SEMAN S.A.

We know How

SEMAN S.A.

SCIENTIFIC ENERGY MANAGEMENT

Advanced Know How

Improvement of Power Quality

Energy Saving

Lower Maintenance Cost

Power Availability Increase

Energy Saving Projects

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SEMAN S.A. A Scientific Technical Company

Operational Fields:

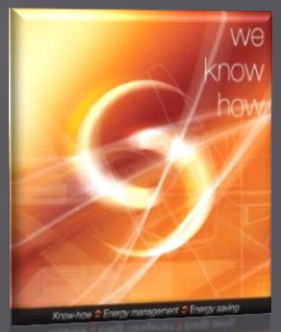
- *Energy Saving in existing Factories, Commercial Centers, Towers, Power Distribution Lines and Data Centers.*
- *Design and construction of new installations with Energy Saving philosophy.*

We know how

Countries

SEMAN is activated in:

- Greece as SEMAN S.A.
- Cyprus with SESS LTD.
- Russia with MERLION – SEMAN LTD.
- Romania with ELCOMEX - SEMAN LTD.
- Bulgaria with SEM – SYSTEMS LTD.
- United Arab Emirates with SCIENTIFIC ENERGY MANAGEMENT DMCC.



Various Projects (Groups)

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HELLENIC PETROLEUM GROUP
PETROLEUM INDUSTRY

1) HELLENIC PETROLEUM S.A.
THESSALONIKI, GREECE
Total installed power: 50 MW

2) DIAXON S.A.
PLASTIC INDUSTRY
INDUSTRIAL AREA OF KOMOTINI, GREECE
Total installed power: 12 MW

3) HELLENIC PETROLEUM KALOHORI
THESSALONIKI, GREECE
Total installed power: 1 MW

ITALCEMENTI GROUP
CEMENT INDUSTRY

1) HALYPS CEMENT
ATTIKI, GREECE
Total installed power: 30,5MW

ALFA WOOD GROUP
WOOD PROCESSING INDUSTRY

1) ALFA WOOD - PINDOS S.A.
GREVENA, GREECE
Total installed power: 9,45 MW

2) ALFA WOOD S.A.
LARISA, GREECE
Total installed power: 10 MW

3) ALFA WOOD BULGARIA S.A.
VARNA , BULGARIA
Total installed power: 8,8MW

YIOULA GLASSWORKS GROUP
GLASSWORK INDUSTRY

1) DRUJBA GLASSWORKS S.A.
PLOVDIV, BULGARIA
Total installed power: 20 MW

2) YIOULA GLASSWORKS S.A.
ATTIKI, GREECE
Total installed power: 15 MW

ALUMIL GROUP
ALUMINIUM INDUSTRY

1) ALUMIL S.A.
KILKIS, GREECE
Total installed power: 17 MW

2) ALUCOM S.A.
KOMOTINI, GREECE
Total installed power: 5 MW

3) ALUNEF S.A.
XANTHI, GREECE
Total installed power: 5 MW

4) ALUMIL S.A.
BEOGRAD, SERBIA
Total installed power: 8,5 MW

5) ALPRO S.A.
VLASENICA, BOSNIA
Total installed power: 7 MW

Various Projects

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United Arab Emirates

1) MAZOON TOWER
RESORT FACILITIES
DUBAI, UAE
Total installed power: 4 MW

2) EMIRATES OASIS DATES
DATES FACTORY
AL AIN, UAE
Total installed power: 10 MW

3) MAMMUT BUILDING SYSTEMS
STEEL BUILDING COMPONENTS MANUFACTURE
SHARJAH, UAE
Total installed power: 4,8 MW

4) FUJAIRAH FRESH WATER PRODUCTION
WATER TREATMENT & PURIFICATION PLANT
FUJAIRAH, UAE
Total installed power: 2,5 MW

Various Projects

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Russia

1) **BUREAUCRAT COMPANY**
PLASTIC FACTORY & LOGISTICS
MOSCOW, RUSSIA
Total installed power: **5 MW**

Bulgaria

1) **DRUJBA GLASSWORKS**
GLASS FACTORY
FILIPPOUPOLI, BULGARIA
Total installed power: **10,2 MW**

2) **ALFA WOOD**
WOOD FACTORY
VARNA, BULGARIA
Total installed power: **8,8 MW**

Saudi Arabia

1) **RAJHI STEEL INDUSTRIES CO L.T.D.**
STEEL FACTORY
RIYADH, SAUDI ARABIA
Total installed power: **50 MW**

2) **AL MARAI**
DAIRIES PRODUCTS
RIYADH, SAUDI ARABIA
Total installed power: **30 MW**

3) **AL BABTAIN POWER & TELECOMMUNICATION CO**
POLE FACTORY
JUDETUL, SAUDI ARABIA
Total installed power: **9,5 MW**

Various Projects

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1) **ZANAE-NIKOGLOU BAKERY YEAST S.A.**
BAKERY YEAST INDUSTRY – CANNING
THESSALONIKI, GREECE
Total installed power: **9 MW**

2) **ELVITYL S.A.**
TELECOMMUNICATION EQUIPMENT INDUSTRY
THESSALONIKI, GREECE
Total installed power: **8,3 MW**

3) **DORAL S.A.**
ALUMINIUM DOORS AND WINDOWS INDUSTRY
THESSALONIKI, GREECE
Total installed power: **7,5 MW**

4) **THRACE MILLS- OUZOUNOPOULOS J. S.A.**
FLOUR INDUSTRY
ALEXANDROUPOLI, GREECE
Total installed power: **7 MW**

5) **GENERAL MILLS HELLAS S.A.**
FOOD INDUSTRY
VIOTIA, GREECE
Total installed power: **12 MW**

6) **VODAFONE S.A.**
TELECOMMUNICATION COMPANY
ATTIKI PALLINI, GREECE
Total installed power: **4,5 MW**

7) **IMAS S.A. – CONTINENTAL GROUP**
RUBBER GOODS AND ELASOMETER TECHNOLOGY
INDYSTRY VOLOS, GREECE
Total installed power: **7 MW**

8) **PAPASTRATOS S.A. - PHILIP MORRIS INTERNATIONAL GROUP**
CIGARETTE MANUFACTURING INDUSTRY
ATTIKI, GREECE
Total installed power: **6 MW**

9) **FAGE S.A.**
MILK INDUSTRY
ATTICA, GREECE
Total installed power: **10 MW**

10) **ELAIS-UNILEVER HELLAS S.A.**
TOMATO PROCESSING INDUSTRY (PUMMARO)
ILIA, GREECE
Total installed power: **2,8 MW**

Various Projects

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GROUP CARREFOUR MARINOPOULOS S.A.

RETAIL GROUP
EYKARPIA THESSALONIKI GREECE
Total installed power: 1,7 MW

RETAIL GROUP
ALEXANDROUPOLI GREECE
Total installed power: 0,85 MW

1) ADOCIM CIMENTO BETON
CIMENTO FACTORY
TOKAT TURKEY
Total installed power: 33 MW

2) COCA COLA HBC
NON ALCOHOLIC BEVERAGE,
NOGARA PLANT ITALY
Total installed power: 15,3 MW

3) PALAPLAST S.A.
PLASTIC PIPES & PLASTIC PARTS INDUSTRY
INDUSTRIAL AREA SINDOS, GREECE
Total installed power: 3,5 MW

4) SOYA MILLS S.A.
PROCESSING COMPANY OILSEEDS & GRAIN DISTRIBUTOR
ISTHMIA KORINTHIANS, GREECE
Total installed power: 4,7 MW

5) ELSA SILGAN S.A.
METAL PACKAGING
PIRAEUS, GREECE
Total installed power: 1,8 MW

GROUP HATZOPOULOS S.A.

FLEXIBLE PACKAGING INDUSTRY
ARKADIOU KALOCHORI GREECE
Total installed power: 2,1 MW

FLEXIBLE PACKAGING INDUSTRY
STADIOU KALOCHORI GREECE
Total installed power: 4,2 MW

Various Results

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DIAXON S.A.	9,20	11,50	3.115.914,63 €	2.757.584,45 €	358.330,18 €	2,50	2,00
HELLENIC PETROLEUM CC PLANT	6,80	9,80	8.572.055,00 €	7.731.993,61 €	840.061,39 €	2,00	1,39
ALFAWOOD S.A. Grevena	14,00	18,60	3.520.985,59 €	2.866.082,27 €	654.903,32 €	1,66	1,25
ALFAWOOD S.A. Larisa	11,00	12,50	158.275,33 €	138.490,91 €	19.784,42 €	2,41	2,12
ALFAWOOD S.A. Tirnavos	11,00	14,20	120.241,36 €	103.167,09 €	17.074,27 €	2,20	1,70
ALFAWOOD S.A. Bulgaria	12,00	13,10	224.585,85 €	195.165,10 €	29.420,75 €	1,30	1,19
ALUMIL S.A. Kilkis	9,80	11,60	2.841.852,36 €	2.512.197,49 €	329.654,87 €	2,00	1,69
ALUKOM	10,00	11,78	365.641,18 €	322.568,65 €	43.072,53 €	2,00	1,70
ALUNEF	11,00	12,59	265.174,37 €	231.788,92 €	33.385,45 €	2,00	1,75
ALPRO BOSNIA	11,00	13,69	311.115,47 €	268.523,76 €	42.591,71 €	2,66	2,14
ALUMIL SERBIA	11,00	15,81	120.387,41 €	101.354,16 €	19.033,25 €	3,00	2,09
GENERAL MILLS HELLAS S.A.	11,05	20,69	393.915,41 €	312.414,31 €	81.501,10 €	2,60	1,39
ZANAE S.A.	9,28	11,64	698.948,91 €	617.591,26 €	81.357,65 €	2,25	1,79
VODAFONE S.A.	6,80	14,20	786.741,90 €	675.024,55 €	111.717,35 €	2,33	1,12
DORAL S.A.	9,14	12,00	530.547,22 €	466.881,55 €	63.665,67 €	2,50	1,90
HALYPS CEMENT S.A. ITALCEMENTI GROUP	5,32	9,00	7.850.189,88 €	7.143.672,79 €	706.517,09 €	1,80	1,06
THRACE MILLS S.A.	11,00	14,00	680.201,57 €	584.973,35 €	95.228,22 €	1,20	0,94
DRUJBA GLASSWORKS PLOVDIV BG	7,80	11,64	2.955.843,00 €	2.611.782,89 €	344.060,11 €	2,16	1,86
MAMMUT BUILDING SYSTEMS	16,00	18,50	1.588.150,11 €	1.294.342,77 €	293.807,77 €	2,27	1,96

Economic Analysis Of Energy Saving Projects

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Assumptions

Rate: 5,00%

Price Of Electric Energy: Stable

Annual Energy Cost: Stable

Hellenic Petroleum S.A.

50 MW
Power Plant

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8.572.055 € Annual Energy Cost	**6,80 %** Guaranteed Saving
1.165.000 € Total Cost Of Investment	**9,80 %** Saving Achieved

	0 Year	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years	7 Years	8 Years	9 Years	10 Years
SAVING PER YEAR	-1.165.000€	840.061€	840.061€	840.061€	840.061€	840.061€	840.061€	840.061€	840.061€	840.061€	840.061€
PROGRESSIVE MONEY INFLOW	-1.165.000€	-324.939€	515.123€	1.355.184€	2.195.246€	3.035.307€	3.875.368€	4.715.430€	5.555.491€	6.395.553€	7.235.614€
RATE 5,00 % FACTOR	0	1,05	1,10	1,16	1,22	1,28	1,34	1,41	1,48	1,55	1,63
NET PRESENT VALUE OF FUTURE INFLOWS	-1.165.000€	800.058€ -364.942€	761.960€ 397.019€	725.677€ 1.122.816€	691.121€ 1.813.816€	658.210€ 2.472.026	626.867€ 3.098.893€	597.016€ 3.695.909€	568.587€ 4.264.495€	541.511€ 4.806.007€	515.725€ 5.321.731€

Progressive Money Inflow **7.235.614 €**	Return On Investment **621 %**
Net Present Value Of Future Inflows **5.321.731 €**	Return On Investment **457 %**

PAY BACK PERIOD : 1,39 Years

The Problem of Low Voltage and Current Quality

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The Problem of Low Voltage and Current Quality is very common to all electrical installations around the world due to:

- The **non-linear** nature of modern electric **loads**, Power electronics like inverters, dc converters, soft starters etc., are used for motor control and soft starting, but they «**pollute**» the electrical installations **with harmonics**.
- The **incompatibility** between **electrical motors** and **mechanical load** demands that motors supply.
- The **reactive currents** that inductive loads (motors) should be supplied with in order to operate.

Effects of Harmonics

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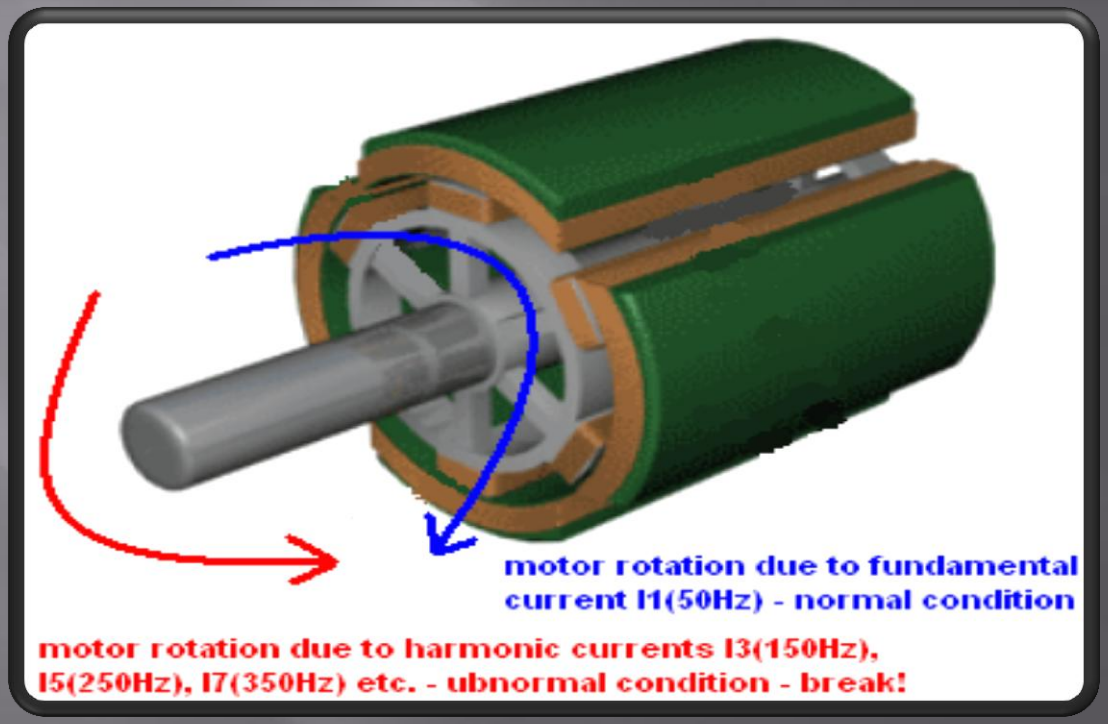
D. Breaking torque occurrence (torque that works as a brake) in motors all-around the electrical installation, that leads to an excessive efficiency reduction.



Effects of Harmonics

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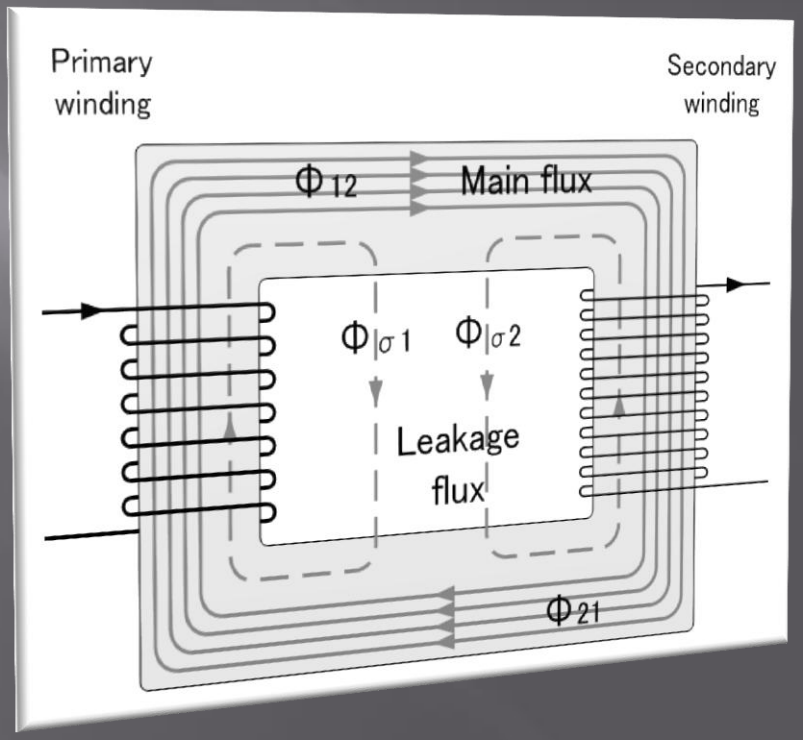
E. Overload of Power transformers and increase of losses that lead to low efficiency.



The Scientific Solution of SEMAN S.A.

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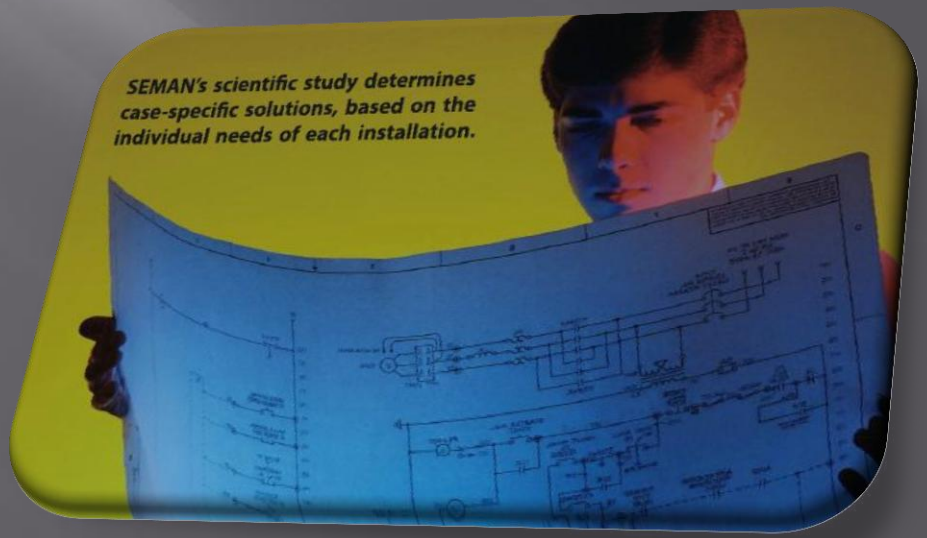
The scientific solution of SEMAN S.A. is given according to the following procedure:

a) ***Collection of all nominal data.***

b) ***Measurements and recordings.***

c) ***Elaboration of a scientific study.***

d) ***Design, construction and application.***



B. Measurements and Recordings

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Real time measurements and recordings involve:

- Power Distribution Lines.
- Power Transformers.
- Low and Medium Voltage General Panels.
- Various Distribution sub-panels.
- Inverters and Soft Starters.

Measurements concern:

Basic electric values, current and voltage harmonics up to 35th and transient phenomena.

Examples of Harmonic Reduction Filters

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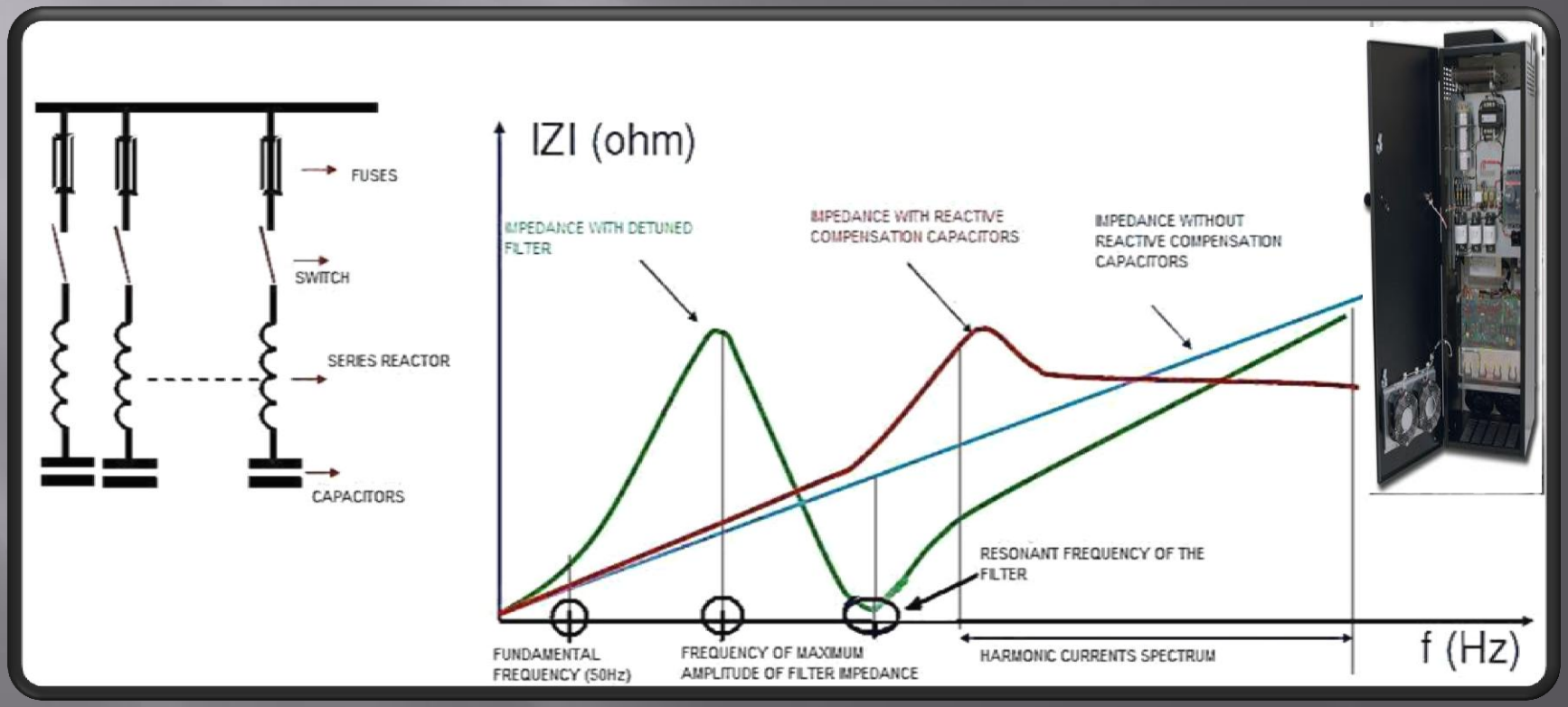
Schematic display of a Detuned Harmonic Filter and its principle of operation.



Examples of Harmonic Reduction Filters

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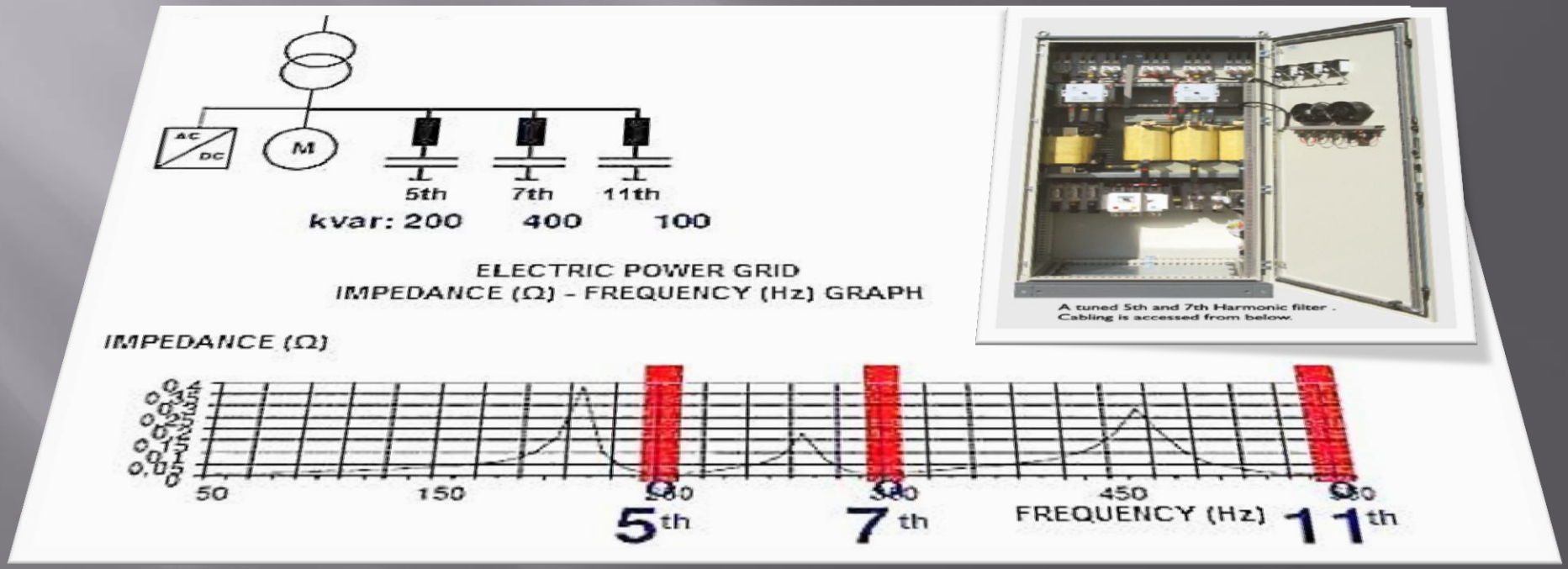
Schematic description of a **Tuned Harmonic Filter** and its basic principle of operation.



Examples of Harmonic Reduction Filters

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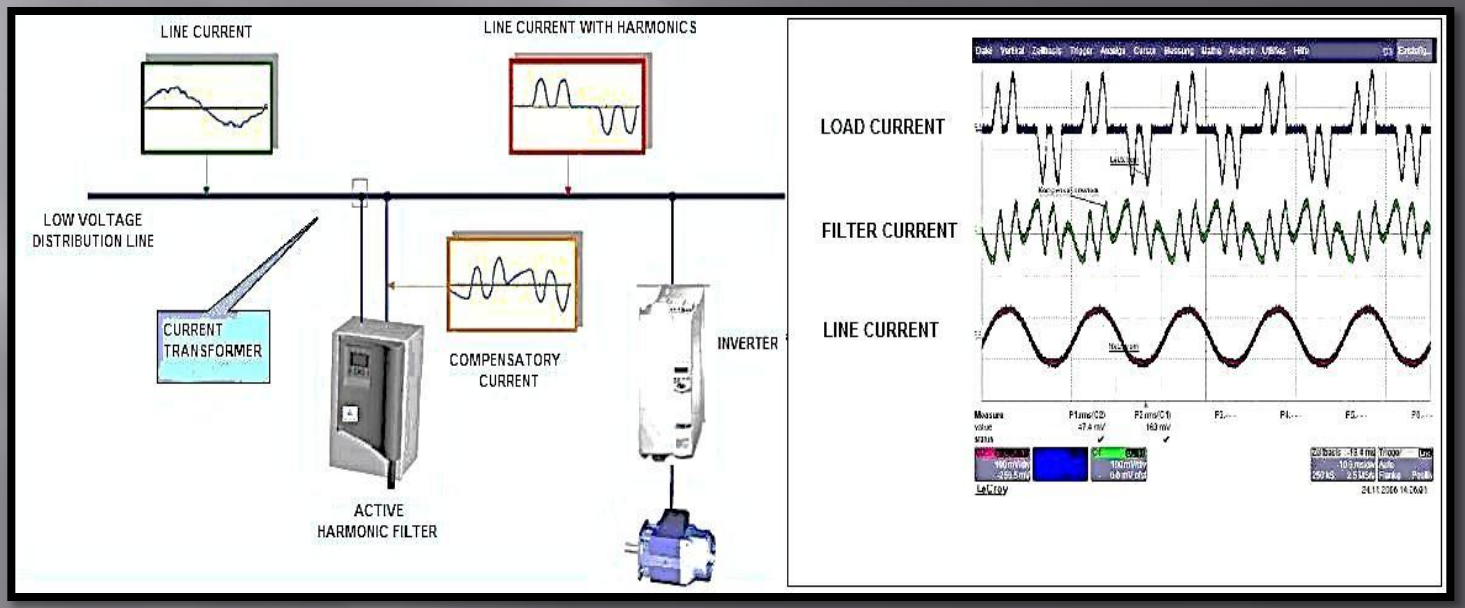
Schematic description of an **Active Harmonic Filter** and its basic principle of operation.



Examples of Harmonic Reduction Filters

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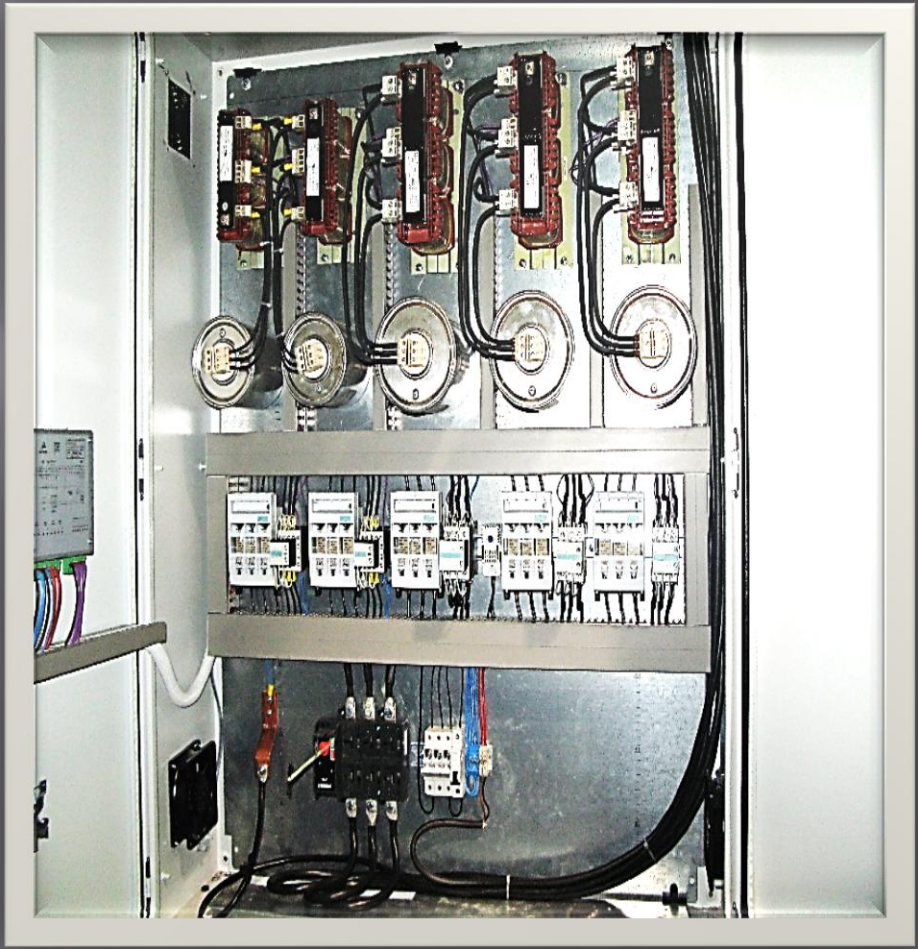

Examples of Harmonic Reduction Filters

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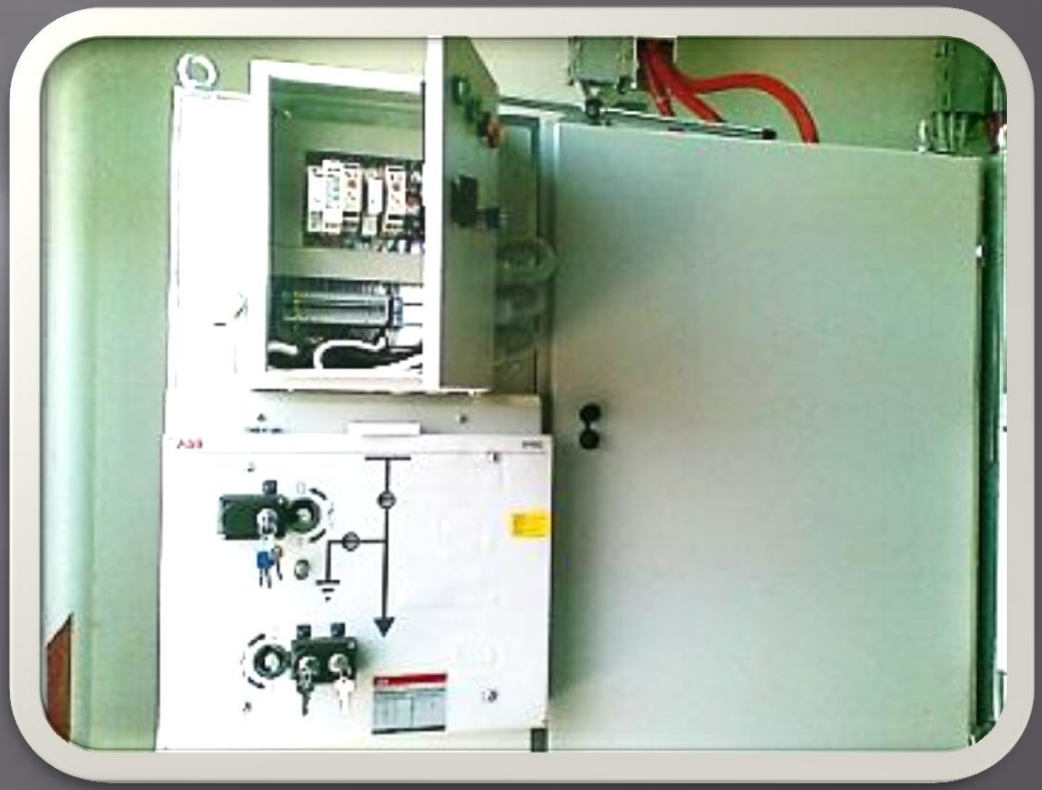

Examples of Harmonic Reduction Filters

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Examples of Harmonic Reduction Filters

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Thank you for your time

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