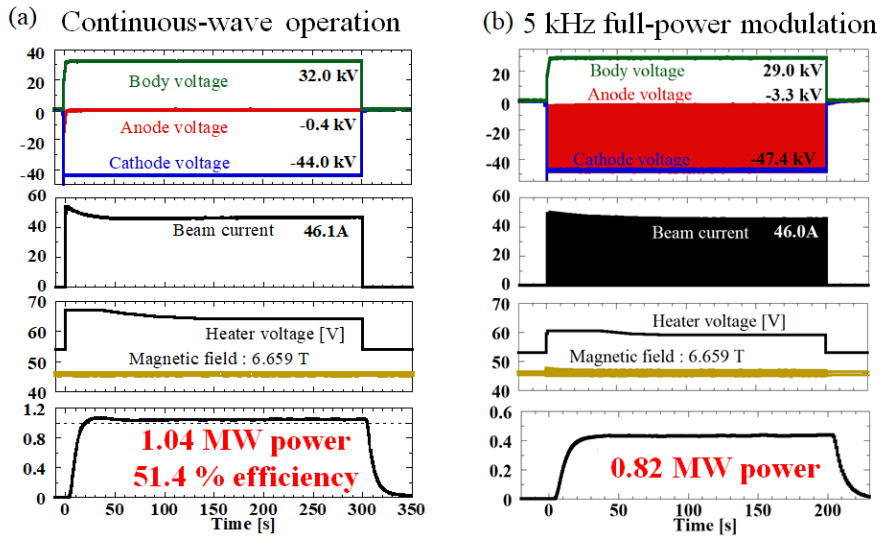
[TECH/1-787] Progress on performance tests of ITER-gyrotrons and design of dual-frequency gyrotron for ITER staged operation plan

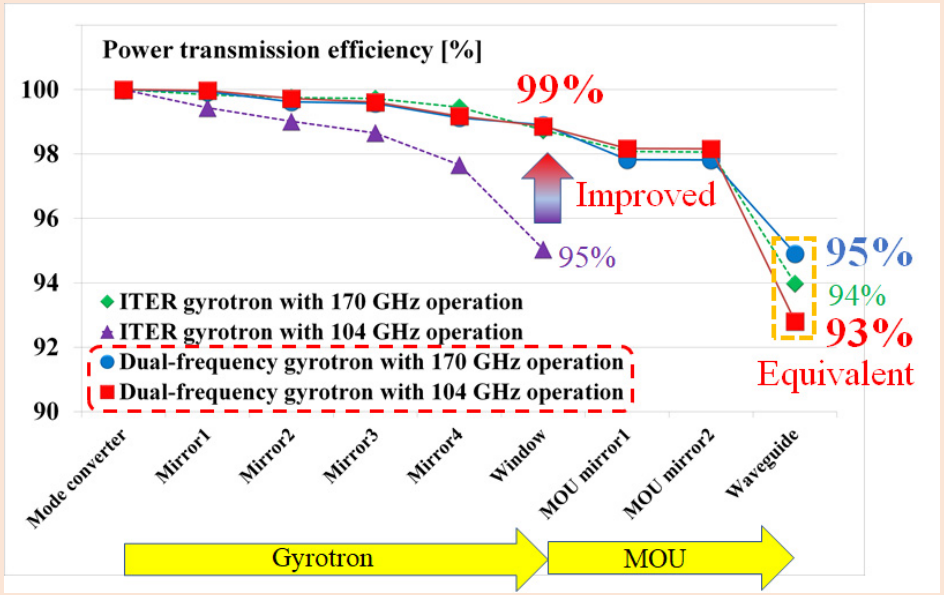
Presented by R. Ikeda (QST, Japan)

1. Japan ITER-gyrotrons



Four gyrotrons passed the performance tests.

2. Design of 170GH/104GHz gyrotron



Power transmission efficiencies of dual-frequency gyrotron equivalent to that of the ITER gyrotron were achieved.

1. Manufacturing of all sets of Japan ITER-gyrotrons (8 sets) was completed. The 4 gyrotrons have completed the performance tests (170 GHz frequency, 1 MW power and 50 % efficiency, 5 kHz modulation) and are being prepared for delivery to ITER for First Plasma.

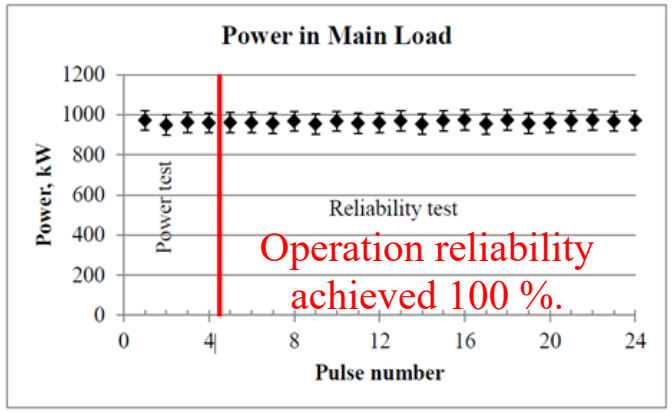
2. Design optimization for dual-frequency 170 GHz and 104 GHz (for 1.8 T operations) gyrotron was completed.

[TECH/1-787]

New Developments in Russia of Gyrotrons for Plasma Fusion Installations

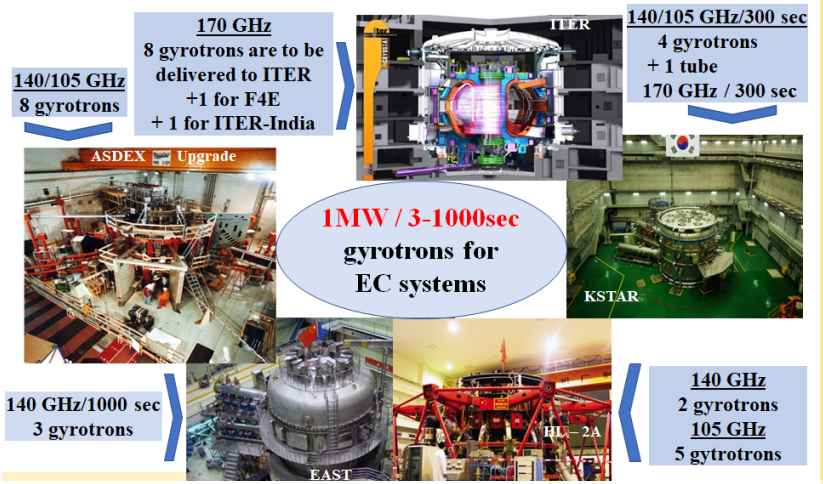
G.G. Denisov (IAP, Russia)

1. Russia ITER-gyrotrons



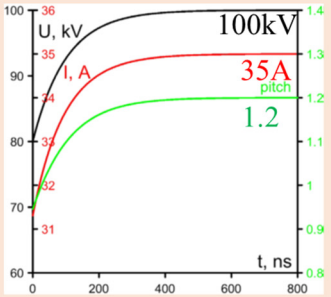
Four gyrotrons passed the performance tests.

2. Gycom/IAP deliveries in last years



More than thirty MW gyrotrons in last 10 years

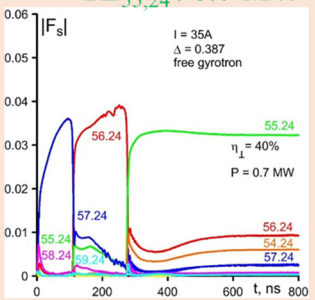
3. New approach



Electron beam parameters
(Voltage, Current , Pitch factor)

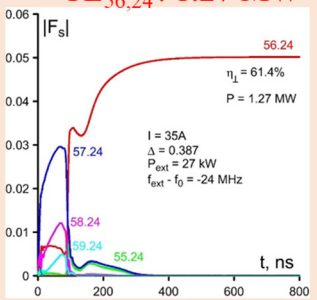
345 GHz

$TE_{55,24}$: 0.7 MW



Free running gyrotron
(no input signal)

$TE_{56,24}$: 1.27 MW



New approach
(27 kW external signal)

External signal provides the single mode gyrotron operation with significantly higher power and oscillation efficiency.

1. Fabrication of 4 Russia-Gyrotrons was completed and two more systems are in manufacturing. The four gyrotrons passed the factory acceptance tests (1000 s pulses at megawatt power and efficiency higher than 50%).

2. Delivered more than thirty MW gyrotrons are contributing to the advancement of plasma and fusion physics.

3. Stable 1 MW power operation at 345 GHz was simulated by introducing new approach.