Fusion Plasma Performance Required for Fusion Power

The performance achieved on MFE and IFE fusion experiments using DT fuel is compared with the fusion performance required for a Fusion Power Plant.

	Const. Cost $B	Date of Fusion Result		Fusion Yield MJ	Fusion Gain Achieved	Fusion Gain Required for Power Plant		Fuel Gain Achieved	Fuel Gain Required for Power Plant	GAP in Fuel Gain to Power Plant
MFE										
TFTR	$0.5B[1]	1994		7.5	0.28	35		0.28	35	125
JET	$0.5B[1]	1997		22.2	0.65	35		0.65(~1)	35	54
IFE										
NIF	$4.5B[2]	2013		0.014	0.008	65		~1	8,125	8,333
MFE- Under construction				Goal	Goal					Goal
ITER	$20B[3]	2030		200,000	10	35				3.5

Fusion Yield = fusion energy produced during a single experimental pulse,
       MJ is 1 million joules of energy or 1 million watts for 1 second.
Fusion Gain = fusion power produced/ power used to heat fuel (standard definition)
Fuel Gain = fusion power produced/ power absorbed by fuel   (a new definition)
In definitions above power is used for magnetic fusion, and energy for inertial fusion

Notes:
1. TFTR and JET construction costs in 1980 dollars
2. NIF construction costs in 2004 dollars
3. ITER Construction Costs estimated by EU in 2013 dollars