



BEST

Step-Up
Transformer

Pump-up Your
Substation with

Dual Voltage
Step-Up Transformers



Step-Up Transformer

Balıkesir Elektromekanik Sanayi Tesisleri A.Ş. (BEST A.Ş. www.besttransformer.com) is manufacturing transformers for more than 50 years. A new challenge is occurred in 2017; the requirement was a new transformer that will increase energy plant capacity in 20kV but company planned to change generators to 24kV in coming years. At the same time; Turkish high voltage grid is planned to change from 380kV to 400kV so "Dual Voltage Step-Up Transformer" must handle this change too.



Pic. 1: Best Transformers could manufacture up to 800MVA 525kV transformers.

Power rating of transformer is record for Best: 500MVA. With hybrid cooling ODAF/ONAF/ONAN; transformer rating could be adjusted 225-500MVA. Another challenge with dual high voltage requirement is tap winding. Taps should give enough cover at 380kV and 400kV level. For this purpose; a special type tap winding with additional winding + coarse tap and fine tap is designed and manufactured. HV cable box connections are best suitable for substation connection.



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With cable box HV connection and ODAF cooling; transformer is very compact when compared with a standard 500MVA. With all equipment; total weight is 420 tons, height is more than 10 meters and length is approximately 13 meters. This "giant" transformer have 5-leg core design in order to reduce height to limits of Turkish transportation as 4.5 meters.



Pic. 2: 500MVA step-up transformer



Pic. 3: Giant transformer is ready for test with all equipments.

Voltage change from 380kV to 420kV or 20kV to 24kV will be done once in transformer lifetime. For this purpose; undercover link to change voltage solution is provided. For HV winding with %20 of tap range; an on load tap changer is given. Transformer successfully passed all routine, type and special tests at factory thus Best's "largest MVA transformer" record is in this giant's hands.



Pic. 4: All equipment removed before transportation.

Advantages of dual-voltage transformers;

- Could be supplied with two different generator output (21 and 24kV)
- Could be connected to 380 and 400kV voltage level lines separately
- This is the largest transformer that Best A.Ş. have manufactured since 2018
- With pumps; less radiator and fans which means less maintenance, but more performance
- Transformer has withstand ability to transient voltage spikes from generators.