



# WP-12: Warm Magnets

## WPL: B. Krause

## Magnets for Injector

- Input parameters for magnet design derived from the desired lattice:
- **Quadrupols** in the Injector 1 and 2: 48
- Magnet length in beam direction: 250 mm
- Bore radius: 20 mm
- Minimum beam energy: 0.10 GeV
- Maximum beam energy: 0.15 GeV
- Max. Gradient: 2.402 T/m
- Pole tip field: 0.048 T

## Magnets for Injector

- **Corrector magnets** in the Injector 1 and 2: 2 x 24
- Magnet length in beam direction: 100 mm
- Gap height: 40 mm
- Minimum beam energy: 0.10 GeV
- Maximum beam energy: 0.15 GeV
- Field in the gap: 0.003 T

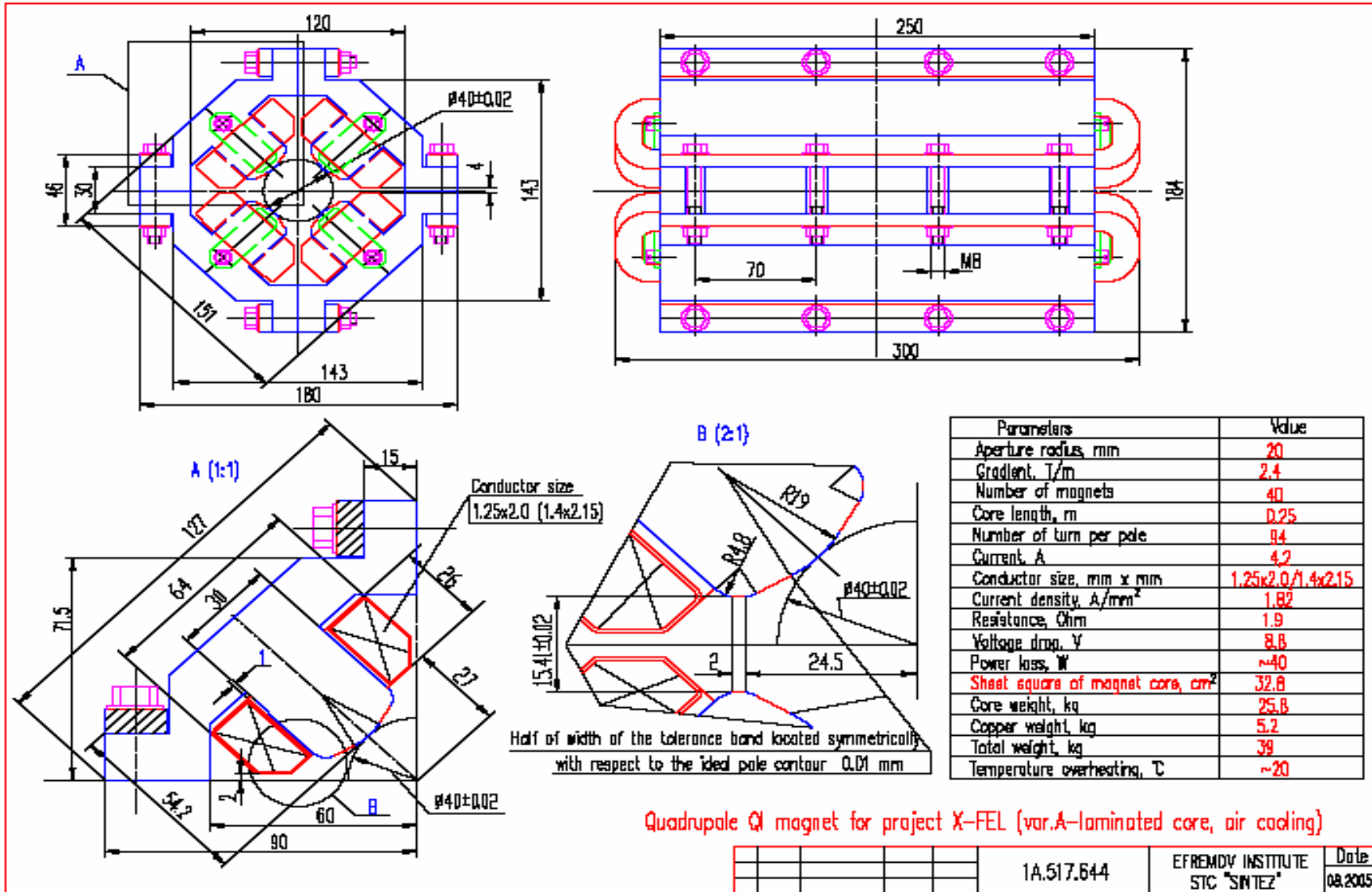
## Magnets for Injector dogleg

- **Dipole magnets** in the Injector dogleg: 6
- Magnet length in beam direction: 500 mm
- Gap height: 40 mm
- Minimum beam energy: 0.10 GeV
- Maximum beam energy: 0.15 GeV
- Field in the gap: 0.314 T

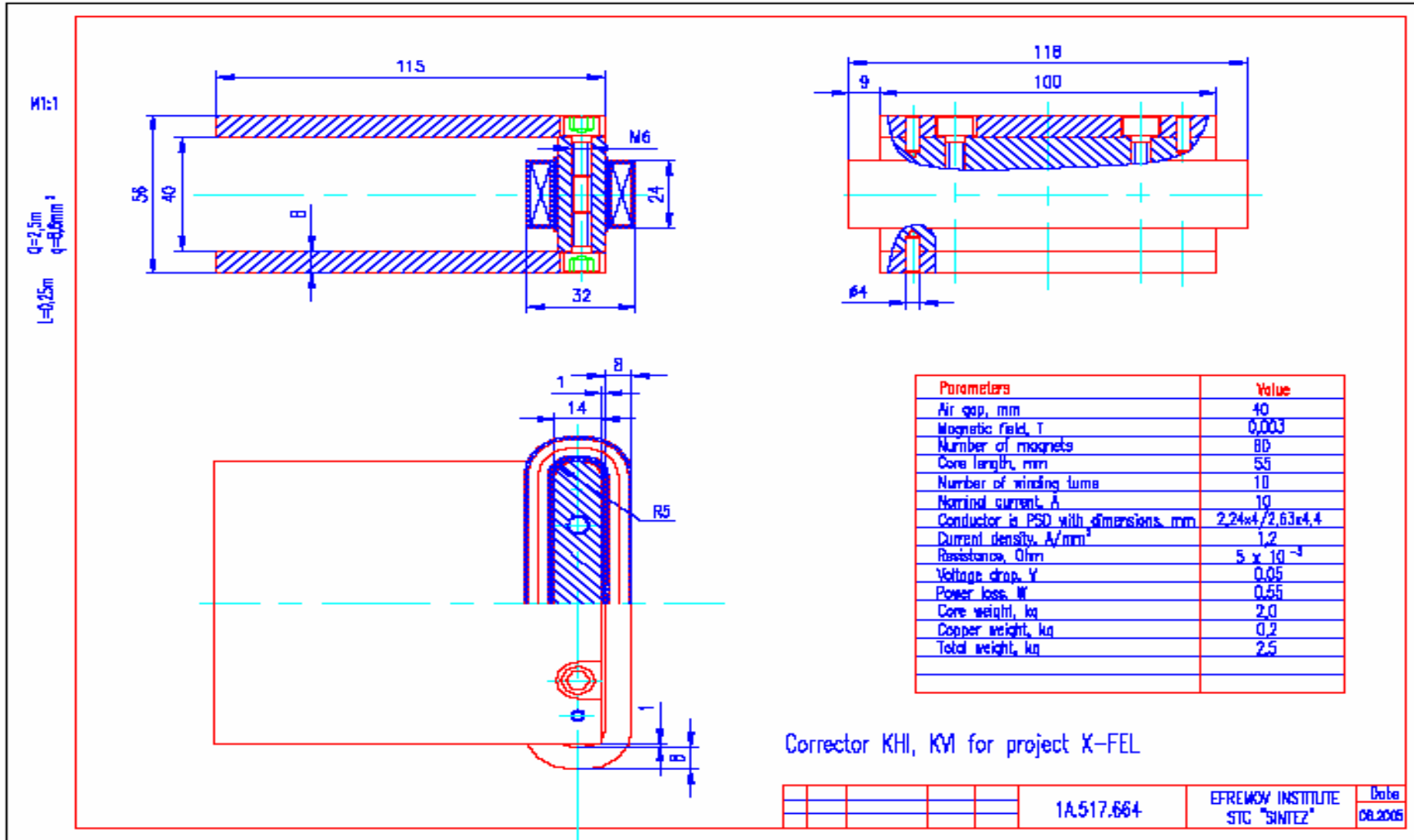
## Power Supplies, Cooling water

- Power supplies for the magnet coils:  
input current between  
500 A and 1000 A (200 V to 500 V) (dipole);  
100 A and 400 A (100 V to 150 V) (quadrupole)
- Cooling water system for the magnet coils:  
water pressure 6 bar; pressure drop 4 bar.

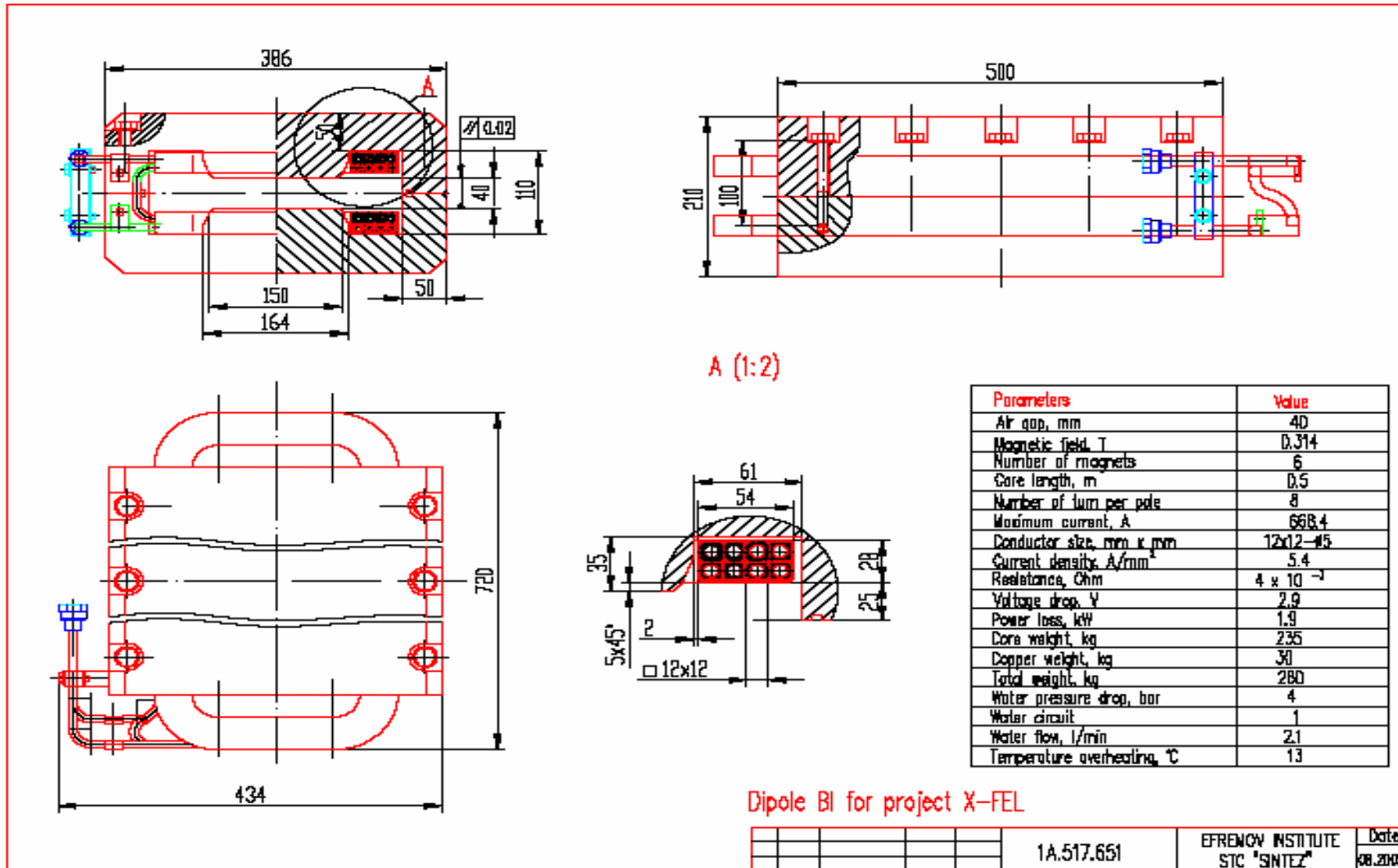
## Quadrupol Injector



## Correction magnets Injector



## Dipole injector dogleg





## Information needed to continue

- Define required B-field quality.
- Installation and repair procedure important for the design.
- Define working regime of the magnets.
- But: To reduce manufacturing costs most of the magnets for the machine has to be defined (keyword: magnet families).