

How does Flash spiral scan mode works?

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Flash Spiral scanning

- Up to 48 cm / s
- No breath hold / flat breathing
- Adaptive 4D Spiral Plus for Perfusion & long-range dynamic CTA (up to 48 cm)

FlashSpiral scanning (ECG-triggered)

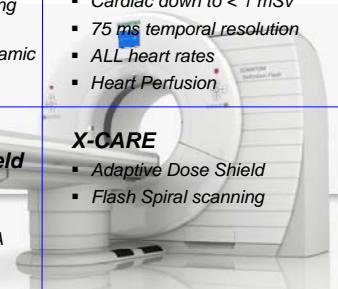
- Cardiac down to < 1 mSv
- 75 ms temporal resolution
- ALL heart rates
- Heart Perfusion

Dose neutral with Selective Photon Shield

- 2nd generation energy separation
- DE Heart PBV + 75 ms CTA
- DE Pre-processing

X-CARE

- Adaptive Dose Shield
- Flash Spiral scanning



There are 3 main parameters that determine scan speed.

1. Gantry rotation time;
2. X-ray collimation width;
3. Pitch.

Let's focus on the relationship of Recon data and Pitch.....



Relationship of Image Recon and Pitch

Some Useful Formulas

Conventional Technology

$$\text{ReconData} = \frac{360^\circ}{\text{Pitch}} \dots\dots\dots(1);$$

Dual Source Technology

$$\text{ReconData} = \frac{360^\circ}{\text{Pitch}} + 90^\circ \dots\dots\dots(2);$$

$$\text{OverlappingReconData} = \frac{360^\circ}{\text{Pitch}} - 90^\circ \dots\dots\dots(3);$$

* Formulas (2),(3) are ONLY suitable on condition of $4/3 \leq \text{Pitch} \leq 4$.

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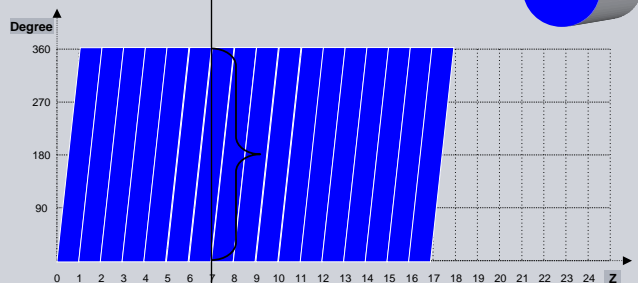
Relationship of Image Recon and Pitch

Image Recon and Phase Data

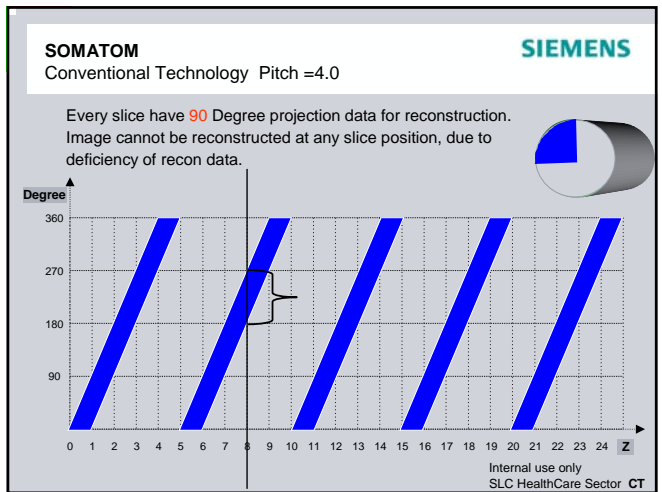
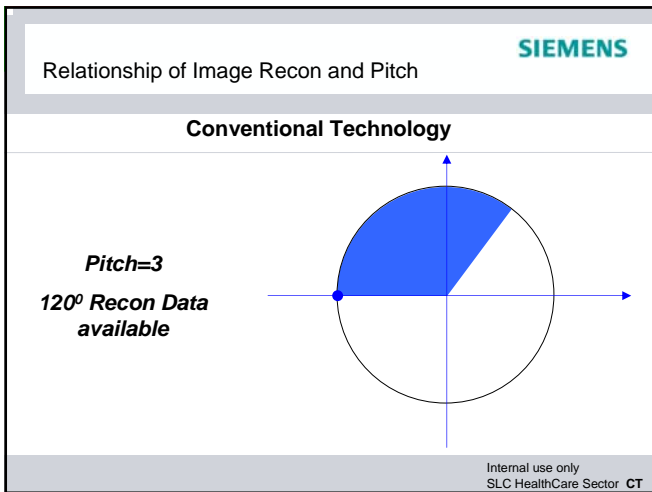
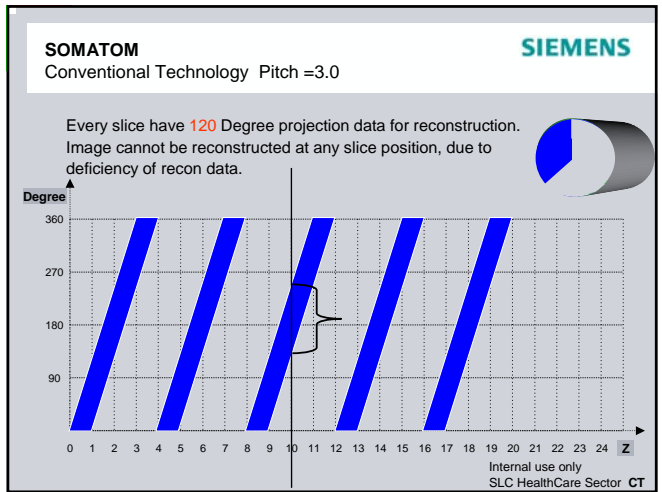
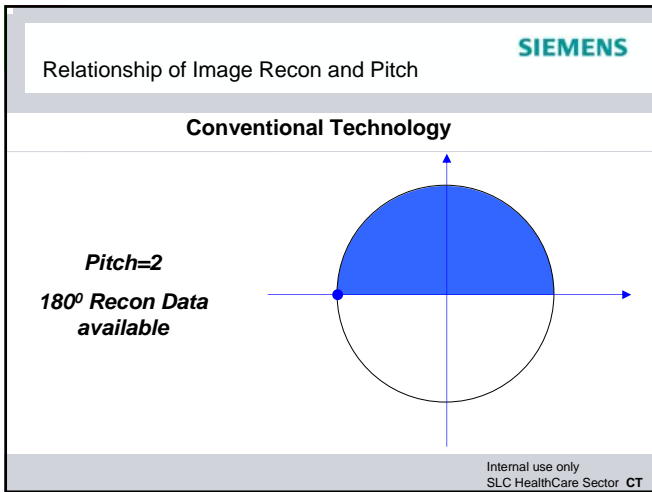
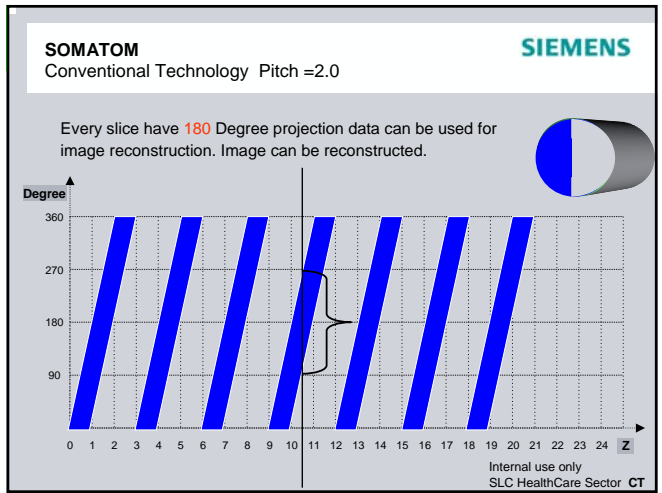
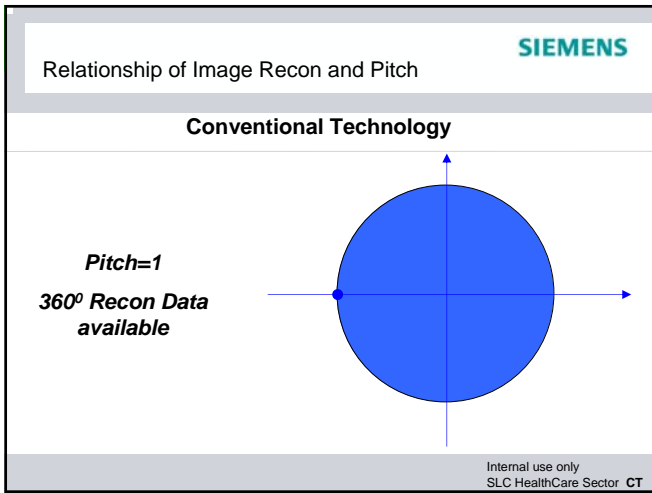
1. At least 180° Phase data is needed for reconstructing a image;
2. Thorax/CTA(including CCTA)/Extremities' CT imaging can use larger pitch-----180° Phase data is enough;
3. Abdomen/Neuro's CT imaging uses corresponding small pitch for getting better density resolution, only considering the relationship between density resolution and pitch;
4. Recon data is just Phase data in the PPT.

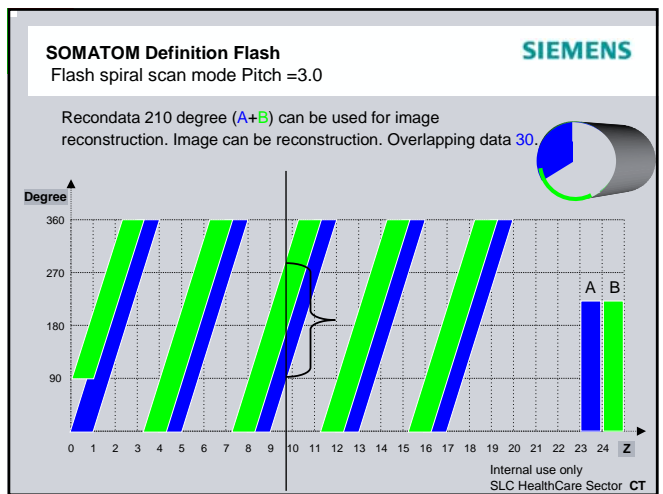
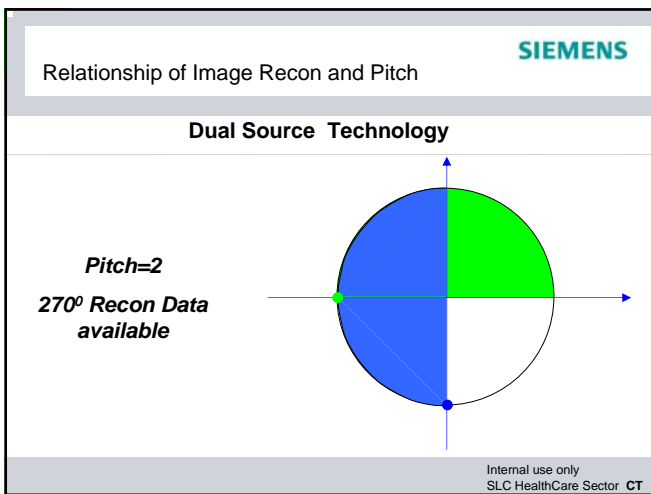
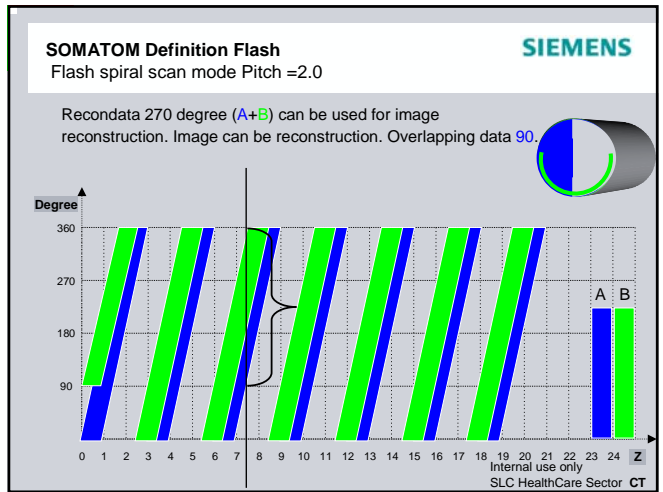
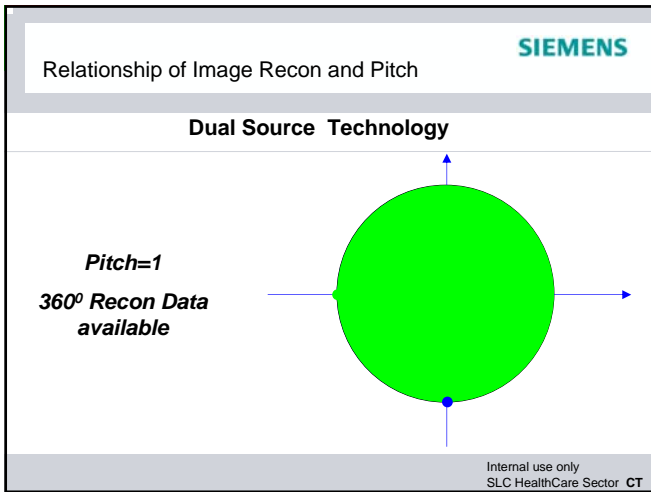
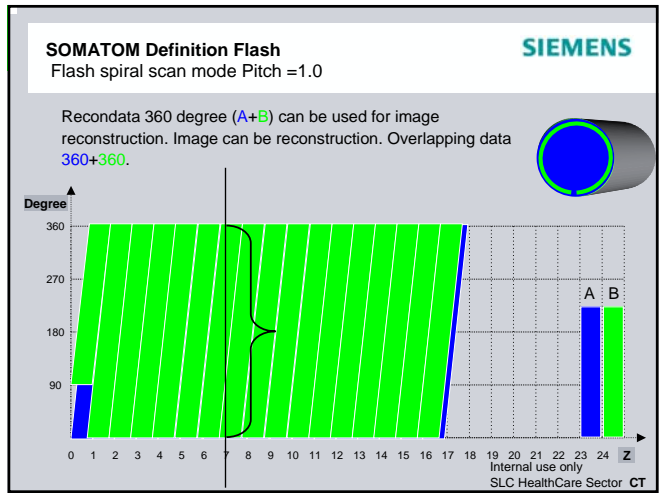
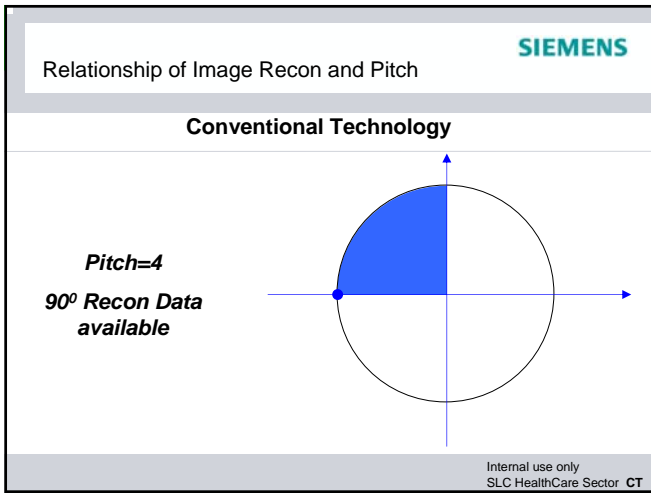
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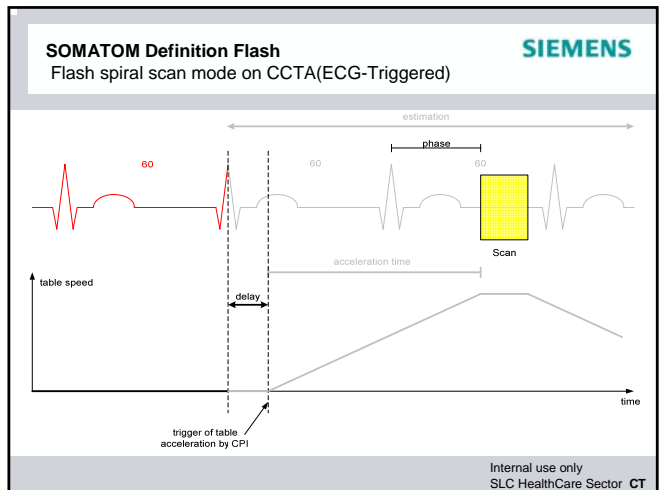
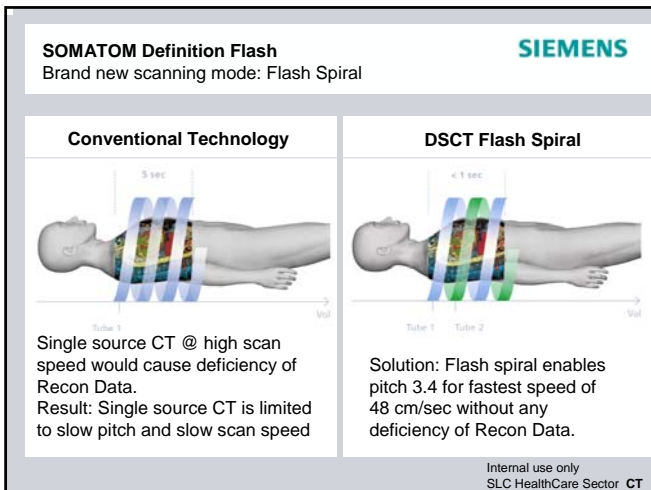
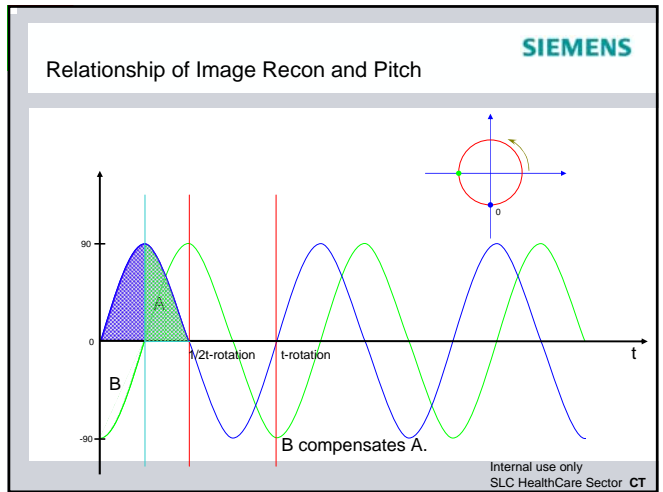
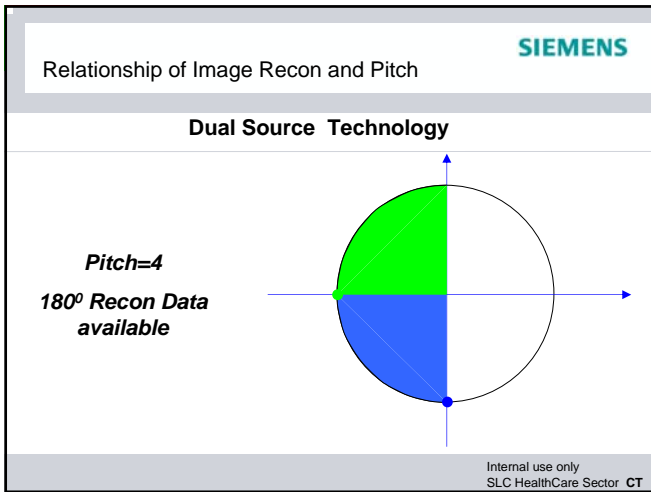
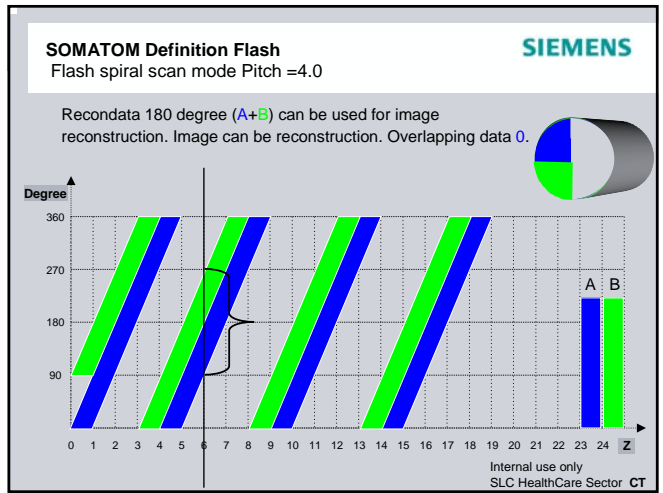
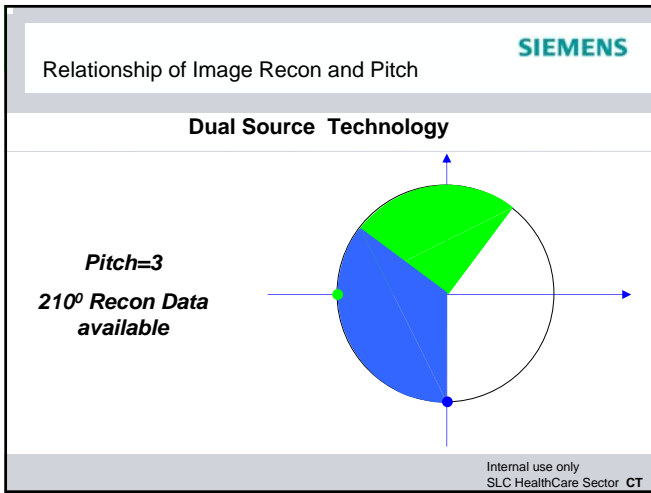
Every slice have 360 Degree projection data can be used for image reconstruction. Image can be reconstructed.



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SOMATOM Definition Flash

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Flash spiral scan mode-----Viewpoints & summaries

- 1.Considering data acquisition safety or some other issues, Max pitch limit to 3.4, not 4.0 mentioned.
- 2.There is 90 degree between two tubes, but the principle is same when phase angle becomes 94 degree.
- 3.ECG triggered Flash Spiral scan mode can be used for CCTA examination, and due to the reduction of redundant data(time is reduced), dose is very low. If heart function is needed, **Flash Cardiac Sequence** can be used for the aim, of course,dose is also very low.

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