

**Cooperation among land owners was effective. Consideration was given to environment from the outset of planning.**

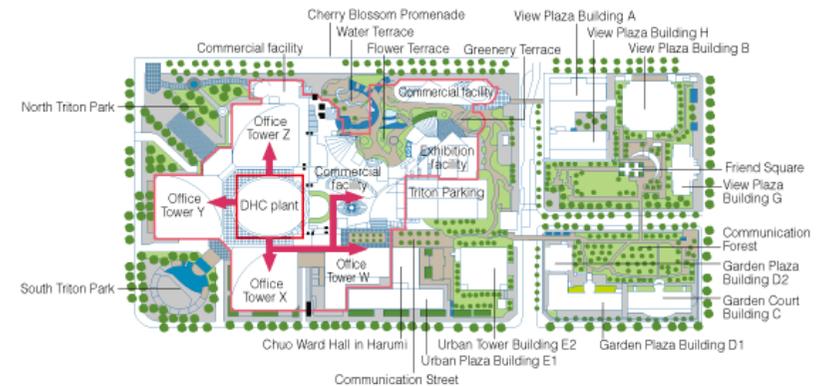
## Example of town creation by making use of "air-source heat" Harumi Island Triton Square

One of the largest carbon emissions reduction in Japan is realized by thorough development plan and management system.



Harumi Island Triton Square (hereinafter referred to as "Harumi Triton") is a town that was created by large-scale redevelopment that covered a site area of as large as about 8.5 hectares (total floor area of about 670,000 square meters). The initiative of such large-scale redevelopment is usually taken by the central government, local governments or developers in general. Harumi Triton is a very epoch-making example of redevelopment because of the fact that the master plan was made by the landowners concerned who cooperated with each other and equally bore the cost of redevelopment.

From the outset of planning, they considered systems to supply energy such as heat as well as utility service facilities such as water supply and substation facilities. As a result, they succeeded in constructing highly efficient systems in a reasonable manner. Moreover, HARUMI CORPORATION that was founded in 1988 has been involved in the redevelopment from the planning stage, and changed to an operation company after the completion of facilities. As the company manages and operates the facilities in an integrated manner, the environment friendliness that was expected at the time of planning is realized.

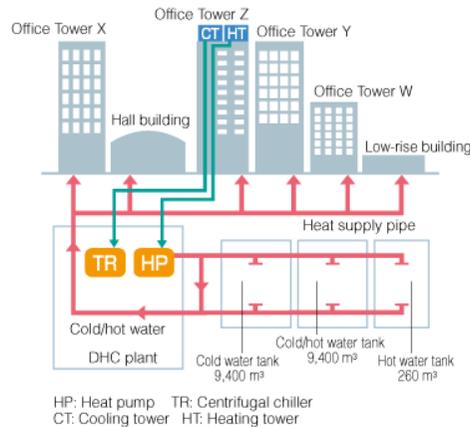


**[Harumi Island Triton Square]**

## Heat source system that realized low carbon emission

Cold heat and warm heat for air conditioning in Harumi Triton are supplied by district heating and cooling (DHC) systems. For the heat source system of DHC, heat pumps that use heat in the air and large water tanks for thermal storage are adopted in consideration of environment friendliness and cost efficiency. The heat pumps selected had the highest efficiency then. To make the heat pumps to reach their full potential, they are combined with water thermal storage tanks.

As heat source systems were also considered from the outset of planning, DHC plant could be installed at the center of thermal loads to efficiently supply heat to respective buildings. As for thermal storage tanks, the distance to DHC plant could be shortened, making it possible to work out reasonable and cost-effective plans.



**[Heat source system of DHC]**

To realize low carbon emission, equipment in each building to receive heat from DHC is also important. The amount of energy consumed by supply pumps can be reduced by increasing as much as possible the difference in temperature between the cold or hot water supplied and that returned and by always maintaining such temperature difference, and the capacity of thermal storage tanks can be fully utilized.

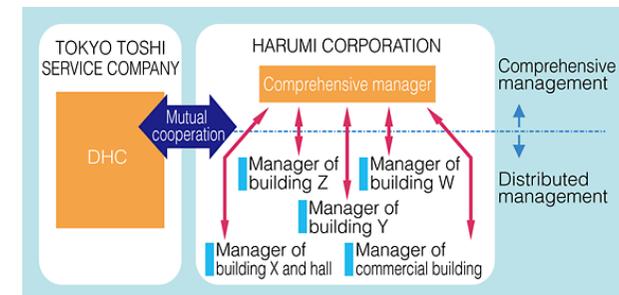
In the case of Harumi Triton, for this purpose, the technical standards to efficiently utilize heat are clearly stated in the design guideline for building clusters under an agreement with the landowners concerned.

## Operation and management system to maintain high efficiency

Comprehensive town management has been applied to overall blocks of Harumi Triton from the initial stage of redevelopment to the present operation.

As for DHC, a committee was organized by persons of learning and experience and the members involved in design, execution of construction work and operation, and the committee has conducted performance assessment from the design to operation phases. As a result of thorough improvement, Japan's top class efficiency has been maintained since the commencement of supply service in 2001. In addition, CO2 emissions per quantity of heat sold in Harumi Triton are about half of the nationwide average value\*1 of DHC.

The factors that allow Harumi Triton to maintain Japan's top class efficiency are that its heat source system was planned from the initial stage of redevelopment plan to enable construction of a reasonable, environment-friendly and cost effective system, and that a comprehensive town management is realized from the planning to operation phases. Not only the efforts on the heat producing side, but also the cooperation with heat using consumers under the design guideline is a great factor. Various efforts of those who are concerned contribute to energy conservation and CO2 emissions reduction.



**[Town management scheme]**

### [Improvement of anti-disaster function]

As the water in thermal storage tanks can be used as water for firefighting and daily life in the event of a disaster, they play an important role as local anti-disaster functions.

\*1 The value stipulated in Cabinet Order under the Act on Promotion of Global Warming Countermeasures (emission intensity of steam (excluding that for industrial applications), hot water and cold water supplied by others: 57 kg-CO2/GJ)