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Research, Development and Production of ITER Toroidal Field Conductors and Poloidal Field Cables in Russia

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Russian Federation is the initiator and active participant in development and building of International Thermonuclear Experimental Reactor – ITER. The major element of ITER is its huge superconducting magnet. Special superconducting cables and conductors had to be developed to satisfy very strict demands for such conductors. A lot of Research and Development (R&D) works have been performed in Russia to create our own production of superconductors, cables and conductors. Russian Scientific R&D Cable Institute (known by Russian abbreviation as VNIKIP) has been participating in ITER project since 1993 both at the early stage of R&D and at the following stage of Engineering Design Activity (EDA). Tests of several short samples at Sultan test facility were crowned by successful testing of Toroidal Field (TF) and Poloidal Field (PF) insert coils performed in Japan in 2001 and 2008 correspondingly. After many R&D works bow VNIKIP is actively implementing the final production and delivery stage of cables and conductors. By 2009 the new and modern technological complex has been accomplished to produce PF cables for both the Russian Federation (RF) and European parts and TF conductors for RF part. The complex includes several productions such as chemical technology line, cabling facility and jacketing line. In this review we present a short history of VNIKIP participation in ITER and our current achievements, including some R&D results. The technology used and our production line are described in some details.

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