

FACTORY ELECTRIC MOTORS



Our flexibility to meet any challenge

COLOMBO Group of Companies

FELM



Engineering Company of
Electric Motors



NUOVA CEAM



Technology in Motion

**BROOK
CROMPTON**

SCHORCH

under license of



ATB SEVER

Technology in Motion

ATB Laurence Scott

Technology in Motion

M&G International



SERVICE World wide
Our first priority:
AVAILABLE

Service
DIVISION





About us:

FELM has been operating in the electric motor sector since 1960 and has a well-consolidated background in the market of electrical machines.

Thanks to the considerable experience of its staff, it can guarantee a technical back-up capable of responding to the most sophisticated technical requirements, both installations and maintenance, ensuring an International Service to its clientele.

Thanks to the large stock of electric motors (our offices and warehouse cover over 10,000 m²) from 0.12 to 800 kW in the various polarities and a widespread distribution service, **FELM** guarantees good product availability and rapid delivery in Italy and across Europe.





About us:

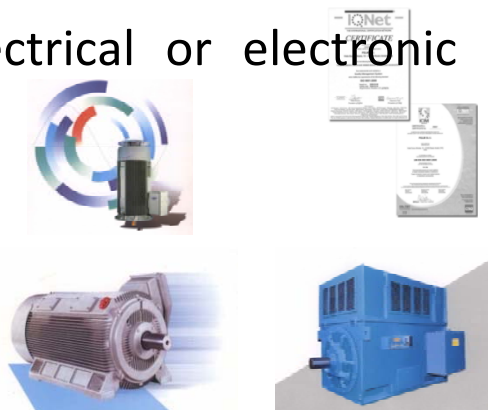
Special attention is dedicated to the production process in the factory, from the careful selection of the materials, copper, insulation, the execution of the windings, to the control of the impregnation and polymerization processes (VPI Vacuum Pressure Impregnation).

The high levels of quality offered by FELM are proven by the **ISO 9001** and **ISO 14001 for the Environmental Management System**

Production of standard electric motors and special motors made to customer specifications.

Commercialization of electric motors and relative electrical or electronic accessories.

Bearings are specially selected to guarantee best performance and product quality and a working life above the average.





About us:

Range of electric motors:

Low Voltage standards IC 411, IC 611

New European classes of motor performance- **IE codes**

In according to IEC 60034-30 that defines the new classes

IE1 = standard performance (comparable to **EFF2**)

IE2 = high performance (comparable to **EFF1**)

IE3 = Premium Efficiency

Medium voltage 3, 6, 11 kV. - IC 411, IC 611, IC 86W

Suitable for inverter use (400 V, 690 V, 3 and 6 KV)

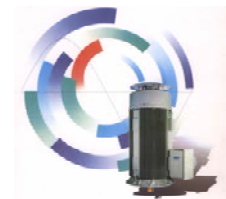
Slip Ring motors with wound rotor

Flame proof: Ex d, e, n

EISA NEMA Premium

GOST, Marine Classifying authority

(RINA, Lloyd Register, DNV, ABS, BV, etc)



Our flexibility to meet any challenge



Our Numbers:

Limited company operating in the A.C. Motors market since 1960 and is exclusive for Italy of different International suppliers.

FELM warehouses extend for more than **10.000 sqm.**

Products value in the stock: more than **4 Million Euro.**

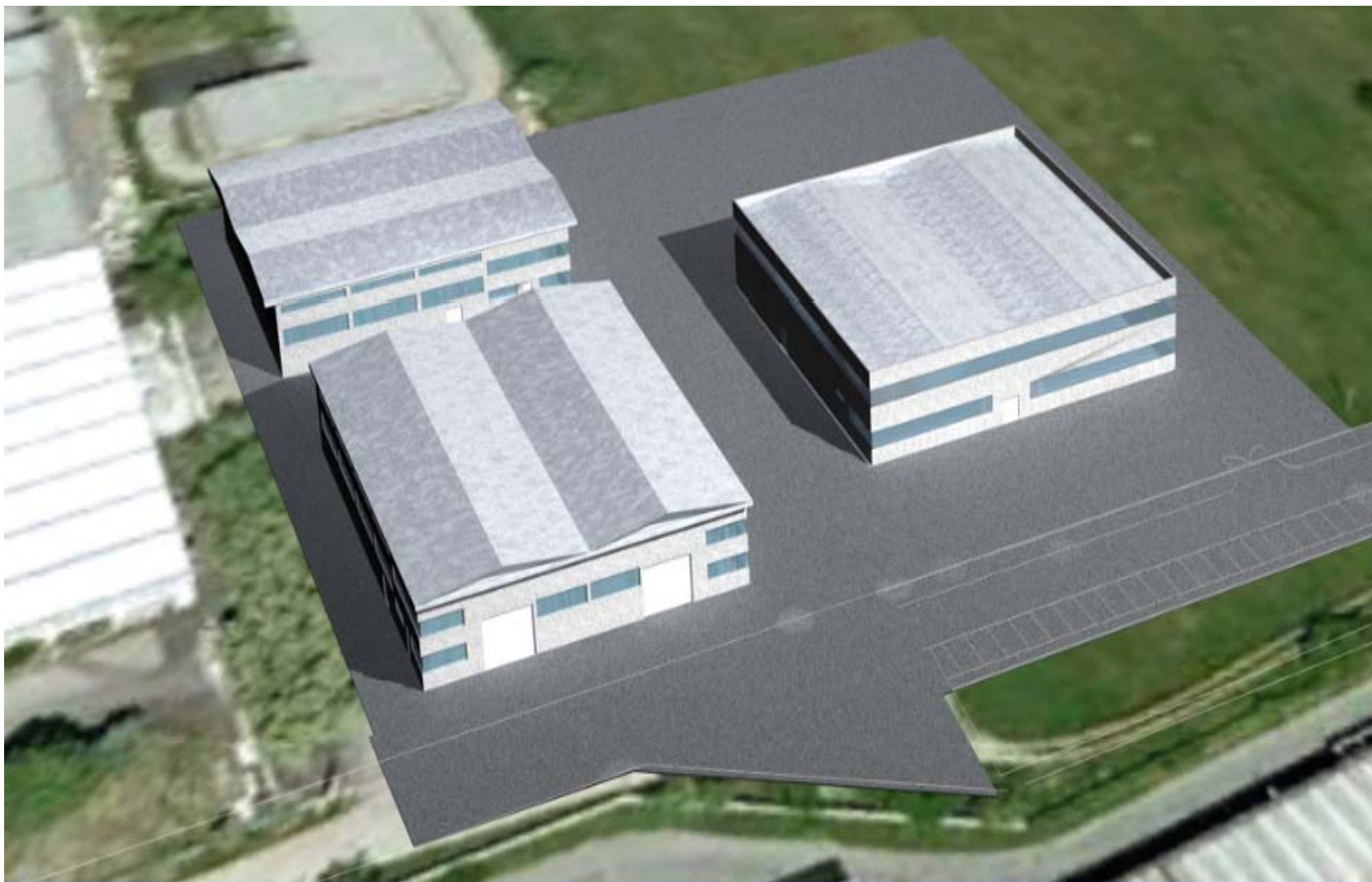
Yearly turnover: **19.5 Million Euro**

Technical staff and the own Maintenance Repair workshop answer to the most sophisticated customers requirement.



The New Location in Inveruno

Ready on 2012



Workshop & Partners

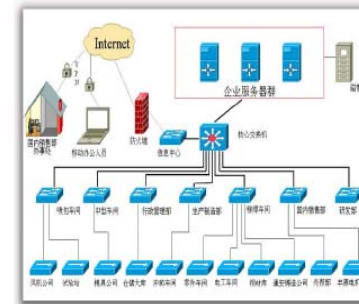
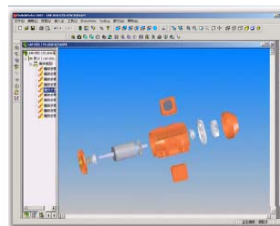
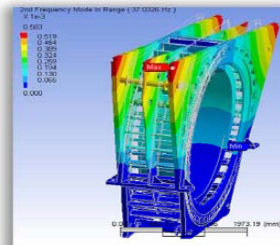
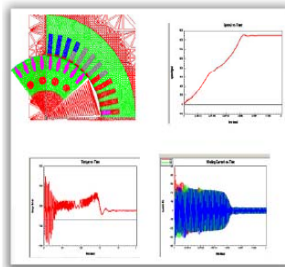
• Technical office and Service

Composed by 5 persons with various experiences matured in manufacturing prestigious companies of electric motors: Leroy Somer, Marelli, Alsthom, ABB.

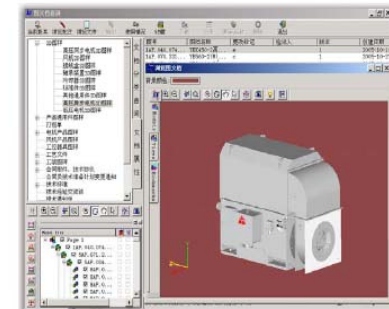
Software Programs: PDF, AutoCAD, DWG and Motors program calculation.

FEA/CAD/CAE

- 3-D CAD (Solidworks)
- Electromagnetic design (Ansoft)
- Mechanical Design (Ansys)



Network Topogram



PDM

• Workshop

Equipped for modifications on the Electric motors until 500kw:
force-ventilation, application PT100, Heaters elements on the windings, isolated Bearing for inverter use and small mechanical modifications

Workshop & Partners

- **WORKSHOP**

Equipped for modifications on the Electric motors until 500kw:
force-ventilation, application PT100, Heaters elements on the windings,
isolated Bearing for inverter use and small mechanical modifications

- **TESA** - specialize in the Lathe-turner's work and Press for steel sheets work processing.
- **Falcetta** - specialize on Repair and Motors Winding for D.C. and Sleeve Ring Motors
- **Electromotor** - specialize on Repair and L.V. and H.V. Motors Windings from 300 to 3 MW.
- **Re** - specialize on Repair and Low Voltage Motors Winding from 1 to 300 kW.
- **Casiraghi** - specialize on Repair and Low Voltage Motors Winding up to 110 kW, and brake motors up to 55 kW.
- **Sicei** - specialize on workmanship of special shafts.



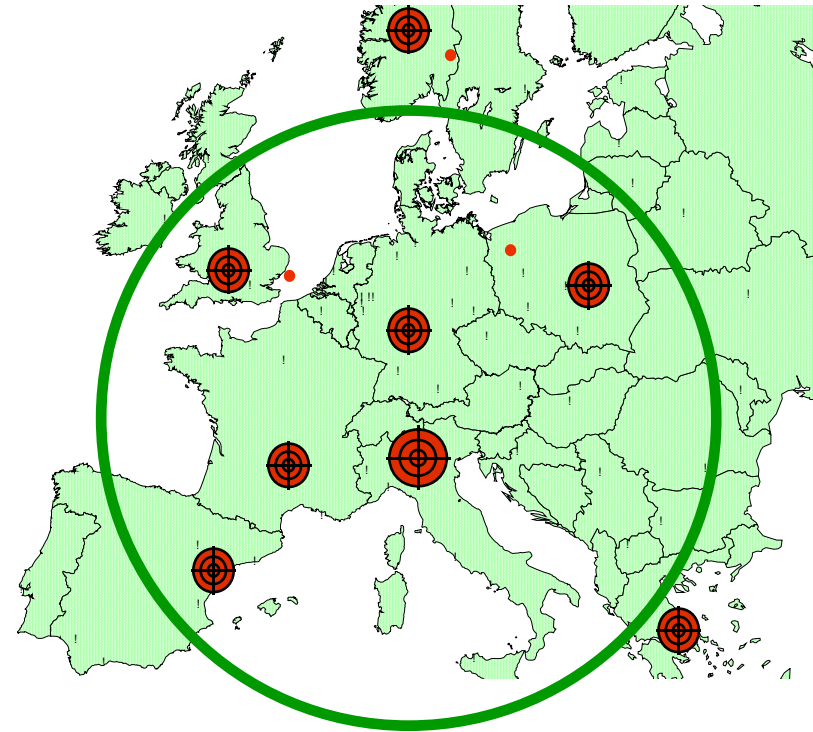
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- **Casiraghi** - specialize on Repair and Low Voltage Motors Winding up to 110 kW and brake motors up to 55 kW.
- **Sicei** - specialize on workmanship of special shafts.
- **Rondena** - Heavy mechanical workmanship of shafts and sheet
- **TGE** - Laboratory of the Vibrations analysis.
- **T.O.S.I.** - Laboratory of the Materials and Welding analysis
- **Helmke** - Low and High Voltage Tests room up to 4,50 MW.



Workshop & Partners

- **Zust Ambrosetti** - International Carrier and Forwarding Agent.
Two shipping per day from Central stock to Customers and Distributor:
Europe, North Africa and Gulf Area



Our flexibility to meet any challenge



Our Products:

Frames 140~449T

EISA NEMA Premium Efficient



High Efficiency Motors IE2 & IE3



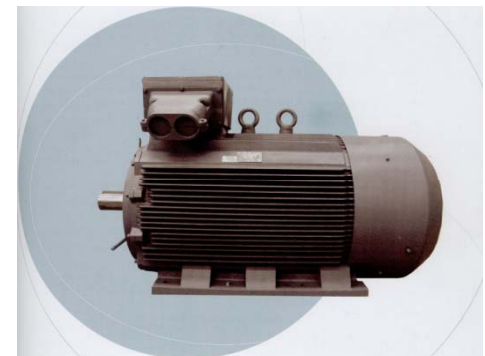
Low Voltage Motors range

Aluminium housing: 0,12 to 30 kW

Cast iron housing: 0,12 to 1500 kW.

Internal cooling IC 01 – IP23

External cooling TEFC – IC 411/IC416 – IP55



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High Voltage Motors

Squirrel-cage Motors

Cast iron and Steel Frames

Out-put range 200 – 7.000 kW.

Frames size 315 to 1000

Slip-ring Motors

out-put range 200 – 2.500 kW.

Cooling methods

Internal cooling IC 01 – IP23

External cooling TEFC – IC 411 – IP55

Cooling IC 611 – Totally Enclosed Air to Air Cooled



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Three-Phase Explosion Proof LV & HV Motors Flameproof Enclosure

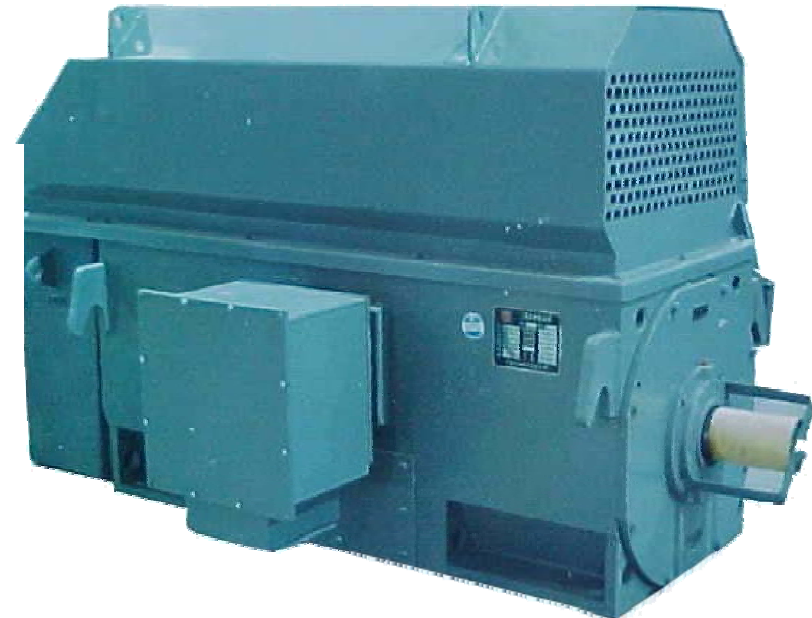
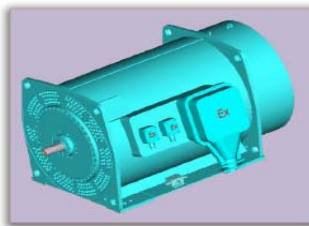
Explosion protection certifications :

- PTB for Europe
- GOST for Russia
- NEPSI for China
- Test Safe for Australia
- IECEx Scheme for the world

Out-put range : 0,18 – 3.000kW



Ex d motors



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The Factory

Advanced machining facilities:



**Digital Heavy Duty Horizontal
Lathe**



TKU6916 Digital Boring and Milling Machine



Half Coil Taping Machine

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The Factory

Manufacturing Facilities



Production lines



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MANUFACTURING FACILITIES



GENERATOR STATOR & ROTOR



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The Factory

Vacuum Pressure Impregnation Facility (VPI)

- 5.8m Diameter – the largest facility in Asia
- Class H Epoxy Resin
- All products (LV and HV) are VPI treated
- Horizontal and Vertical Tanks



- VPI for different sizes of both stators and rotors

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The Factory

Test room facility



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PRODUCTS- SERIES INDUCTION MOTORS

- Output: 200kW to 15000kW
 - Voltage: 3kV to 13.8kV
 - Frame Size: 355 to 1250
 - Speed: 2-20 Pole
 - Cooling: Air or Water
 - Ingress Protection: up to IP56
 - Squirrel Cage and Slipring
 - Insulation: Class F - VPI
-
- Output: 15500kW 4P CACW
 - Voltage: 10kV
 - Has finished the design and ready for production



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PRODUCTS - SYNCHRONOUS MOTORS RANGE

- Output: 450kW to 10000kW
- Syn Speed: 150-600 rpm
- Voltage: Up to 13.8kV
- Cooling: Air and Water
- Insulation: Class F ,VPI
- Outer Core Dia: to 3250mm
- Hazardous Area Options



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A.C. Motors inverter duty

Low Voltage 230 – 400 – 690 - 50Hz

High Voltage 3.3 – 6.0 – 6.6

Protection IP20

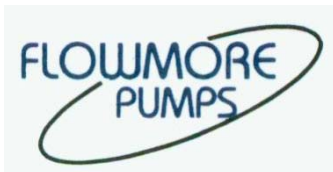
Range : 0,37 – 3000 kw



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References in Pump industry



Rovatti Pumps

Aturia Group

Allwailer/Colfax pumps

Caprari

Robuschi



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Air Compressor industry



**Gardner
Denver**



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References in Ventilation



Boldrocchi

CBI

Stranich

OMS

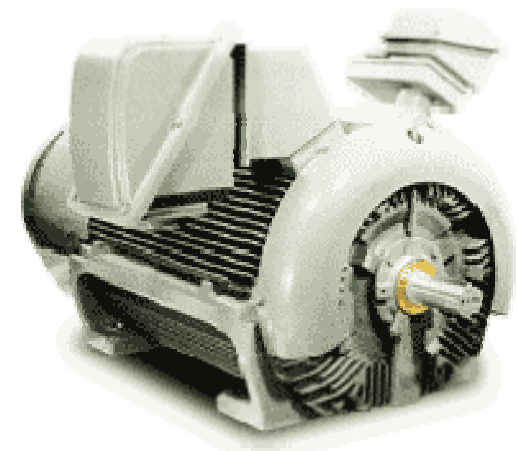
Ferrari

Decsa

Baltimore

Ilmed

Evapco



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**Petrochemical & Chemical / Steel & Metal
Main Contractors / Engineering / OEM / Marine solution**

Ansaldo Sistemi Industriali

Rockwell Automation

Danieli Officine Meccaniche

Elettronica Santerno

Danieli Automation

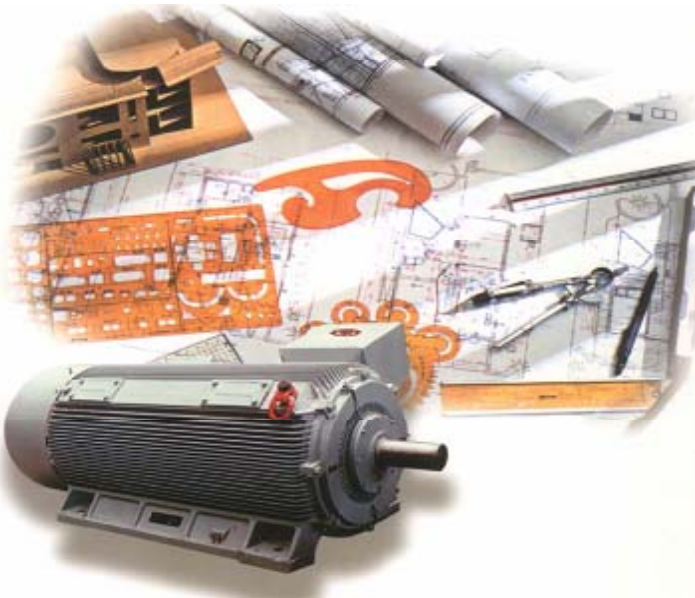
Bernardinello

Bono Engineering

Garbarino

Techint

ILVA



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Oil & Gas Main Contractors / Engineering / OEM

**ENI // SAIPEM // SNAM PROGETTI
NUOVO PIGNONE**

Flowserve

Weir / Gabbioneta

Technip Rome / Technip Paris

Finder Pumps

Peroni Pumps

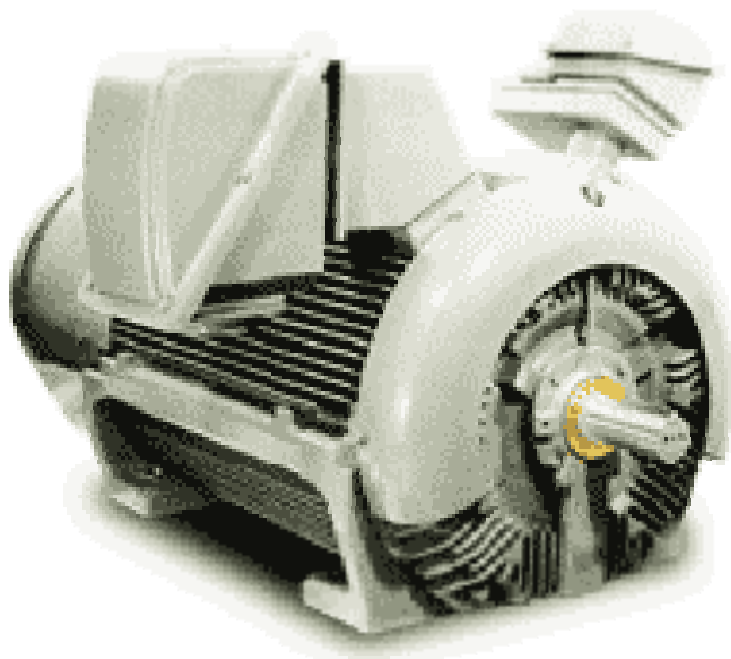
Sirtec Nigi

FBM

OLMI

Foster Wheeler

Lurgi



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Sales network – organisation Italy

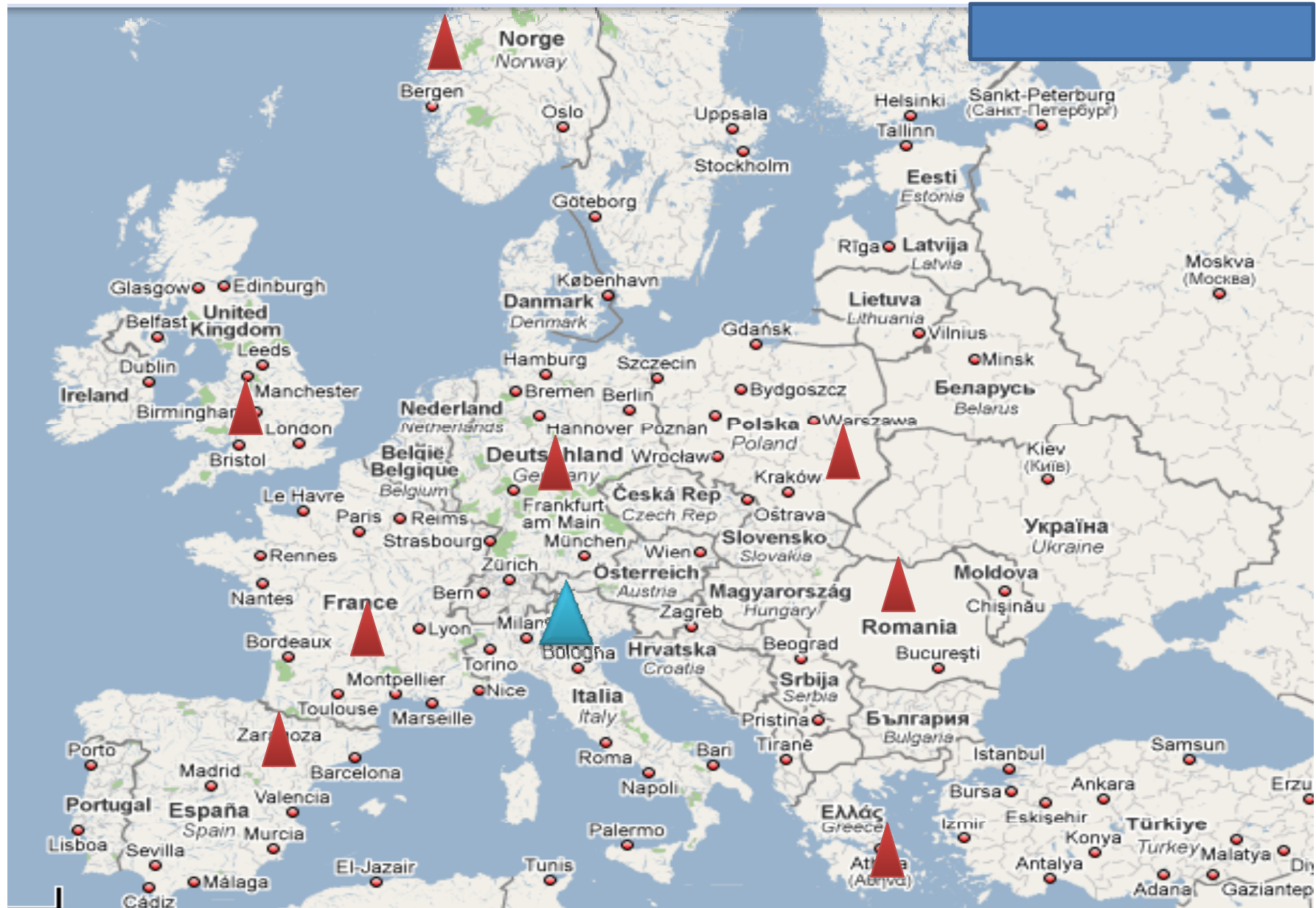
Headquarter in Inveruno (Mi)

- . Warehouse // stock
- . Assembly plant
- . Technical office
- . Service Centre

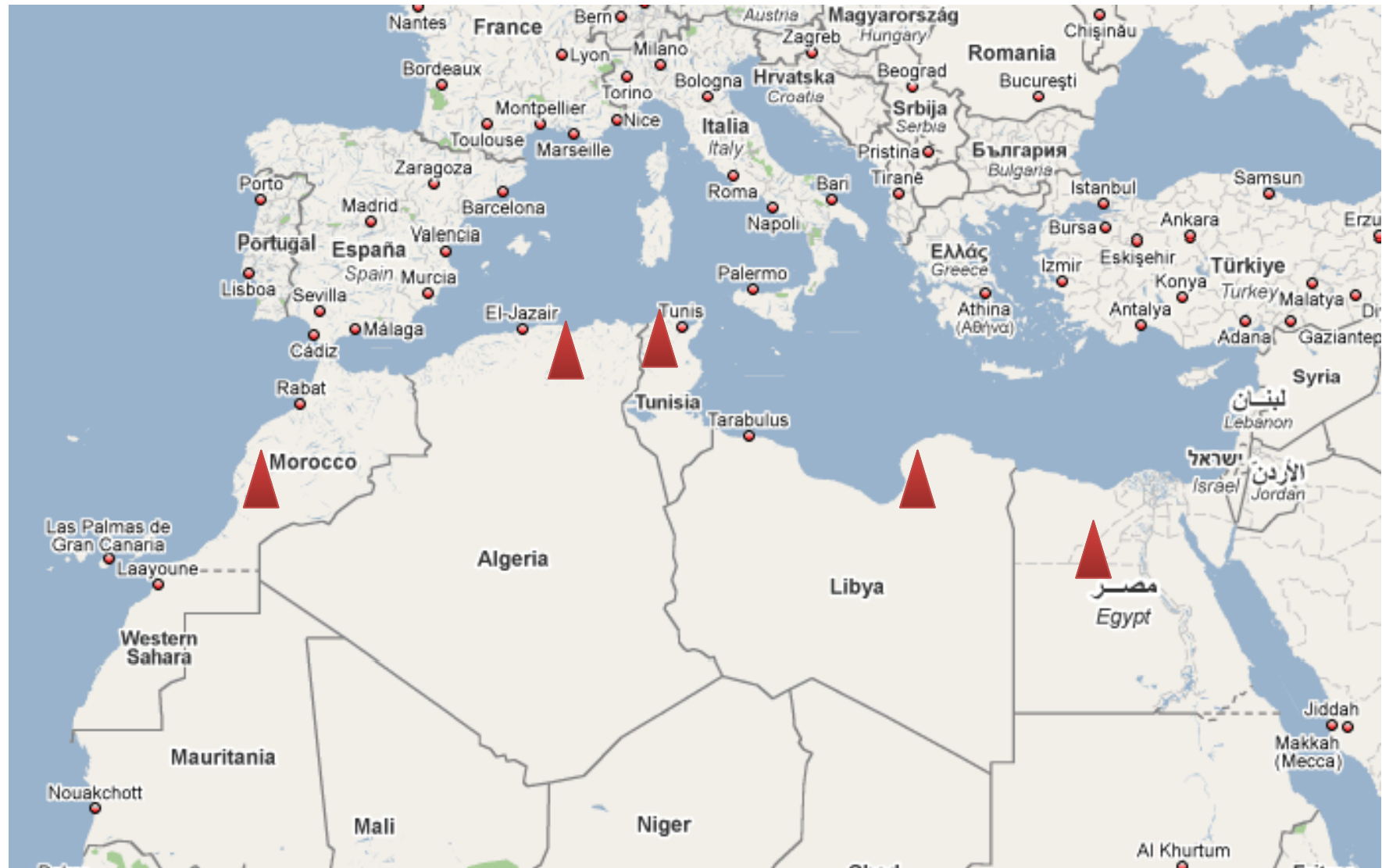
10 Sales point



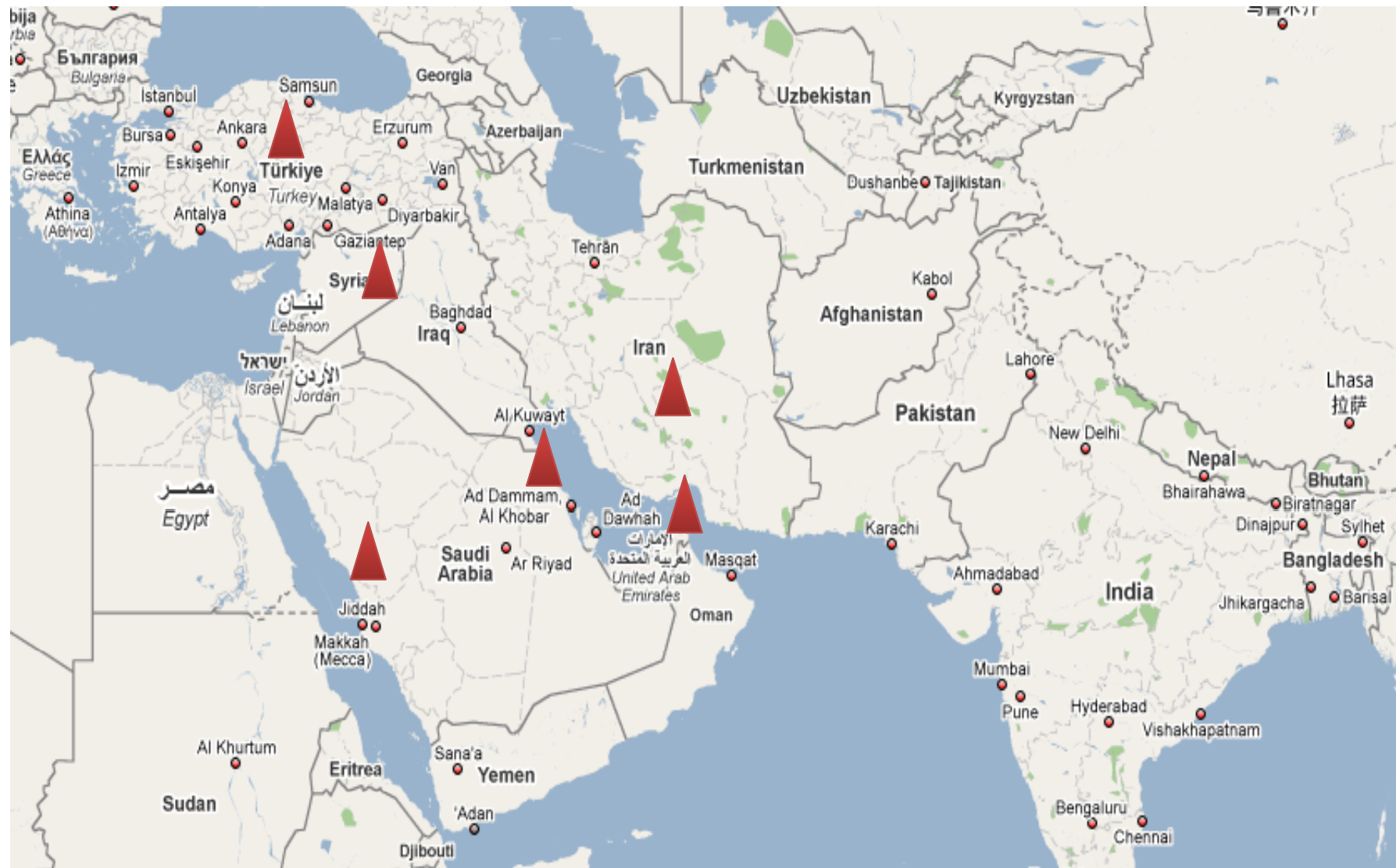
Sales network – organisation Europe



Sales network – organisation North Africa and Gulf Area



Sales network – organisation Middle East & Gulf Area



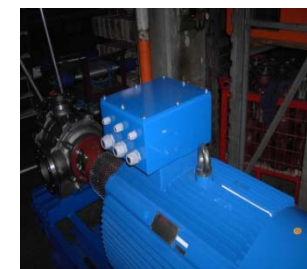
Word Wide Service Network



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Our Experiences:



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**Certified company UNI EN ISO 9001:2000
CISQ / ICIM CERT. IT – 27970**



ISO 9001:2000
Cert. N°: 2508



Production of standard and special electric motors on customer's specifications.

Trade of electric motors and related electric or electronic accessories.

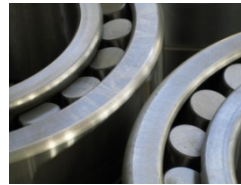
EN ISO 14001 : 2004

Certificate n° 4382

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Not only a product



Spare parts

Repairs



Express Service



24-hour standby



Customer training

Oil/Grease service



Collect-and-deliver service



Special packages (marine)

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In the name of Felm Srl, we would like to take this opportunity to thank all the Members for the starting and improving cooperation



Good luck for your activities