

RF Distribution Costs

- Klystron Model
- Distribution of Costs compared to Snowmass-most-optimistic

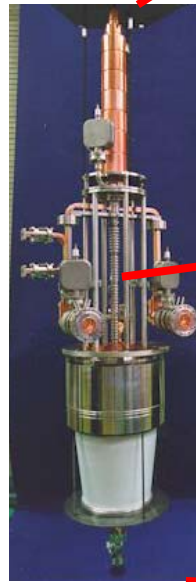
Klystron Factory Model

Scaled from Cornell NLC factory model

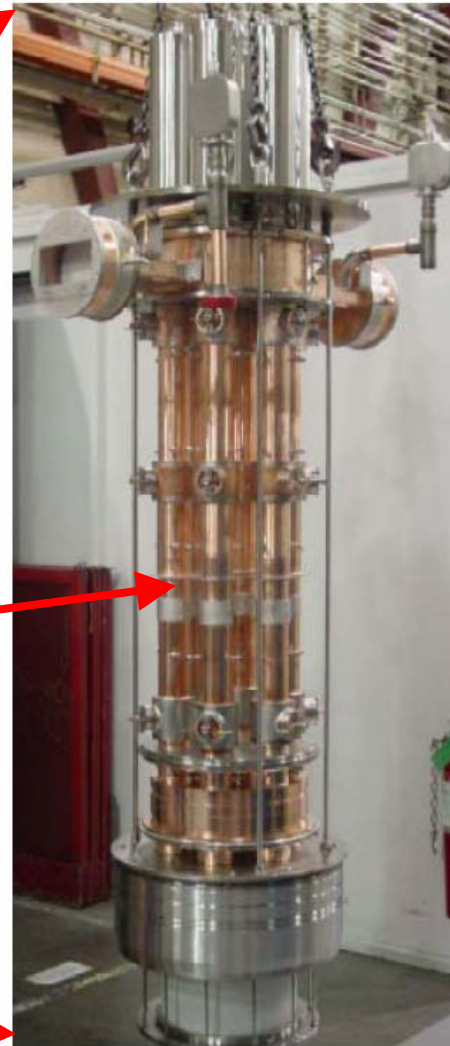
Size/volume => raw mat'l + labor + equipment

of beams => drift tube mat'l count + labor

Caryotakis Difficulty factor => yields



X-band
Single beam



L-band
MBK

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Parts and Labor

VACUUM ENVELOPE ASSEMBLY:
RAW MATERIALS
BRAZE ALLOY
ELECTRON GUN ASSEMBLY
BODY ASSEMBLY
WAVEGUIDES/WINDOWS
COLLECTOR
PARTS AND MATERIAL SUBTOTAL
LABOR HRS
LABOR COST SUBTOTAL
EXHAUST:
LABOR HRS
LABOR COST SUBTOTAL
FINAL ASSEMBLY:
MAGNET ASSEMBLIES
LABOR HRS
LABOR COST SUBTOTAL
TEST:
LABOR HRS
LABOR COST SUBTOTAL
YIELDED PARTS AND MATERIALS
YIELDED LABOR HOURS
YIELDED LABOR COST
ENGINEERING FTE'S
ENGINEERING LABOR HOURS PER TUBE
ENGINEERING LABOR COST PER TUBE

KLYSTRON Tube Model

Example of some of the Detail

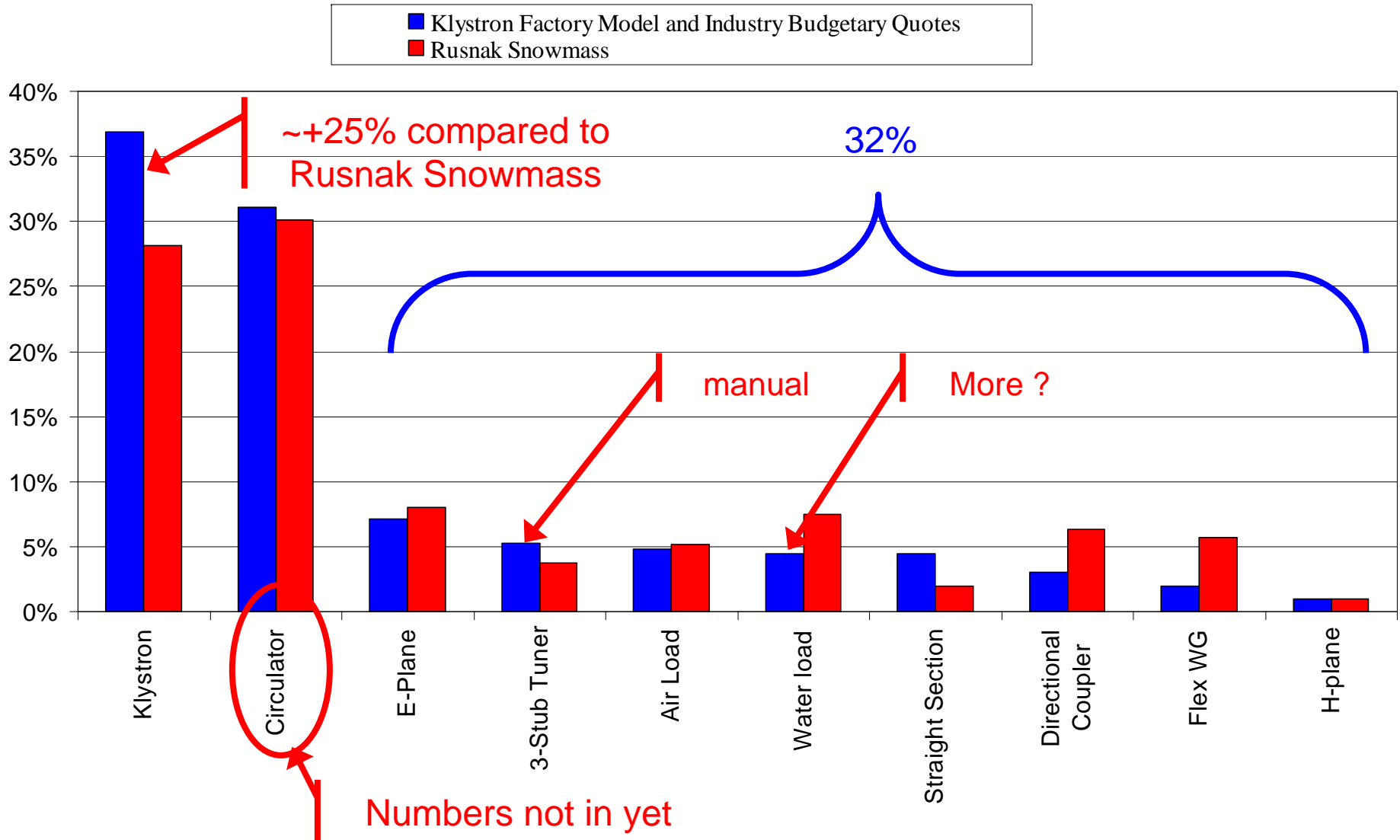
Difficulty Factors

COST/LEARNING FACTORS
RAW MATERIALS
PURCHASED PARTS
LABOR
COSTING QUANTITY
YIELD FACTORS
VACUUM ASSEMBLY
BAKEOUT
TEST
TOTAL
EQUIPMENT UTILIZATION
EXHAUST TIME (HRS)
TUBES/STATION
TEST TIME (HRS)

Equipment

PLANT COSTS
SQ FT PER EXHAUST STATION
SQ FT PER TEST STATION
BASE CRANE SPACE
SQ FT OF CLEAN RM /100 TUBES/YR
BASE GENERAL SPACE
SQ FT OF GEN SPACE /100 TUBES/YR
GEN'L SPACE SQ. FT.
CLEAN-RM SQ. FT.
CRANE SPACE SQ. FT.
TOTAL SQ. FT.
GEN'L SPACE COST PER SQ. FT.
CLEAN-RM COST PER SQ. FT.
CRANE SPACE COST PER SQ. FT.
TOTAL PLANT COST
TOTAL COST, PLANT AND EQUIPMENT
ANNUAL LEASE COST

Distribution of Full Qty Costs (% of Total) for a Klystron Pack (excluding modulator)



RF Distribution Costs per Klystron Pack (Excluding Modulator)

- ~1/3 Klystron
- ~1/3 Qty 24 Circulators
- ~1/3 All other WG components