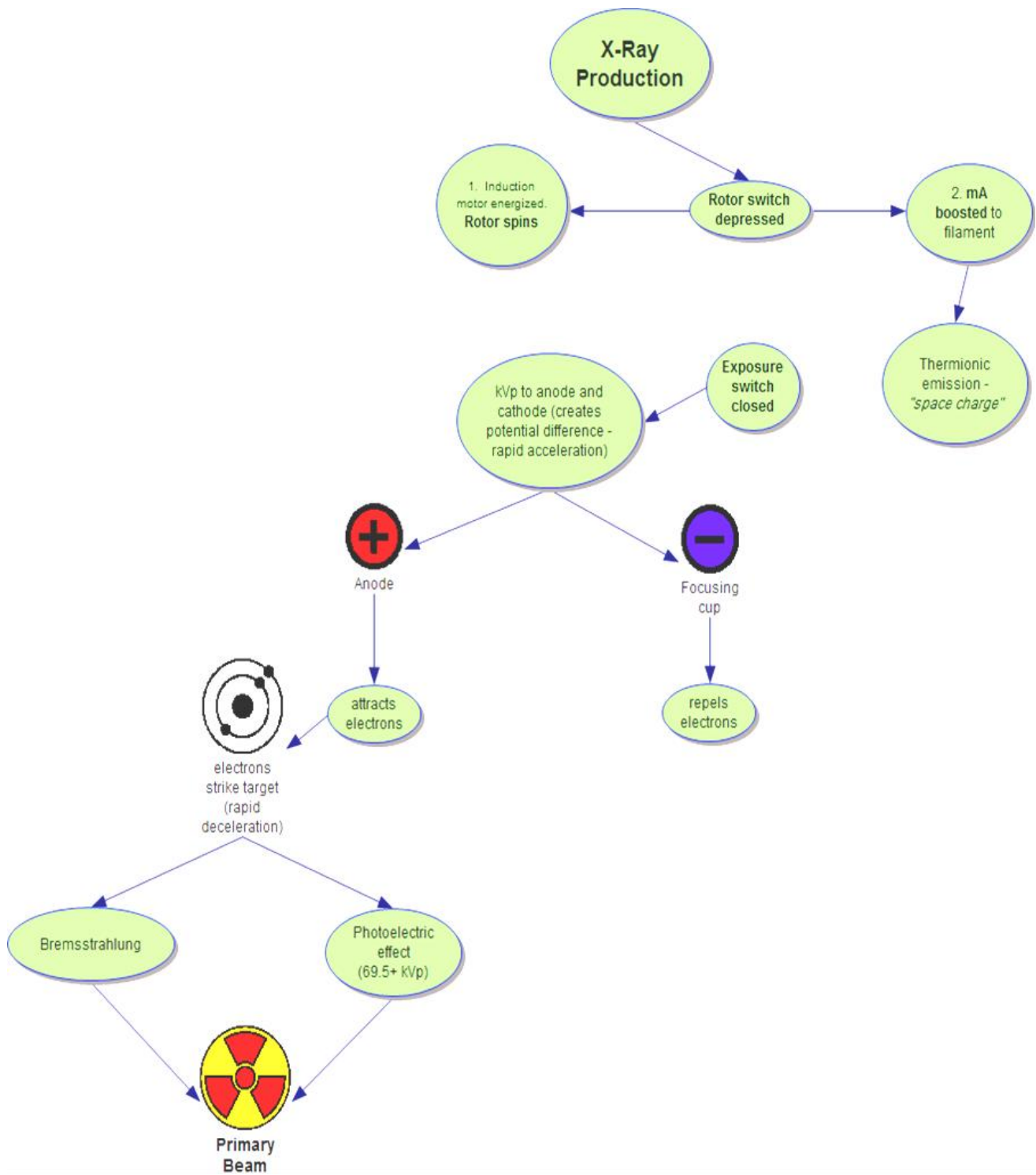


“Technique 101: Getting Back to Basics” ~ 2012

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Behind “the buttons”



Handy Formulas, etc...

Calculating mAs

- mAs = mA X time
 - mA = $\frac{\text{mAs}}{\text{time}}$
 - time = $\frac{\text{mAs}}{\text{mA}}$
- Or . . .
- | | |
|-----------|-------|
| mAs | |
| mA | time* |
| * seconds | |

Density Maintenance

Used to calculate adjustments in mAs to compensate for changes in SID (to maintain density)

$$\frac{\text{mAs}_1}{\text{mAs}_2} = \frac{D_1^2}{D_2^2}$$

- mAs₁** – mAs used during the first image
 - mAs₂** – new mAs required at new distance
 - D₁** – original SID (for 1st exposure)
 - D₂** – new SID (for 2nd exposure)
- This compensates for beam attenuation / divergence.
 - as SID ↑ , mAs ↑
 - as SID ↓ , mAs ↓
 - More distance requires more mAs
 - Less distance requires less mAs

Inverse Square Law

Used to calculate changes in beam intensity (or dosage) relative to changes in distance

$$\frac{I_1}{I_2} = \frac{D_2^2}{D_1^2}$$

- As distance ↑, intensity (and dose) ↓.
- As distance ↓, intensity (and dose) ↑

Grids

Grid Ratio = $\frac{\text{height (of strips)}}{\text{distance between}}$

GR	GCF
none	1
5:1	2
6:1	3
8:1	4
12:1	5
16:1	6

- ← Needs 2X mAs as non-grid
- ← Needs 3X mAs as non-grid
- ← Needs 4X mAs as non-grid
- ← Needs 5X mAs as non-grid
- ← Needs 6X mAs as non-grid

Converting from one grid ratio to another

$$\frac{\text{New GCF}}{\text{Old GCF}} \times \text{original mAs} = \text{new mAs}$$

(for new GCF)

Intensifying Screens (Film/Screen Systems)

Calculating I.F./Speed

Exp. without screens or
“direct exposure” (mAs or mR)

I.F. / speed

exp. with screens
(mAs or mR)

Converting from 1 screen speed to another (same density)

Old Screen Speed

New Screen Speed X original mAs =

mAs required for new screen

Image Magnification

$$\frac{\text{Image Size}}{\text{Object Size}} = \frac{\text{SID}}{\text{SOD}}$$

Remember: Object size will **always** be smaller than image size due to magnification!

Magnification Factor

$$\frac{\text{Image Size}}{\text{Object Size}} = \frac{\text{SID}}{\text{SOD}}$$

$$\text{MF} = \frac{\text{image size}}{\text{object size}} = \frac{\text{SID}}{\text{SOD}}$$