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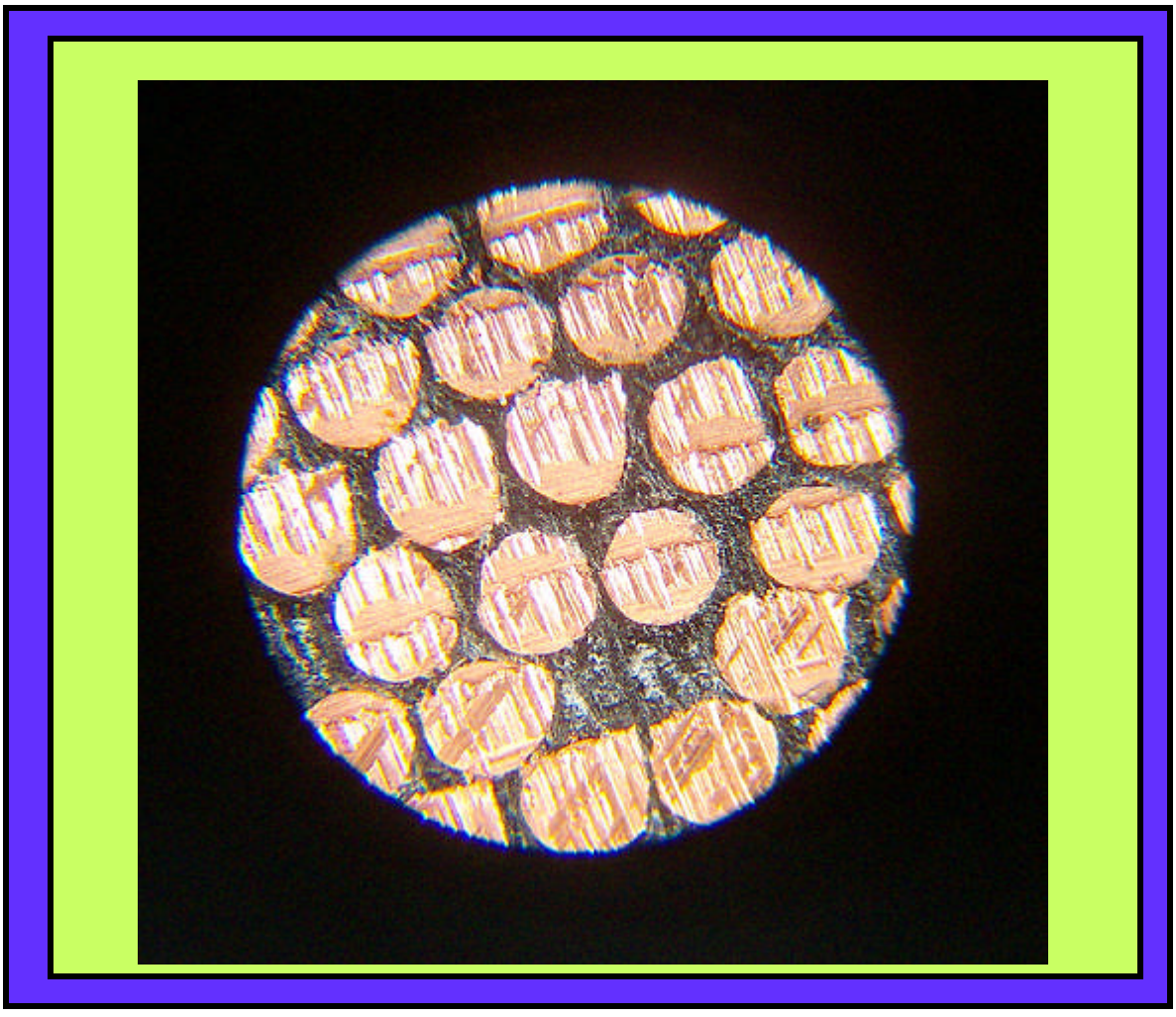
Current-UV-Dip-Impregnation

April 2006

General description of the technology

Impregnation of electrical coils is necessary to mechanically secure the coil wires, to protect the insulation against atmospheric influence and to improve the dissipation of motor heat.The cured windings should also be protected agasinst vibrations and electrodynamic activities.
During production of the coils there are gaps in the slots and between the wires which should be filled by impregnation resins.
Positive results of this technology are; good heat transfer from the winding to the rotor or stator lamination; an improved insulation system; the windings are baked to one solid mass, eliminating potential damage by corona dishcharge.
With current-UV-ip-impregnation plants,the electrical coils will be impregnated with liquid impregnation resin. The chemical process of hardening will be done by joule effect and UV-radiation.



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Impregnation mediums

The applied impregnation resins guarantee the full functioning of the electrcial windings for a long period. This is done by improving the insulation system and providing additional protection against mechanical, thermal and chemical influences.
All current-UV-dip impregnation plants can be used with solvent resin and with solventless resins.

Economical advantages

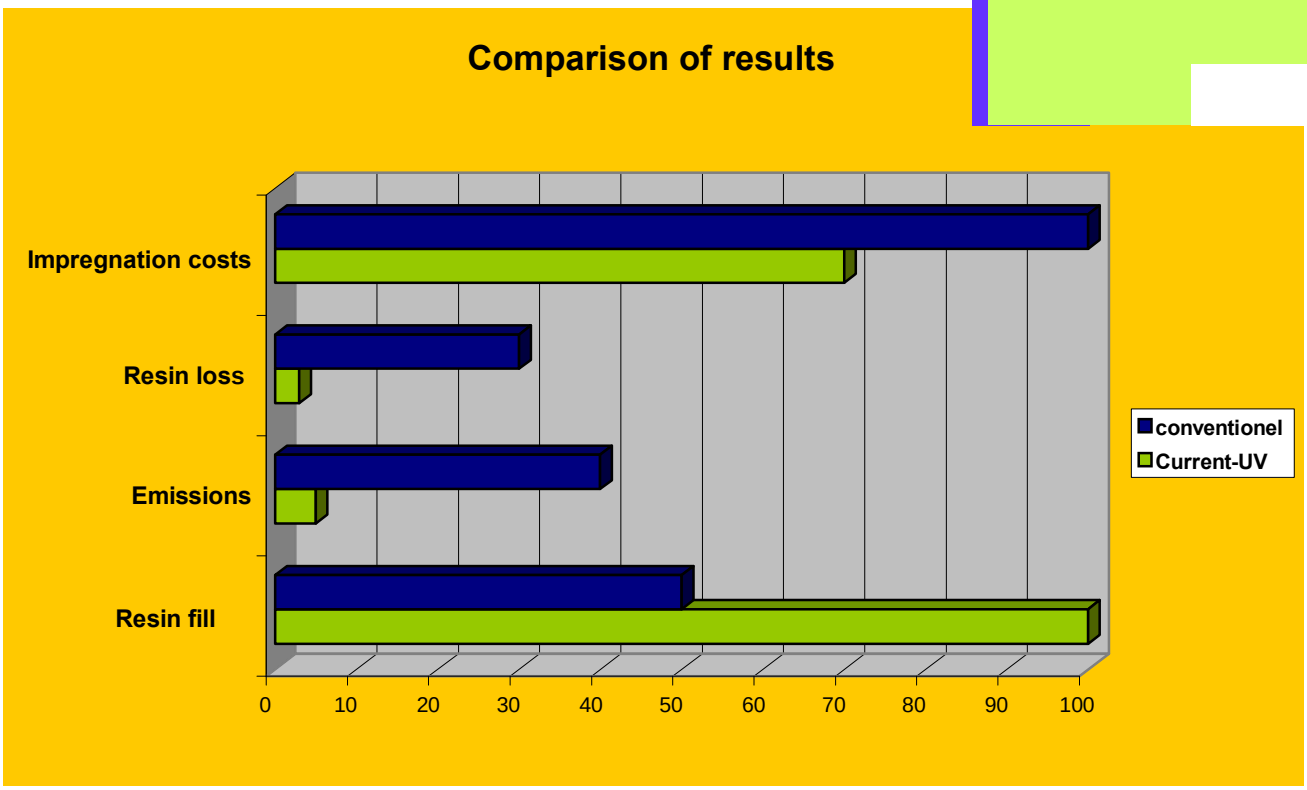
The economical advantages of this impregnation technology are undoubtable.
With this technology, quality standards are raised, production costs are decreased and environmental problems are reduced to a minimum.

Environmentally friedly
==> because of very low emissions and very low draining losses

Energy saving
==> the regulated joule effect prevents wasted energy loss

High quality
==> very high resin fill of the winding

High flexibility
==> because of extreme short cycle times



Advantages of the current-UV-dip-impregnation

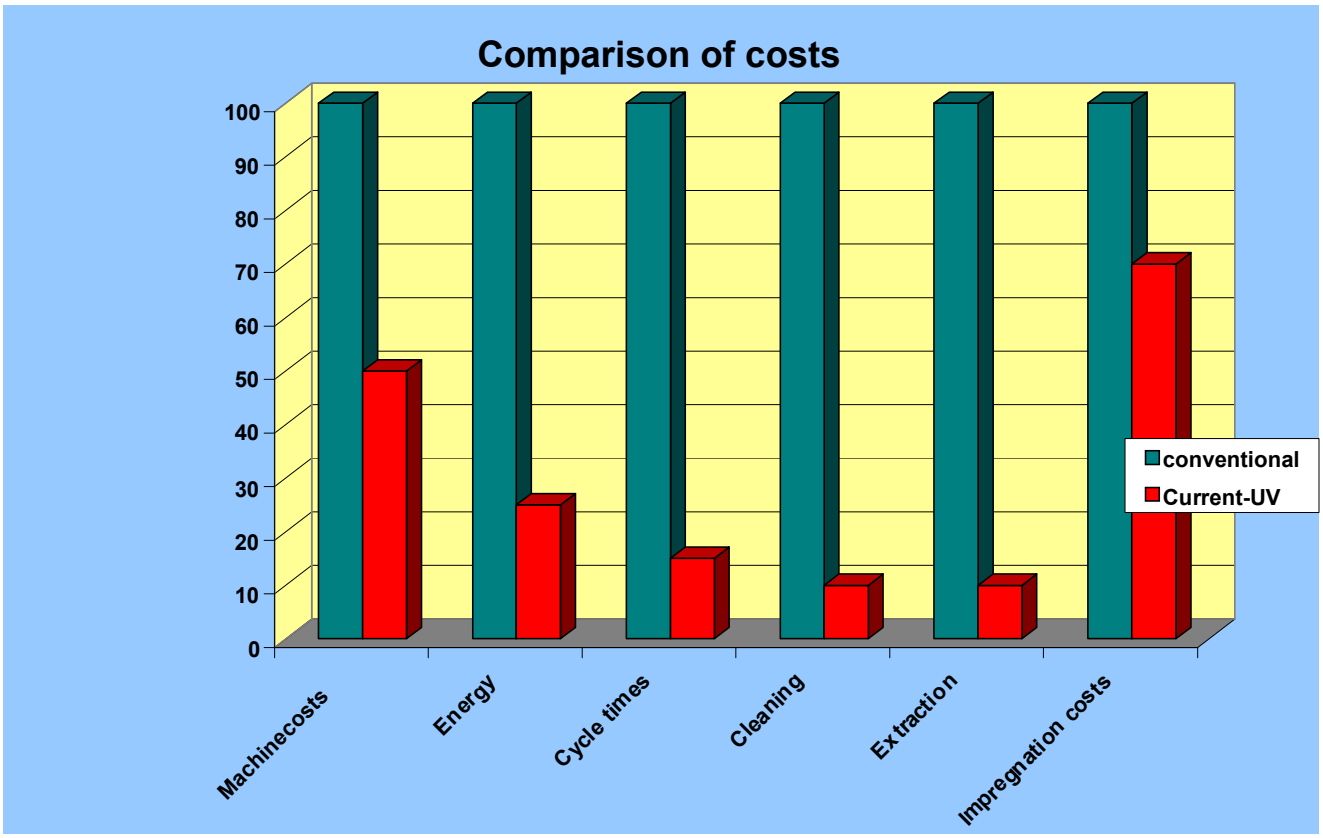
Short cycle times:		**IEC-size 180**	**IEC-size 280**
Stators	Warming	5– 10 minutes	10-15 minutes
	Dipping	5 minutes	5 minutes
	Draining	10 minutes	10 minutes
	Hardening	10–15 minutes	10-15 minutes
	UV-hardening	10-15 minutes	10-15 minutes

Low emissions: **resins with solvents < 10%**
solventless resins < 5%

Low draining loss: **draining losts < 3%**

Energy saving: **Energy consumption for a complete impregnation cycle with hardening for IEC-size 315 = 16 kWh**

Cost saving: **Decreasing of the impregnation costs**



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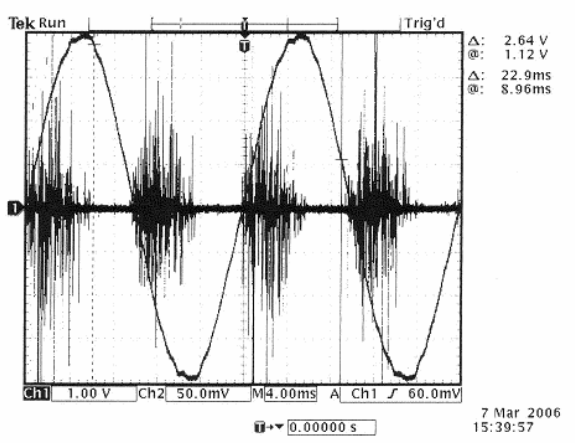
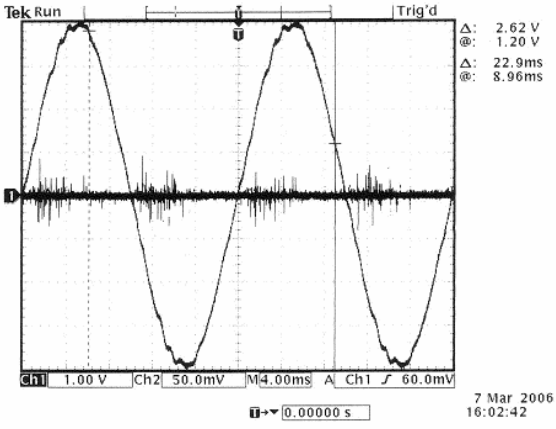
Impregnation quality

	conventionel	current-UV-dip-impregnation
Dry resin filling	30 – 60 %	90 – 95 %
Cleaning outside diameter	yes	no
Cleaning bore hole	yes	no
Temperature	Improvement of heat transmission to the stator core	

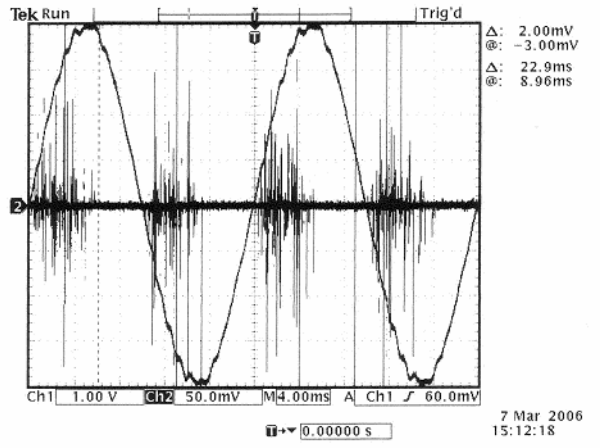
TE-Measurements



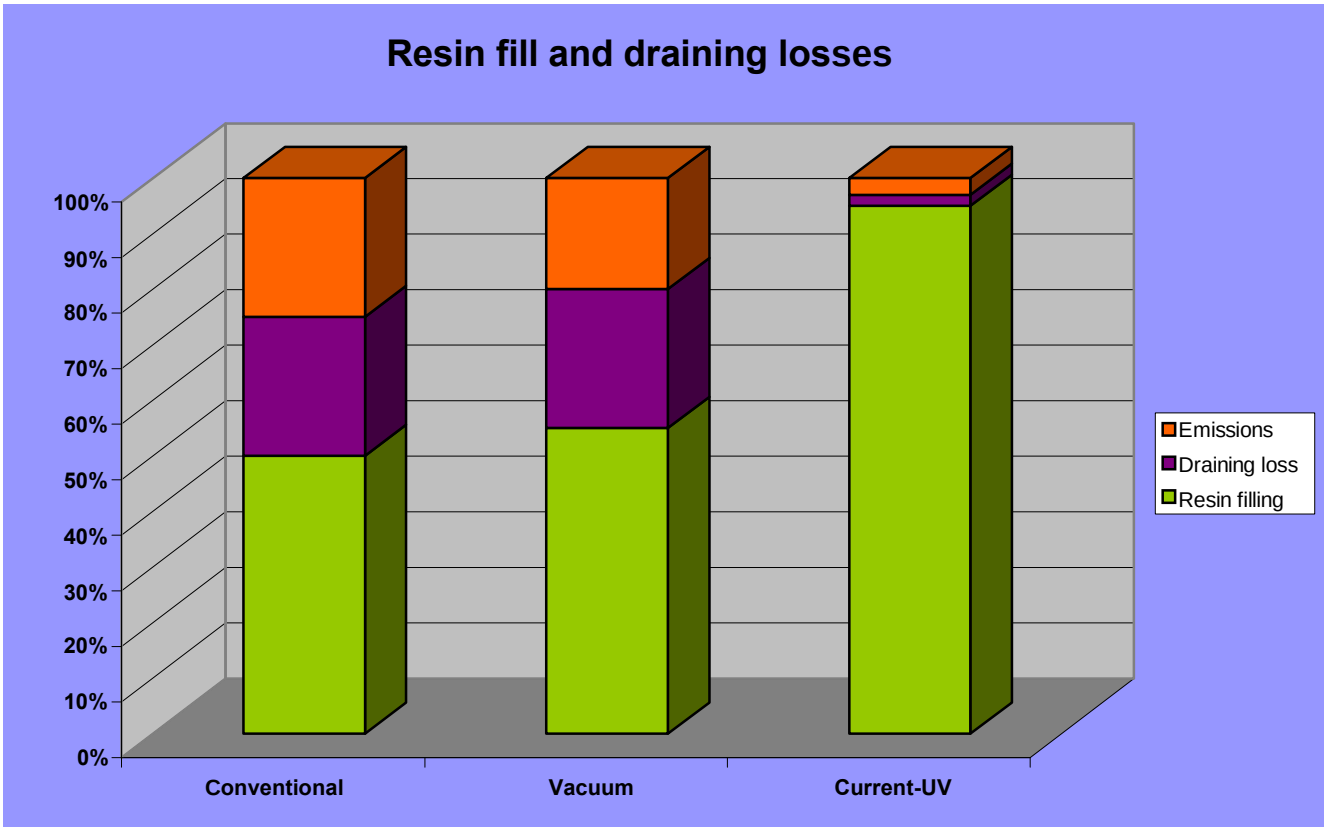
Not impregnated



Current-UV-Dip-Impregnated



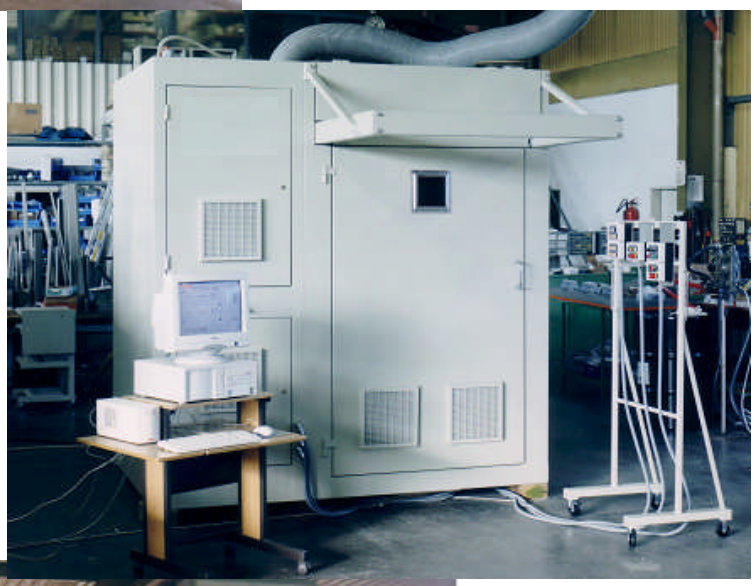
conventionel dip-impregnation


Resin fill and draining losses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Conventional
Vacuum
Current-UV
Emissions
Draining loss
Resin filling

Examples of current-UV-dip-impregnation plants

for high output volumes with cooling system

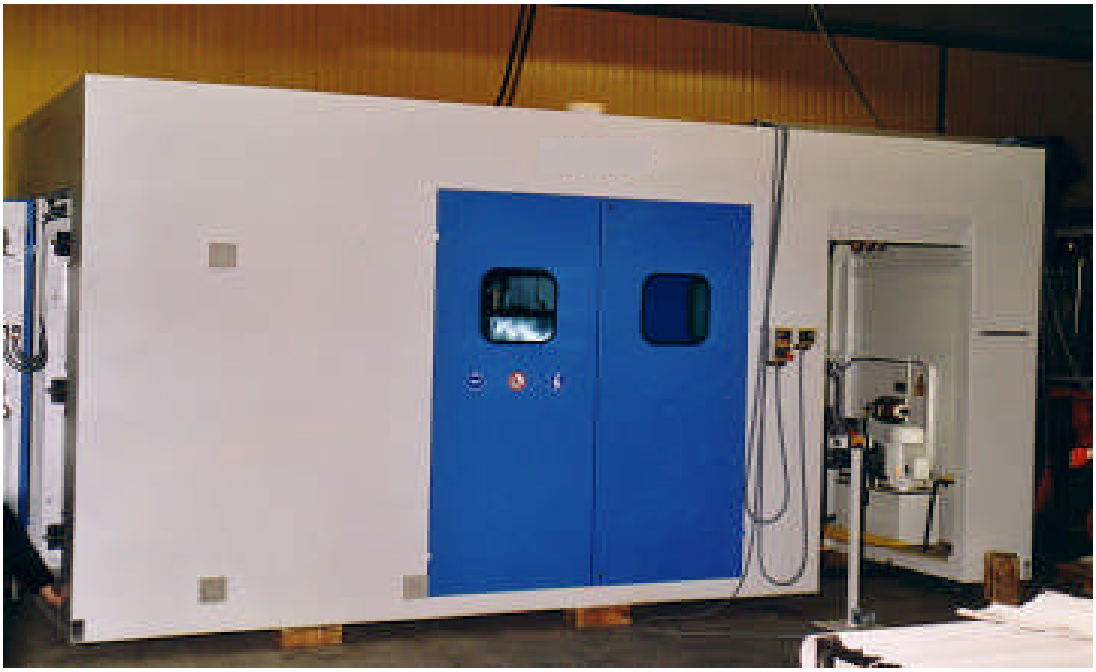
For low production- easy handling



for large stators and rotors

for small production ranges

For medium production rates



For large stators and rotors

Current – UV – dip impregnation under vacuum

This impregnation technology is very interesting for large motors, high voltage motors and motors for extreme conditions.

The vacuum-current-UV-dip-impregnation technology has the same advantages as the normal current-UV-dip-impregnation process but with even higher resin fill.