# DIGISENS launches its NITRO® software module designed to drastically reduce radiation doses in tomography.

Digisens launches NITRO® its new module to create reconstructions using a very limited number of projections. This new module will enable DIGISENS to provide the medical and research fields with a means of reducing radiation doses from factor 6 to 8 both for scanners and electron microscopes. Combined with its DigiXCT and DigiECT software, this module completes its offering for the tomographic world.

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 NITRO® is designed to create reconstructions using a very limited number of projections without any loss of image quality. With this new module, DIGISENS provides the medical and research world with a way of drastically reducing doses. NITRO® is available under Windows 7 in mono or multi-GPUs to reduce processing time.

The two diagrams below show the comparison of the NITRO® reconstruction (fig. 2) with a standard reconstruction FDK (fig. 1). As part of a dose-reduction strategy, the animal has been scanned in twenty-four images instead of 192 images. It can be seen that the results obtained by the NITRO® software (fig. 2) enables a more precise definition of the anatomical structures, thus helping the medical diagnosis.
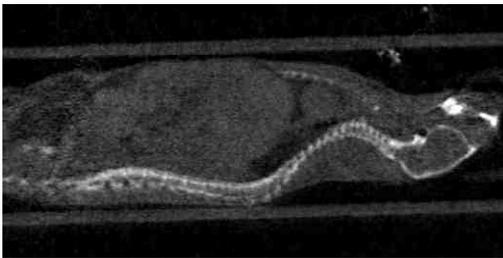
Fig. 1 cross-section obtained using a standard FDK algorithm
Number of projections = 24
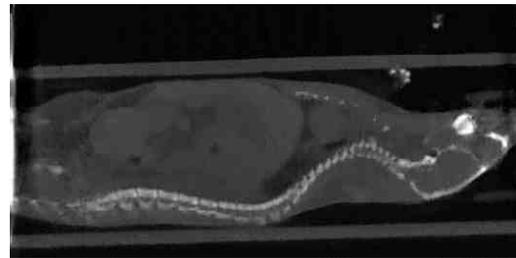
Fig. 2 cross-section obtained using the Digisens NITRO® algorithm
Number of projections = 24

The main features and benefits of NITRO® are:

- optimum image quality with a low number of views
- dose reduction from 6 to 8 for an image quality comparable to a complete scan
- user-friendly: few parameters to adjust (maximum 2 parameters)
- automatic and tailored choice for initialisation
- optimum convergence speed
- adjustment possible
- local tomography reconstruction, in specific areas of interest or in wide-spread mode

In these two application areas, the final quality of the reconstructed images, and consequently, the diagnosis quality is in great part due to the ionization radiation dose used. In the medical field, it is very important to reduce the dose because using ionization radiation presents a health risk. In electronic microscopy 3D observation takes place at lower nanometre scales, consequently a short, low-dose inspection time is therefore crucial in order to obtain the clearest possible images.

In order to satisfy the reduced dose, one of the traditionally used methods is the reduction of the number of exposure with the same number of projections. This method leads to an impasse due to creating severe artefacts making it difficult indeed impossible to analyse the reconstructed images.

With NITRO$^\circledR$ it is now possible to use this method while still benefiting from an unmatched image quality. This new module represents a major breakthrough in the medical and electronic microscopy fields.

NITRO$^\circledR$ completes the (DigiXCT and DigiECT) software offering for the world of tomography.

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About Digisens

Digisens is a leader in high value-added 3D-imaging software solutions for X-ray computed tomography and electron tomography. Whether in medical, dental & small animal 3D-imaging, research or industry software solution by Digisens strive for optimizing 3D imaging equipment performances (X-ray CT , electron microscopes) to deliver perfect 3D-reconstruction quality thanks to a user friendly GUI together with unequaled reconstruction speeds all this even with very large raw datasets.