FUJITSU

Case Study
PAN Institute of Agrophysics

»FUJITSU CELSIUS W530 workstations provide a powerful environment for the comfortable use of applications for three-dimensional modelling, analysis and data visualization. Effective work with professional programs in this class requires considerable computing power.«

Krzysztof Sitarz, computer scientist, PAN Institute of Agrophysics

The customer

Country: Poland
Industry: Research
Founded: 1968
Website: www.ipan.lublin.pl/

Instytut Agrofizyki
im.Bohdana Dobrzańskiego
Polskiej Akademii Nauk

The challenge

The Institute is developing its computing infrastructure for its scientific and research projects. To accomplish these tasks, stable and efficient equipment capable of processing large amounts of data for planning and analysis is required.

The solution

After a thorough analysis of the current market offer, the Institute selected FUJITSU CELSIUS W530 workstations equipped with NVIDIA Quadro K2000 2GB and NVIDIA Tesla K20 systems and FUJITSU PRIMERGY servers equipped with NVIDIA Tesla C2075 GPGPU cards.

The customer

The PAN Institute of Agrophysics in Lublin, established in 1968, is involved in cognitive research, applications and training of scientific personnel in the application of physics to solve problems related to shaping and protecting the environment, sustainable agriculture and food processing.

The challenge

The Institute needed a high-performance computing platform for its scientific and research projects, including three-dimensional design, acquiring data, data analysis and visualization. To accomplish these tasks reliable and powerful graphics workstations were required that use professional graphics cards and that work with simulation and design software.

The solution

As a result of a tender in 2014, hardware was selected that is an essential part of the infrastructure necessary for their projects. The Institute decided to purchase Fujitsu solutions – CELSIUS workstations with NVIDIA Quadro K2000 (2GB) and NVIDIA Tesla K20 and FUJITSU PRIMERGY servers equipped with NVIDIA Tesla C2075 GPGPU cards.

"The selected Fujitsu solutions fulfill all the requirements necessary to work with advanced professional software at the lowest price," says Krzysztof Sitarz, a computer scientist at the Institute of Agrophysics.

The projects conducted at the Institute of Agrophysics are diverse in nature, but they all share a need for processing power. "The primary task of the FUJITSU CELSIUS W530 workstations is to provide a powerful environment for the comfortable use of applications for three-dimensional modelling, analysis and data visualization," says Krzysztof Sitarz.

One of the key projects of the Institute includes the creation of a measuring station with a data acquisition and analysis system. The design work will be carried out by a team that will use software including AutoCAD LT 2015 and AutoCAD 2015 - academic version with modules for designing in 2D and 3D. The project will put together a complete measurement chain with sensors, an analog-

The benefit

- Reliability and stability of simulation and design software
- High-performance computing required for professional applications
- Quiet operation in offices

Products and Services

- FUJITSU CELSIUS W530 workstation
- FUJITSU Server PRIMERGY equipped with NVIDIA Tesla C2075 GPGPU cards
- NVIDIA Quadro K2000 2GB
- NVIDIA Tesla K20

digital card and software for processing and visualizing the results. The station will use a FUJITSU CELSIUS W530 workstation with NVIDIA Quadro K2000 2GB systems. "We use programs such as Autodesk and Salome on Fujitsu workstations. They are used to create 3D models and prepare them for numerical calculations. The models are used in specialized software to simulate granular materials," says Krzysztof Sitarz.

After conducting performance tests of various equipment manufacturers and after careful analysis of the benefits it decided to choose the solutions offered by Fujitsu. FUJITSU CELSIUS W530 workstations provide a suitable environment for the professional software used in the Institute – EDEM and Liggghts.

In parallel, the Dielectric Spectroscopy Laboratory will use FUJITSU CELSIUS W530 workstations equipped with a dual processor motherboard with lots of RAM and the ability to install a NVIDIA Tesla K20 computational graphics card. This solution has been developed to assist cooperation with software by the company Keysight (Agilent):

- EMPRO for the simulation of electromagnetic fields in three-dimensional systems; this program is used to determine the scattering matrix parameters for three-dimensional multi-rod TDR probes;

- ADS (Advanced Design System) software for the automation of electronic, microwave and RF design and high-performance digital applications. These programs were purchased as part of a National Centre for Research and Development project. They are used to

conduct the simulation and design of microwave circuits.

The benefit

"We also use Fujitsu's solutions as a platform for data processing," says Krzysztof Sitarz. Processing data from the programs mentioned above is no easy matter due to the amount of information collected. The Institute's innovative systems written in C ++ and Python are used to process data and the data obtained from the simulation has to be visualized. This is another function that is performed by Fujitsu's powerful graphics workstations at the Institute of Agrophysics. ParaView software is used on graphics stations that enables complex processes and phenomena to be visualized.

Conclusion

This is not the last innovative application of Fujistu's graphics workstations at the Lublin institution. A stable 3D printer controller was required for the daily work of the Institute. It has been implemented on graphics stations designed for continuous operation and it has a high uptime ratio.