

"Istok"-A LEADING RUSSIAN MICROWAVE R&D FACILITY**A. N. Korolyov**

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ABSTRACT

This paper provides an introduction to the Research and Production Corporation "ISTOK". ISTOK has been in existence for over 50 years, and is a major research and production facility for microwave devices in the former Soviet Union. This paper briefly summarizes its primary areas of research and production activity.

SUMMARY

This paper provides an introduction to ISTOK, a leading Russian microwave company originally founded in 1943 to produce receiver tubes, but which now produces a wide variety of both vacuum and solid state devices at microwave and millimeter wave frequencies. Some of the Istok products have close parallels in the Western marketplace, but a significant number of products are unique to Istok.

Some firsts of ISTOK include discovery of the physical mechanism of IMPATT Diodes (avalanche transit-time instability), multiple beam microwave tubes, and electrostatic microwave amplifiers. ISTOK is the first company in the CIS to produce high-reliability TWT's for communications satellites, low-noise ribbon-beam TWT's, and a wide variety of monolithic and hybrid-monolithic integrated circuits.

ISTOK is currently active in the microvacuum electronics field, the use of high-temperature superconductors in production devices, and production of precision multilayer semiconductor structures with intricate doping profiles. Use of microstrip for replacement of waveguide is common, and ferrite microstrip devices have been extensively developed. Production gas lasers are another product of ISTOK.

The company is the only electronics company of the former Soviet Union which has extensive internal vertical integration. This permits production of products ranging from special electronic materials to airborne transceivers, to medical electronics. The firm is thus isolated from difficulties with vendors and component suppliers.

ISTOK is active in both millimeter and microwave portions of the spectrum, and the paper outlines the full spectrum of Istok products and R & D activities.

