B. Industrial Studies

Much of the technical component part of the TESLA cost estimate has been based on industrial studies commissioned by DESY and/or the collaboration. These studies addressed possible production plans and strategies and provided a bottoms-up look at how production could be carried out and what its estimated cost would be. Major studies were typically of 6 months duration and ~ 100K$ expense.

This cost estimating approach by industrial study is notable as it is not typical of procedures used in the U.S. at this phase of project planning.

The major industrial studies included:

Niobium production        Wah Chang, Albany, OR, USA
                         Cabot Corp., Boyertown, PA, USA

Cavity fabrication       Babcock Noell Nuclear GmbH, Wuerzburg, Germany,
                         with Dornier consultant,
                         and 2 additional studies by Accel and Zanon

Cold mass                E. Zanon SpA, Schio, Italy
Cryomodule Assembly two studies: Accel, Bergisch Gladbach, Germany
and Noell-Babcock,
with DESY and INFN (Zanon) advisors to both

Input RF Coupler Thomson-Thales, Velizy, France

Klystron tubes Thomson-Thales

Modulators PPT Puls-Plasmatechnik GmbH, Dortmund, Germany
– this study also included the pulse transformer (by
ABB), the IGCT switch (by ABB), and the HV power
supplies for the modulators (by FUG Beerwald who build
HVPS for new TTF modulators

Pulsed Modulator cables Nexans Deutschland, Mönchengladbach, Germany

Other RF components:
Directional Couplers: Spinner, Munich, Germany
Drivers: SSB
Circulators & loads: Domen SPA Ferrite, St. Petersburg, Russia
400 kW circulators: AFT

Other Cost Basis studies included:

Cryogenic Plants estimate by Dr. H. Quack (Dresden) with consultants from
Linde AG Unternehmenszentrale,
Araham Lincoln Strasse 21,
65189 Wiesbaden, Germany, and
L’Air Liquide, Corporate Communications,
75 Quai d’Orsay,
75321 Paris cedex 07, France
based on CERN studies & LHC & HERA experience

Civil Construction based on HERA construction experience in consultation
with the firms of
Windels, Timm, & Morgen, Ballindamm17,
90095 Hamburg, Germany, and
Amberg Ingenieurbüro AG, Trockenloosstrsse 21,
Postfach 27, CH-8105 Regensdorf-Watt,
Switzerland