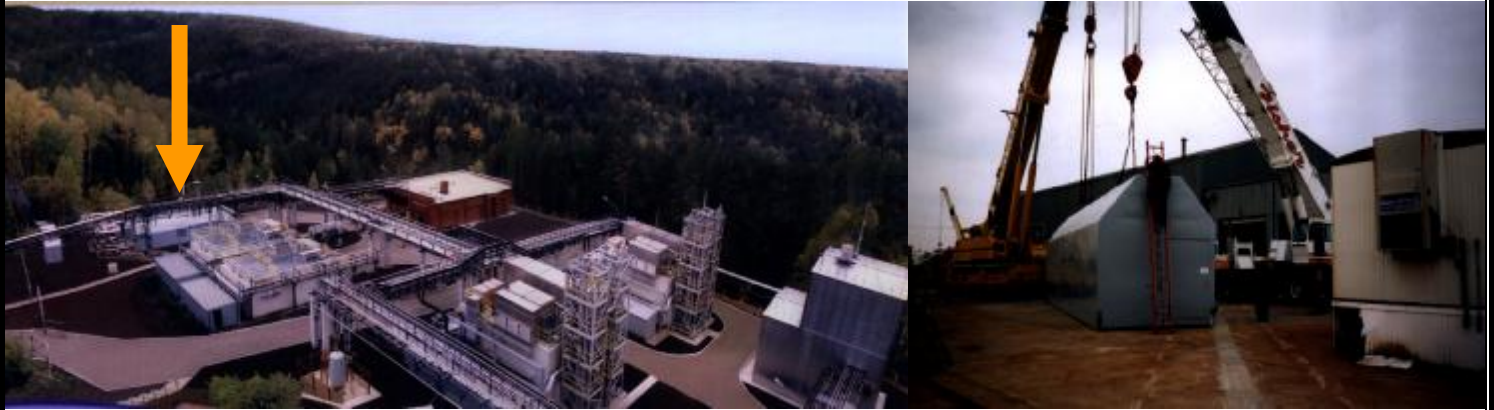




HONEYWELL SIBERIA, RUSSIA



■ **Project:**

(3) 300 HP Containerized Units for Nunn-Lugar Cooperative Threat Reduction Act

■ **Project Completion:**

April 1997

■ **Project Description:**

Ware designed and built (3) 300 HP Containerized units. The boiler system had to be totally self-contained, portable and capable of operating in temperatures from +80 degrees Fahrenheit to -20 degrees [30C to -30C]. All of the controls and monitoring devices were available in both Russian (Cyrillic dialect) and English to help increase communication and decrease accidents. Ware also did startup and commissioning of the units in Siberia. A rigorous test was performed on the units by the U.S. Government and Ware's workmanship and control system passed with flying colors.

Case Study: Honeywell International Inc. (Formerly Allied Signal)
Ballistic Missile Fuel Conversion Plant located in Siberia, Russia

Design/Build Project - \$1.7 million
November 1996 to August 1997

Ware Warms Up Siberia, Russia

Unless you're a hibernating bear, Siberia, Russia is not likely to be on your business travel itinerary. However, some folks embrace a challenge whenever and wherever the opportunity arises. Brutally cold temperatures, language barriers and customs' red tape couldn't stop Ware Operations Manager Mike Taylor and his team.

Ware was called in to design and build a steam system for a conversion process to safely convert highly toxic fuel from dismantled ballistic missiles into environmentally friendly chemicals such as fertilizer that could be sold for civilian purposes.

"In technical terms, ballistic fuel (unsymmetrical Di-Methyl-Hydrazine otherwise referred to as UDMH) was converted to DMA (Di-Methyl-Amine) and ammonia," said Dan Kaye, Mechanical/Process Engineer for Honeywell International. "The DMA is a commercial product that can be used to produce many end-products including fertilizers."

The missile fuel disposal plant was being constructed through the Nunn-Lugar Cooperative Threat Reduction Act which became law in 1991. In total, the United States government spent \$26.1 million to build missile fuel disposal facilities in Siberia, Russia. Over 80% of the funds were awarded to major American firms such as Thiokol Corporation to engineer and build the plants.

Needless to say, there were many challenges and obstacles to constructing these plants. Thiokol Corporation had contracted with Allied Signal (currently Honeywell International) to help design and build the conversion equipment. Ware was brought into this complex project because of their proven expertise and experience.

"The boiler system had to be totally self-contained, portable and capable of operating in temperatures from +80 degrees Fahrenheit to -20 degrees [30C to -30C]," said Mike Taylor, Ware Operations Manager. "We faced so many 'challenges' along the way to building the system. Things like burying the water lines 10 feet deep instead of 8 feet deep. In Siberia, the water would freeze at 8 feet. We also were very aware of safety and environmental concerns. Ballistic missile fuel is highly toxic. If spilled or processed improperly, just one gallon is capable of killing everyone and everything in the vicinity. One major goal of our design was to help keep operator intervention and thus, error, at a minimum. All of the controls and monitoring devices were available in both Russian (Cyrillic dialect) and English to help increase communication and decrease accidents."

Another huge challenge was the physical delivery of the boiler system to Siberia. Trains were the only mode of transportation available and the tunnels through the mountains were only 10 feet wide.

“Ware packaged all the equipment into a relatively small 40 feet long by 8 feet wide container while still providing some space for maintenance access,” said Kaye. “Also, they installed special insulation required to conserve heat and prevent freezing in the skid. Ware did an exceptional job in supporting Allied Signal in this project and actually helped to develop the final configuration of the boiler skids.

Ware helped also helped design and install specialized additional equipment that was used to dissociate the ammonia to make H₂ and N₂ with the hydrogen used by the conversion process,” said Kaye. “The equipment we provided (3 complete systems) to the Russians was designed to convert 30,000 metric tons of UDMH fuel and if equipment was maintained in operation, this could all be converted in approximately 1.5 years of operation.”

Ware braved the bitter cold and unique challenges to ensure the success of the Krasnoyarsk, Siberia facility. Currently, Ware is a preferred national vendor for Honeywell International.

“We (Honeywell) have used Ware’s services at many of our plants since the Russian project got launched with much success,” said Kaye. “My personal experience has been extremely positive. It has given me the confidence to depend on them for other critical work related to boilers and their operation. The personnel at Ware are dependable, honest, and committed to satisfying their customers in a down-to-earth manner. They won’t let you down.”

Half-way around the world or right next door, Ware is there to help meet your company’s hot and cold needs.