

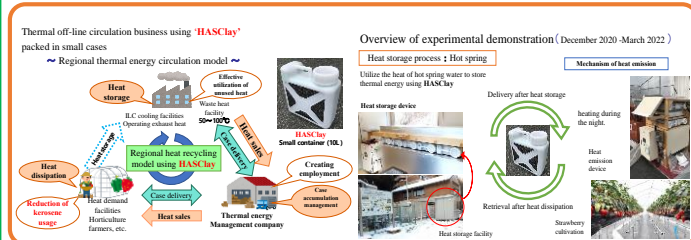
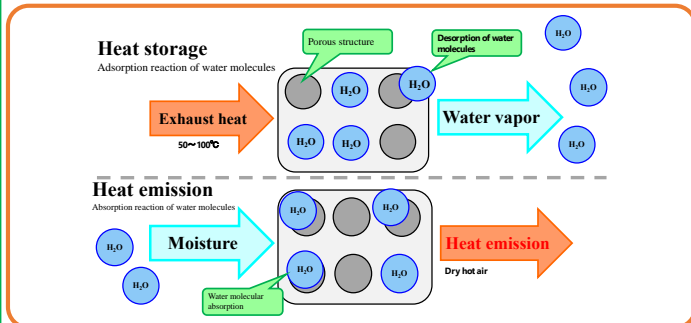
# [Industry -academia -government collaboration]

## Iwate accelerator-related industrial study group



The International Linear Collider (ILC) is being considered for construction in Tohoku, with the Kitakami mountains located in southern Iwate/northern Miyagi prefectures as the leading candidate site. Furthermore, Tohoku University is currently constructing a new synchrotron radiation facility, NanoTerasu, which has led to a growing interest in accelerator-related business among local companies. To support this, the "Iwate Accelerator-Related Industry Study Group" was established in Iwate Prefecture. The group aims to (1) provide opportunities for local companies to collaborate with industry, academia, and government in accelerator-related business, and (2) promote the enhancement of technical capabilities and expansion of business opportunities for local companies. We would like to highlight some of the activities undertaken by this group.

### Experimental demonstration of local thermal energy circulation using 'HASClay': an innovative material that reuses low-quality (low-temperature) waste heat

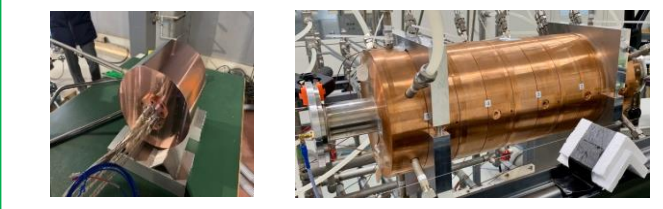
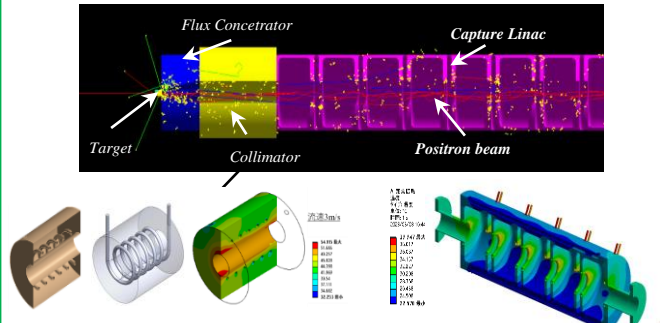


2021-2022 Demonstration trial (heating period: 135 days)  
Average daily kerosene consumption reduced by 4.2 liters, total annual kerosene consumption reduced by 343 liters (CO2 emissions: -1.6 t-CO2/year). A full-scale demonstration project is planned to begin in Iwate Prefecture in 2023.

Industry-Academia-Government Collaborative Team	
Division of roles	
IWATE UNIVERSITY	Structural analysis
National Institute of Advanced Industrial Science and Technology	'HASClay' development
Takasago Thermal Engineering Co., Ltd.	Technical support
ISHIHARASANGYO KAISHA, LTD.	'HASClay' production
Iwate Prefecture	Financial support
WING Co., Ltd.	Plastic container production
Higashi-Nihon Kidenkaishu Co., Ltd.	Commercialization Demonstration test

### Development of electron-driven high-intensity positron source for ILC

→ Key technology: HIP (Hot Isostatic Pressing)



Production of a prototype collimator using HIP technology  
Confirmation of cooling performance through comparison ANSYS calculation

Industry-Academia-Government Collaborative Team			
Industry	Partner company	KEK, the High Energy Accelerator Research Organization	Design and technical support
TSK (Takasago Thermal Engineering Co., Ltd.)	MTC (Metal Technology Co., Ltd.)	Hiroshima University	Design and technical support
		Iwate University	Engineering support
		Kondo Equipment Co., Ltd.	Cooling equipment manufacturing
		THOKU SEIMITSU CO., Ltd	Collimator manufacturing
		Metal Technology Co., Ltd.	Collimator manufacturing
		Iwate Industrial Research Institute	ANSYS calculation
		Iwate Industry Promotion Center	Project management

### Proposal for Casting Cryomodule Mounting Frames

Key Technology: Casting Manufacturing Technology

**Iron castings have vibration absorbing properties: damping capacity**  
組織中の黒鉛が振動エネルギーを熱エネルギーに変換する  
Because graphite in the structure converts vibration energy into heat energy

Cast enclosure vs Steel welded enclosure  
減衰振動波形 (Damped vibration waveform)  
Castings < Can manufacturing  
30% OFF Manufacturing Cost

※By making molds, cost reduction of about 30% is expected compared to can manufacturing.