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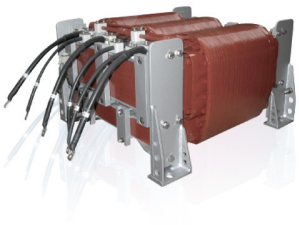
RUT 500

Leakage transformer



Unique Selling Point

- Space-saving (transformer and choke in a single component)
- Longer life for motors by limiting of current peaks
- Low-cost
- Optimized for railway operation (high degree of pollution , Shock- and vibration tested ,
  Salt spray and immersion tested)

Description

In railway applications, where it‘s about the greatest possible comfort and safety of passengers, components are required that save space, are safe and have a long service life. Supply interruptions or voltage drops can lead to a range of undesirable effects such as the loss of motor power.

The REO leakage transformer ensures harmonized current and voltage outputs, filtering harmonics, and limiting the ripple current.With the spatial separation of the primary and secondary windings and the resulting intentional increase in the magnetic leakage field, the REO leakage transformer achieves a loose magnetic coupling.

This results in the combination of the function of a transformer (transforming voltage with galvanic separation) and a current-limiting choke.

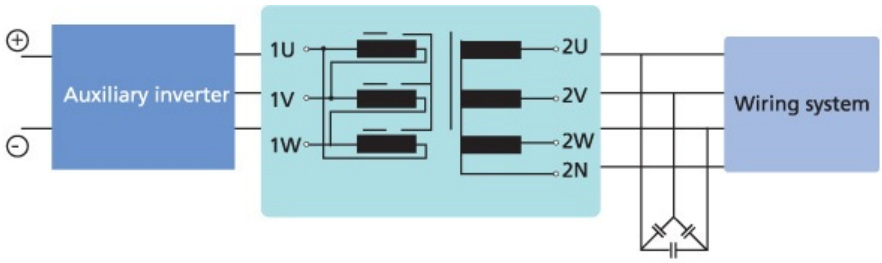
Options

- Various performance classes : 50 kVA , 100 kVA , 150 kVA and 200 kVA
- Voltage drop 10% uk ,20% , and 30%
- Voltage ratio /Windings selectable
- Winding material and optimized insulation degree selectable

Technical Data

- Rated power : 71000 - 275000 VA
- Input voltage : 210 - 1660 V

Circuit example



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Technical data

Type*	Power	Uprim/Usek	uk	Lσ,prim. / sek	Cooling
RUT 500-71-10	71 kVA	580 V / 400 V	10%	1.47 / 0.7mH	AN (1 m/s)
RUT 500-86-20	86 kVA	300 V / 400 V	20%	1 / 1.6 mH	AN (1 m/s)
RUT 500-95-19	95 kVA	1175 V / 440 V	19%	7 / 1 mH	AN (1 m/s)
RUT 500-115-33	115 kVA	1660 V / 480 V	33%	21 / 1.7 mH	AN (1 m/s)
RUT 500-120-26	120 kVA	1015 V / 380 V	26%	7.1 / 1 mH	AN (1 m/s)
RUT 500-155-4	155 kVA	690 V / 400 V	4%	0.45 / 0.15 mH	AN (1 m/s)
RUT 500-85-11	85 kVA	560 V / 400 V	11%	1.32 / 0.7mH	AF (2.5 m/s)
RUT 500-90-50	90 kVA	210 V / 400 V	50%	0.66 / 2.4 mH	AF (2.5 m/s)
RUT 500-111-60	111 kVA	210 V / 400 V	60%	0.8 / 2.9 mH	AF (2.5 m/s)
RUT 500-130-25	130 kVA	1175 V / 440 V	25%	7 / 1 mH	AF (2.5 m/s)
RUT 500-160-35	160 kVA	1015 V / 380 V	35%	7.1 / 1 mH	AF (2.5 m/s)
RUT 500-160-46	160 kVA	1660 V / 480 V	46%	21 / 1.7 mH	AF (2.5 m/s)
RUT 500-215-6	215 kVA	690 V / 400 V	6%	0.45 / 0.15 mH	AF (2.5 m/s)
RUT 500-110-6	110 kVA	1050 V / 400 V	6%	1.6 / 0.24 mH	AF (5 m/s)
RUT 500-110-15	110 kVA	560 V / 400 V	15%	1.32 / 0.7mH	AF (5 m/s)
RUT 500-125-6,5	125 kVA	330 V / 400 V	6,5%	0.1 / 0.15 mH	AF (5 m/s)
RUT 500-168-33	168 kVA	1175 V / 440 V	33%	7 / 1 mH	AF (5 m/s)
RUT 500-170-26	170 kVA	640 V / 380 V	26%	2 / 0.7 mH	AF (5 m/s)
RUT 500-200-44	200 kVA	1015 V / 380 V	44%	7.1 / 1 mH	AF (5 m/s)
RUT 500-200-57	200 kVA	1660 V / 480 V	57%	21 / 1.7 mH	AF (5 m/s)
RUT 500-208-30	208 kVA	1015 V / 380 V	30%	4.7 / 0.67 mH	AF (5 m/s)
RUT 500-250-39	250 kVA	726 V / 380 V	39%	2.6 / 0.71 mH	AF (5 m/s)
RUT 500-275-8	275 kVA	690 V / 400 V	8%	0.45 / 0.15 mH	AF (5 m/s)
RUT 500-310-27	310 kVA	1370 V / 400 V	27%	5.2 / 0.4 mH	AF (5 m/s)
RUT 500-690-35	690 kVA	1125 V / 750 V	35%	2 / 0.9 mH	OF

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Construction

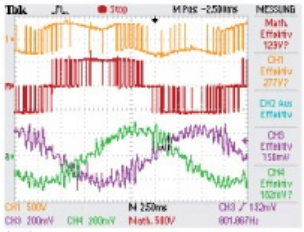
The primary winding covers both iron cores; the secondary winding only the non-gapped transformer core. The leakage inductance is defined such that in combination with a downstream capacitor, this forms a low-pass filter for attenuating the pulse-frequency current and voltage components.

To illustrate the action of a leakage transformer the input and output currents and voltages for different frequencies were displayed on an oscilloscope. Comparing the different measurements, it can be seen that the currents and voltages at the output of the leakage transformer are more „harmonious“, i.e. from the interaction of the leakage inductance and the capacitor bank, an LC filter results that filters out the higher harmonics and limits the ripple current.

The higher the switching frequency of the converter, the greater is the effect of the filter.

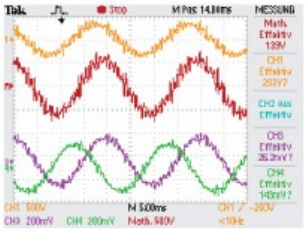
Comparison at 2 kHz:

Input



CH1 = U(U1)
CH2 = U(U1-W1)
CH3 = I(U1) (100mV=10A,20A/Div)
CH4 = I(W1) (100mV=10A,20A/Div)

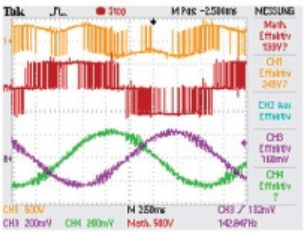
Output



CH1 = U(U2)
CH2 = U(U2-W2)
CH3 = I(U2) (100mV=10A,20A/Div)
CH4 = I(W2) (100mV=10A,20A/Div)

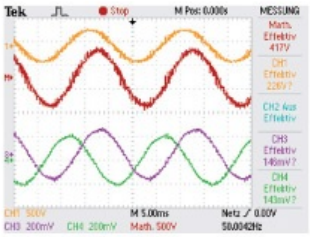
Comparison at 4 kHz:

Input



CH1 = U(U1)
CH2 = U(U1-W1)
CH3 = I(U1) (100mV=10A,20A/Div)
CH4 = I(W1) (100mV=10A,20A/Div)

Output



CH1 = U(U2)
CH2 = U(U2-W2)
CH3 = I(U2) (100mV=10A,20A/Div)
CH4 = I(W2) (100mV=10A,20A/Div)

Dimensions

Please contact us for dimensions/dimension drawings!