, OTT ADC, OTT TRH, OTT Ecolog and Luftt WS200.

The contract price is the aggregate of 2,274,565.74 Euro and 352,289,472.00 LKR. The implementation of the project was satisfactorily completed in January 2017.

The Hydro-Meteorological Information System and instruments installed are working reliably and fulfil our accuracy and durability requirements.


Project Director
DSWRPP

Project Director
Dam Safety & Water Resources Planning Project
No. 500, T.B. Jayah Mawatha,
Colombo 10

THANK YOU FOR YOUR TIME