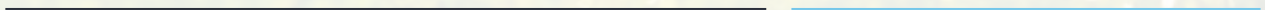**STORMHARVESTER**
Smarter Drainage Solutions

StormHarvester
Active Attenuation.

Flood prevention and rainwater harvesting can now be done in one "Smart" tank. StormHarvester turns an ordinary attenuation tank into a "Smart" tank.
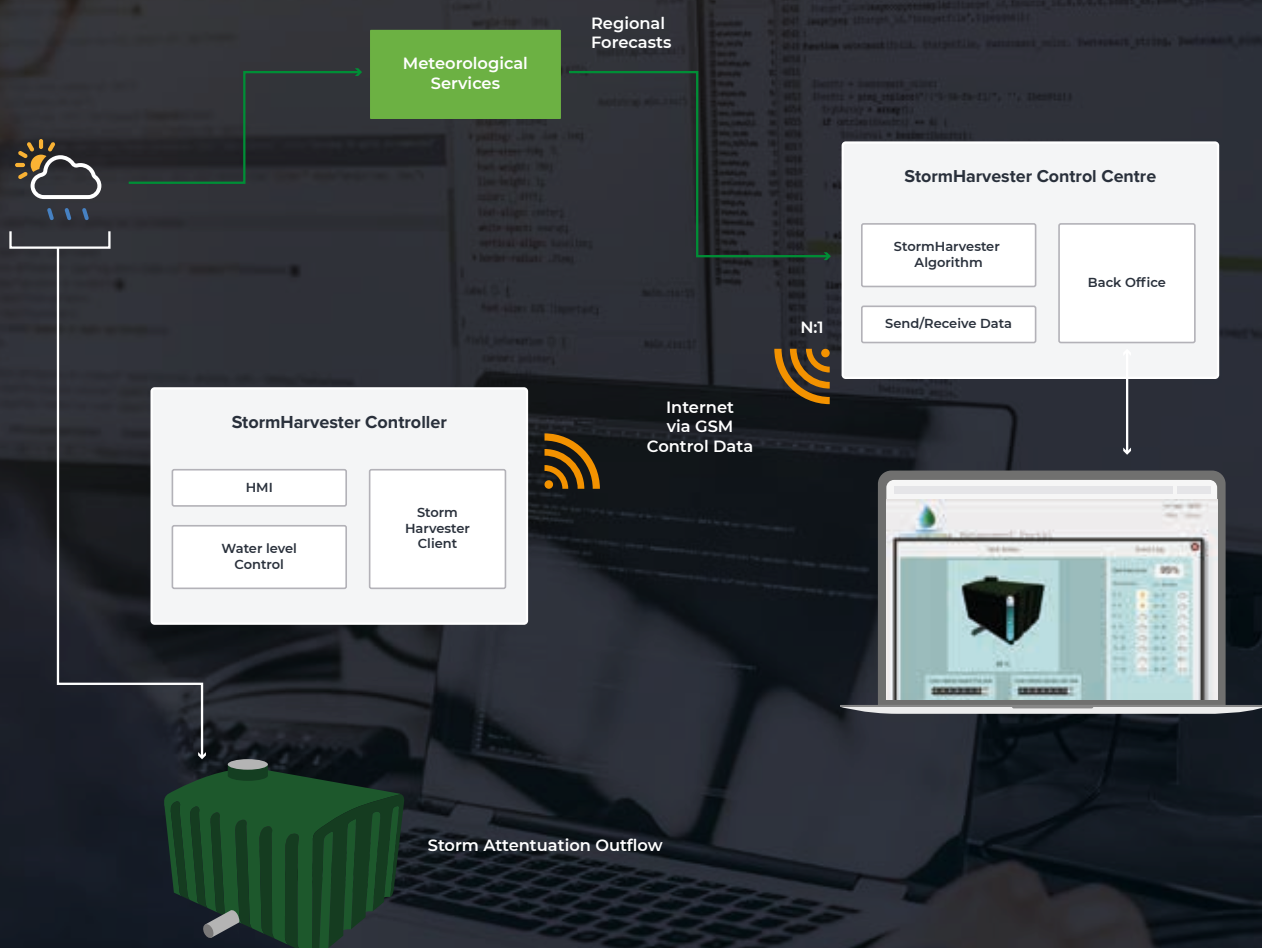
StormHarvester
Active Attenuation.

The StormHarvester Active Attenuation system works by continually monitoring short and medium-term rainfall forecasts.

Once rainfall is forecast the system automatically adjusts the water levels within the tank to ensure that there is sufficient free volume to attenuate the stormwater runoff from the upcoming rainfall event. This means that one "Smart" tank can now be used for both Rainwater Harvesting and Storm Attenuation.

OUR TECHNOLOGY.

The StormHarvester system controls water levels within attenuation or harvesting tanks by linking a valve or attenuation pump directly to a highly accurate rainfall runoff prediction algorithm.

Regional Forecasts

Meteorological Services

StormHarvester Control Centre

StormHarvester Algorithm

Back Office

Send/Receive Data

N:1

Internet via GSM Control Data

StormHarvester Controller

HMI

Water level Control

Storm Harvester Client

Storm Attenuation Outflow

Control Centre.

The StormHarvester control centre receives site-specific rainfall predictions from various International Meteorological agencies including the British Met office. The controller runs this data through an algorithm estimating the likely runoff volume for the upcoming rain events. The site controller then automatically takes action to ensure there is adequate volume available within the attenuation tank based on the predicted runoff volume.

Controller.

The StormHarvester controller receives communication links from the control centre at regular intervals. The controller is instructed of the current safe level of the lake, pond or reservoir. The system then takes action to lower water levels, if required, by temporarily opening an actuated valve or activating a set of pumps.

Display Portal.

Live operational data and system warnings are displayed on a portal. This provides a simple interactive interface to ensure operational staff are fully aware of current site conditions and any warnings/system automation taking place.

Active Attenuation
Benefits.

50% reduction in cost of rainwater harveting system

Less space taken up on-site

Less time spent installing large tanks

On-going reduction in water charges

Less mains water used on site

Up to 95% reduction in stormwater discharge off site

Active Attenuation
Weather Forecast Algorithm.

The StormHarvester rainfall forecast and runoff prediction technology works by checking forecasted information and determining a "safe level" for water within the tank every 5 minutes.

For the majority of rainfall events (low intensity and short duration events) the system only lowers the water level in the tank by a small percentage. In practice, water levels in the tank are regularly already well lower than the small percentage reduction required given that water is constantly being pumping out of the harvesting tank for reuse on the associated site.

The more intense rainfall events (short intense rainfall events (cloudbursts) are predicted using a combination of atmospheric pressure and rainfall forecasts. Cloudburst events will only occur when certain atmospheric pressure conditions are present. The StormHarvester system therefore continually monitors forecasted atmospheric conditions and when conditions conducive to a cloud burst are predicted automatically drains all tanks in the area effected at greenfield rates in preparation for the storm event.

FORECAST OPTIONS

5 day forecasts
3 day forecasts
1 day forecasts

DATA ANALYSIS

Every 5 minutes new forecast data analysed

MONITORING

Atmospheric Pressure Forecasts monitored

SAFETY

Factor of safety applied when predicting runoff volumes

Active Attenuation
Failsafe Systems.

BATTERY BACK UP IN POWER FAILURE SCENARIO

Both the valve and the site controller have built in rechargeable battery backup packs to allow the system to continue working in the event of power failure. The system can operate satisfactorily for several days without power. Once the power is reconnected the system will automatically recharge the batteries.

SYSTEM IDENTIFIES AND AUTOMATICALLY REACTS IN COMS FAILURE SCENARIO

The StormHarvester "controller" and "control centre" carry out system handshakes at 5-minute intervals ensuring that any loss in communications are quickly and automatically detected.

AUTOMATICALLY DETECTS VALVE BLOCKAGES

The system automatically identifies partial and complete valve blockages and automatically alerts the owner of the infrastructure.

AUTOMATED WARNING SYSTEM

Emails and SMS messages are automatically sent to pre-programmed phones and email addresses in the event of any failure, blockage or flood warning scenarios.

Case Study
1 Triton Square, London.

1 Triton Square is home to a state-of-the-art 3,500-person office development in London's West End district. This environmentally responsible and socially active building extends to 366,000 square foot.

An Aqua-lity Storm Control (ASC) system utilises StormHarvester's technology to turn the 285,000L rainwater harvesting and greywater tanks into active attenuation tanks. The active attenuation tanks are used to recycle water for reuse around the site while at the same time allowing the tank to count towards the sites overall storm attenuation requirement.

Installing the ASC system equipped with StormHarvester technology negated the requirement for a separate 285,000L attenuation tank on-site and therefore freed up space on-site. This also contributed significantly towards construction savings.

The ASC system insures a large reduction in the volume of stormwater discharged from the site into Thames Water's local sewer network. Instead of being discharged the water is now reused on-site which contributes to reducing the sites annual water bills.

285k
litre active attenuation system

£128k
saved on tank installation

Case Study
Snowhill Wharf, Birmingham.

Snowhill Wharf is the first flagship development from St Joseph, part of the Berkeley Group. This development is located close to the Colmore Business District (CBD) in Birmingham City Centre. It contains over 400 residential units, a gym, sauna, steam room and communal cinema.

The StormHarvester – Active Attenuation system was used to turn the 130,000L geo-cellular crate attenuation tank into an active attenuation tank. The active attenuation tank is used to recycle water and irrigate the extensive landscaped areas around the site while at the same time allowing the tank to count towards the sites overall storm attenuation requirement.

Installing the StormHarvester system negated the requirement for a separate 130,000L rainwater harvesting tank on-site and therefore contributed significantly to savings within the drainage package. It also freed up some valuable space on an already cramped site.

The StormHarvester system insures a 98% reduction in the volume of stormwater discharged from the site. Instead of being discharged to the local sewer the water is now reused as part of the site irrigation system. This also provides significant on-going water savings to the development.

130k
litre active attenuation system

£58k
saved on tank installation

2.4m
litres annual stormwater reduction

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