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Press Release

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Bilfinger supports Holtec with safe treatment and interim storage of spent fuel assemblies from the Chernobyl Nuclear Power Plant

- **Many years of process engineering support during the qualification and commissioning of the second interim storage facility**
- **Delivery of components for one of the world's largest hot cells, where radioactive waste is safely and remotely processed**
- **Technologically demanding and one-of-a-kind project: Disassembly of highly radioactive fuel elements using state-of-the-art sawing technology**

Bilfinger subsidiary [Bilfinger Noell GmbH](#) is contributing to the safe treatment and interim storage of radioactive waste from the [Chernobyl Nuclear Power Plant](#) ("Chernobyl NPP"). The experts for high-tech special machines supported [Holtec International](#) ("Holtec"), an American supplier of equipment and systems for the energy industry, with comprehensive services in the planning, design, qualification, engineering, manufacturing, delivery, refurbishment and commissioning of one of the world's largest [hot cells](#) at the plant's [Interim Storage Facility 2](#) (ISF-2). There, spent fuel assemblies are dismantled into three parts. The two fuel bundles are dried and stored safely in Holtec's double-walled canisters (DWC) for the next 100 years. The extension rod is removed for handling outside of ISF-2 (radioactive material). The hot cell is a hermetically sealed room to prevent radioactive contamination of the environment. All work takes place automatically or remotely, as personnel are not permitted in the cell for safety reasons.

"Our services helped ensure that Holtec and Chernobyl NPP were able to provide a reliable process for the safe treatment and interim storage of highly radioactive waste for the Chernobyl Nuclear Power Plant," says Karsten Osterland, Project Manager for Nuclear Technologies at Bilfinger Noell GmbH. "For this technologically demanding project, we were able to contribute our process engineering experience and expertise in the treatment of nuclear waste and, together with Holtec, achieve the demanding qualification procedure required by the Ukrainian and international nuclear regulatory authorities."

"With the successful transfer of the first two filled DWCs to ISF-2 in November - December 2020 and the license for operation provided by Ukraine's Nuclear Regulatory Inspectorate (SNRIU)



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on April 26, 2021, 35 years from the day the horrendous accident struck Chernobyl, we commissioned one of the world's largest and most complex dry interim storage facilities,” said Riaz Awan, Vice President for Ukraine Operations at Holtec. “Bilfinger has been a reliable and experienced partner in this project, contributing significantly to the successful design and qualification of the waste treatment process.”

More than 21,000 spent fuel assemblies from power plant units 1 to 3 until now are temporarily stored in water pools in the “wet” [Interim Storage Facility 1](#) (ISF-1) whose service life expires in 2035. They must therefore be transported from ISF-1 to ISF-2 in a special transport container.

Once they reach the hot cell, the fuel assemblies, which are around 10 meters long, are dismantled into three parts. Within the scope of this process, the fuel assemblies are suspended vertically in a device specifically developed for this purpose. They are then dismantled at the central rod using a specially designed saw. This is a highly demanding process because, for safety reasons, the cutting blade cannot come into contact with the actual fuel. The fuel bundles are placed in fuel tubes (a fuel tube is a non-leak-tight cylinder designed to accommodate fuel bundles) and are subsequently packed into Holtec’s double-walled canisters. The fuel assemblies are also completely dried in a process specially developed by Holtec to prevent long-term damage to the canisters caused by water.

93 fuel assemblies separated into 186 fuel bundles are placed into fuel tubes, then loaded into DWCs which, after complete drying, sealing and backfilling with Helium, are stored individually in concrete enclosures in the ISF-2. In December 2020, the Chernobyl NPP supported by representatives of Holtec successfully transferred the first two DWCs, each containing 93 fuel assemblies, to the ISF-2 where they will remain for the next 100 years. The transfer of all fuel assemblies from ISF-1 to ISF-2 will take around 10 years.

Bilfinger Noell GmbH's scope of services comprised the process technology for the remote operation of the hot cell with auxiliary rooms. This included, among other things, a special cutting machine, special machines for the transport of fuel assemblies and canisters, enclosures, suction devices, shielding windows, manipulators, double-lid airlocks for fuel assemblies and 200-liter drums, small part airlocks, transport carts for shielding casks and 200-liter drums, wall penetrations with a remote operating plug system, various remote operating gripper systems for crane operation, lighting, video system, drum measurement station, main filter system, shielding plugs, shielded docking device for the special cask and a special system for the complete dismantling of fuel assemblies, if necessary.



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The Chernobyl NPP went online in 1977 and an accident occurred in unit 4 in 1986. Units 1 to 3 were subsequently [put back into operation](#) until the final decommissioning of the plant after December 2000. In addition to the work on unit 4, which includes the already completed construction of a domed [New Safe Confinement](#) over the aging sarcophagus, the now completely decommissioned power plant is being fully dismantled. Part of this dismantling also includes the construction of ISF-2 and the safe treatment and interim storage of the fuel elements.

Bilfinger Noell GmbH has decades of experience in nuclear technology and supplies components, systems and services for the construction, operation and dismantling of nuclear facilities and for the conditioning of radioactive waste.

Some of the company's most recent projects include

- design, manufacture and commissioning of all [hot cell equipment for ICEDA](#), the French conditioning plant for radioactive waste
- design, manufacture and commissioning of the [waste treatment plant](#) at British nuclear power plant Hinkley Point C, which is currently under construction
- design, manufacture and commissioning of components for two [core melt stabilization systems](#), also for Hinkley Point C
- planning and implementation for the [dismantling of the steam generators](#) in the Mülheim-Kärlich decommissioned nuclear power plant

Bilfinger is a leading international industrial services provider. The Group enhances the efficiency of assets, ensures a high level of availability and reduces maintenance costs. The portfolio covers the entire value chain from consulting, engineering, manufacturing, assembly, maintenance and plant expansion to turnarounds and also includes environmental technologies and digital applications.

The company delivers its services in two service lines: Technologies and Engineering & Maintenance. Bilfinger is primarily active in the regions Continental Europe, Northwest Europe, North America and the Middle East. Process industry customers come from sectors that include chemicals & petrochemicals, energy & utilities, oil & gas, pharma & biopharma, metallurgy and cement. With its ~ 30,000 employees, Bilfinger upholds the highest standards of safety and quality and generated revenue of €3.5 billion in financial year 2020.

You can find additional information, photographs and videos at

