

# Relay Tester AMT105



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## 1- History of Vebko Amirkabir

Vebko is a science-based company, established in 2014 by order of the Science and Technology Vice-Presidency of Iran to manufacture national relay tester device under the supervision of Amirkabir University of Technology. The first industrial product of this company entered the market in 2015 and within three years more than 300 relay tester devices were sold to important industrial centers of electricity, oil and gas as well as some universities.

AMT105 is a universal solution to testing all types of relays and protective equipment, circuit breakers, thermal cables and sensors as well as power, current, voltage and capacitor-voltage transformers. Because of these features, this device is capable of testing different kinds of relays and protective equipment:

Six 32A current sources (64A in three-phase mode, 128A in single-phase mode), four 150 V voltage sources (450 V in single-phase mode), current and voltage combination cable, 8 analog binary inputs, 2 DC analog current and voltage inputs with high accuracy, 4 binary outputs, DC voltage source (212 V).

## 2- Capabilities of AMT105 Relay Tester

### Software Specifications

1. Capable of testing a wide range of static, electromechanical and numerical relays
2. Capable of reading, editing, and creating all XRio and Rio files
3. Capable of transient testing
4. Capable of point-to-point or end-to-end testing
5. Built-in GPS and Wi-Fi
6. Automatically performing tests
7. Comprehensive report of tests
8. Capable of automatically filling out the test sheets of different companies
9. Compatible with Windows XP, 8, 10
10. Supporting Android and iOS apps
11. Autosave, Redo, and Undo options
12. PDF Help file in Farsi (English version coming soon)
13. Using bootloader technology to update firmware
14. A host of instructional videos

### Capable of Testing Circuit Breakers (CB) and Sectioners

1. Testing the opening and closing time
2. Contact resistance measurement test
3. Minimum voltage to operate CB test

### Capable of Testing VT/CVT

1. Ratio & Polarity
2. Winding resistance
3. short circuit impedance
4. excitation

### Capable of Testing Power Transformers

1. Winding resistance
2. Ratio (TTR)
3. No-Load current
4. Vector group
5. Magnetic balance
6. Tap changer continuity
7. Demagnetizing
8. Leakage reactance

### Capable of Testing Current Transformers (CT)

1. Excitation (Saturation)
2. Hysteresis curve
3. Ratio using current or voltage
4. Polarity using current or voltage
5. Phase error
6. Winding resistance
7. Secondary burden

### Capable of Testing Transducers and Meters

1. Highly precise in testing transducers and meters
2. Equipped with a pulse counter to automatically read energy

### Capable of Testing RTD

### Capable of Testing Cable Resistance

## 6- Contact Information



VEBKO Website



WWW.VEBKO.IR



VEBKO Telegram Channel and Bot



<https://t.me/Vebko> , @vekbobot

Visit the Telegram Channel (@vebko)

Get access to the links of the groups and channels (Instructional, etc.).



VEBKO LinkedIn



VebkoAmirkabir

Chief Executive Officer

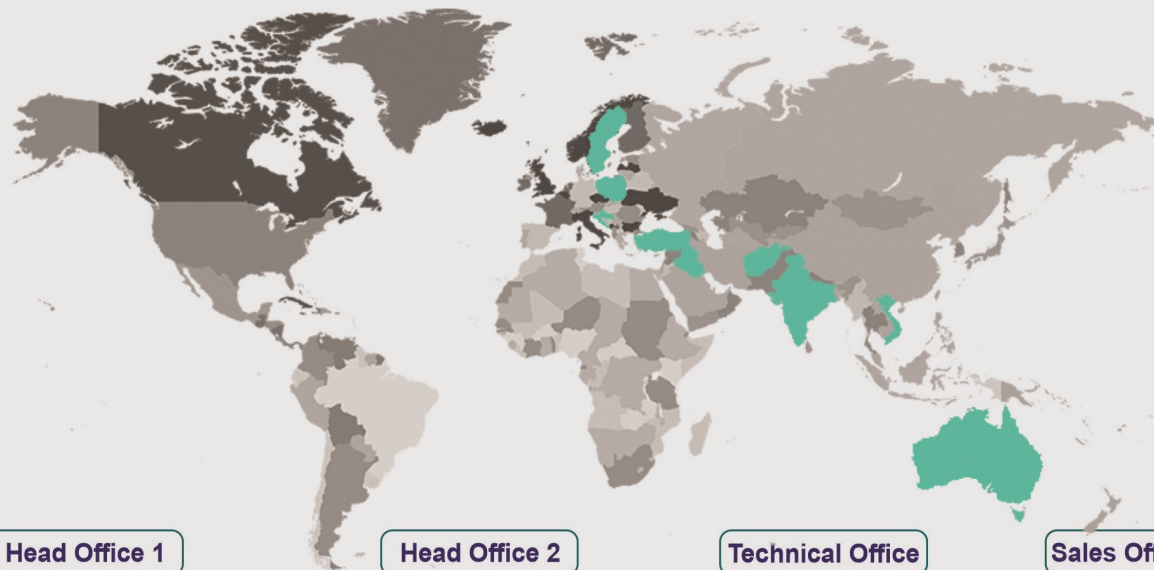
Dr. Farzad Razavi +989121773241

Senior Expert

Dr. Ali Akbar Nazari +989127833092

Sales Department

Mr. Mostafa Hajati +989124335547



### Head Office 1

Unit 15, 4th floor, No. 2, Bujarisefat Alley,  
Fariman Junction, Bozorgmehr St., Valiasr Sq.,  
Valiasr Junction, Tehran, Iran  
Phone: +98-21-645-45-736  
Fax: +98-21-438-52-513  
Email: [info@vebko.ir](mailto:info@vebko.ir)

### Head Office 2

Amirkabir Polytechnic University Center  
for Growth and Entrepreneurship, Unit 12,  
1st floor, No. 7, Balavar St., Across from  
Daneshjoo Park, Valiasr Junction, Tehran, Iran

### Technical Office

5th Floor, No. 76, Parastar Blvd.,  
Qazvin, Iran  
Dr. Farzad Razavi: +989121773241  
Postal Code: 3414689168

### Sales Office

5th Floor, No. 76, Parastar Blvd.,  
Qazvin, Iran  
Postal Code: 3414689168  
Phone & Fax: +982833690245  
Sales Department: +989193849604  
Email: [sales@vebko.ir](mailto:sales@vebko.ir)

## 5- Certificates & Testimonials

CE from IMQ Italy

### Certified by

### Testimonial Issuer Companies Name

- ✓ Iran Power Grid Management
- ✓ Tavanir Co.
- ✓ Niroo Research Institute
- ✓ Sanjesh Koosha
- ✓ IMIDRO
- ✓ Thermal Power Plants Holding

- ✓ Betanir Co.
- ✓ Metanir co.
- ✓ Tavanir Co.
- ✓ Botia Co.
- ✓ Yem Co.
- ✓ Peyman Gharb Co.
- ✓ Isfahan Akhtar Electrical Co.
- ✓ Iran Power Grid Management
- ✓ Isfahan Electricity Management Co
- ✓ Zanjan Regional Electricity Co
- ✓ Azerbaijan Regional Electricity Co
- ✓ Aria industry shield engineering co.



### AVL List

- ✓ Khouzestan steel company
- ✓ Qom Combined Cycle Company
- ✓ provider members of Niroo Research Institute
- ✓ Pasargad oil Company
- ✓ National Iranian copper Industry Company
- ✓ khorasan petrochemical Company
- ✓ Hormozgan steel Company
- ✓ Pars oil and Gas Company
- ✓ petroleum Vendor List Iranian

### Vendor List

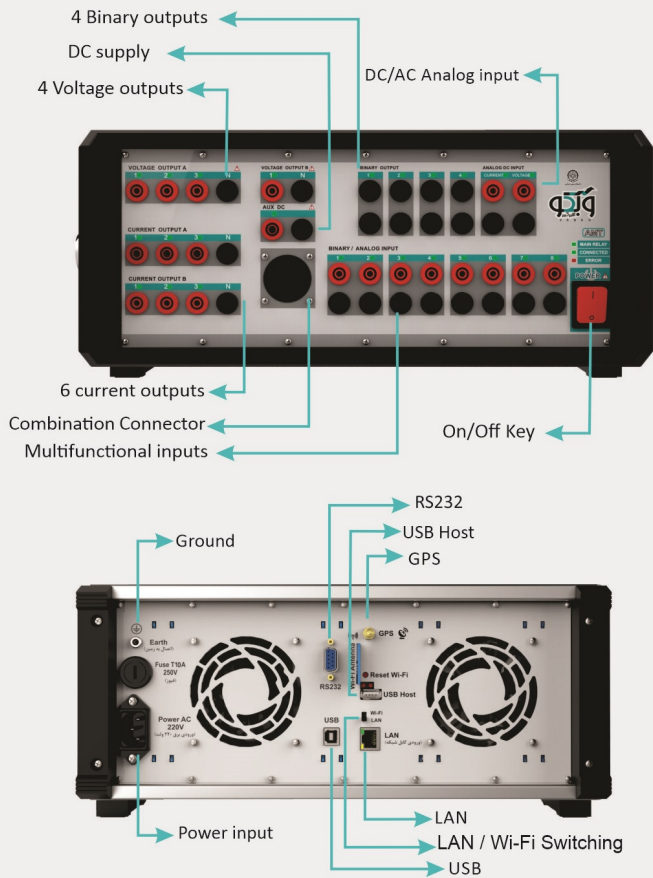
line	Company names	National ID	Economic	Field	Domestic / Foreign	Nationality	Specifications	Product category	Province	City	Address	phone	Fax	Mobile	Email	Website	Update Date	Description
656	Vebko Amirkabir Re-monitoring Power Quality	18004384690		Manufacturer	Domestic	Iran	Relay Protection Tester AMT and Multifunction Protector	67	Qazvin	Qazvin	5th Floor, Building No. 76, Parastar Boulevard, Noroozan Boulevard	+982833692361	+982833692036				2017-11-05	Self declared

To visit this list, you can log on to the e-Commerce Petroleum System (the address below) and download the manufacturers PDF's file and use the national identifier (included in the same table) to search for and view the Vebko company.

<http://ep.mop.ir/search-resource>

### Equipment in Transport Case

 AMT1001 .1	 AMT1002 .1	 AMT1004 .1	 AMT1005 .3	 AMT1006 .1	 AMT1007 .1	 AMT1008 .1
 AMT1009 .12	 AMT1010 .12	 AMT1011 .4		 AMT1012 .4	 AMT1013 .5	 AMT1014 .4
 AMT1003 .1		 AMT1015 .3	 AMT1016 .8	 AMT1017 .1		 AMT1018 .1
 AMT1005 Relay Tester		 AMT1019 .1		 AMT1020 .1		 AMT1020 .1



## Key Features

- ✓ 6 powerful current sources for testing protective relays
- ✓ High current amplitude for testing 5A relays
- ✓ High accuracy and versatility for testing all types of static and numerical relays
- ✓ 8 analog channels for measuring and recording input signals in the transient state

### Voltage generators

Setting Range And Power	4-Phase (L-N)	AC: 4 x 0 ... 150 V(60 VA at 150 V) DC: 4 x 0 ... 210 V(84 W at 210 V)
	1-Phase (L-N)	AC: 1 x 0 ... 150 V(120 VA at 150 V) DC: 1 x 0 ... 210 V(168 W at 210 V)
	1-Phase (L-L)	AC: 1 x 0 ... 300 V(120 VA at 300 V) DC: 1 x 0 ... 420 V(168 W at 420 V)
	1-Phase (L-L-L)	AC: 1 x 0 ... 450 V(200 VA at 450 V) DC: 1 x 0 ... 630 V(250 W at 630 V)

Output Voltage / V	Output Power / VA
0	0
100	25
200	50
300	75
400	100
450	112.5

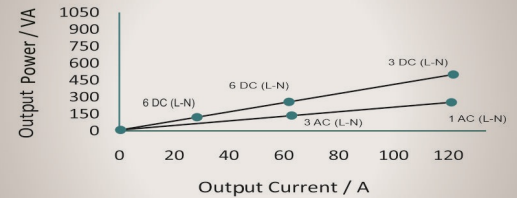
Phase Resolution / Accuracy	0.001° / 0.1°
Resolution / Accuracy	10 mV / 0.2% or 100 mV at Full Load
Frequency Resolution / Accuracy	1 mHz / 1 mHz
Max. compliance voltage	150 V
connection banana sockets	4 mm (0.16 in) banana sockets / combination socket (1,2,3,N)
Short Circuit / Overcurrent Protection	Yes
LED	Yes

## A summary of electrical and physical characteristics of the device

### Current generators

6-Phase (L-N)	AC: 6 x 0 ... 32 A(100 VA at 32 A) DC: 6 x 0 ... 64 A(140 W at ± 32 A)
3-Phase (L-N)	AC: 3 x 0 ... 64 A(200 VA at 64 A) DC: 3 x 0 ... 128 A(260 W at ± 64 A)
1-Phase (L-N)	AC: 1 x 0 ... 128 A(400 VA at 128 A) DC: 1 x 0 ... 128 A(140 W at ± 128 A)
1-Phase (L-N)	AC: 1 x 0 ... 32 A(400 VA at 32 A) DC: 1 x 0 ... 32 A(400 W at ± 32 A)

Setting  
Range  
And  
Power



Phase Resolution / Accuracy	0.001° / 0.1°
Resolution / Accuracy	1 mA / 0.2% or 2 mA at Full Load
Frequency Resolution / Accuracy	1 mHz / 1 mHz
Max. compliance voltage	12 Vpk
Connection banana sockets	4 mm (0.16 in) banana sockets (32 A continuously)
Connection combination socket	Group A/B(25 A continuously max.)
Over current Protection	Yes
LED	Yes
Maximum neutral current	= 32 amp

### Binary outputs, relays

Type	Potential-free relay contacts, software controlled
Number	4
Break capacity AC	Vmax: 250 VAC / Imax: 5 A / Pmax: 1250 VA
Break capacity DC	Vmax: 30 VDC / Imax: 5 A / Pmax: 150W
LED	Yes

### AC,DC voltage measuring input

Measuring range	0...±200mV
Accuracy	50 μV
Resolution	6 μV
Input impedance	10 K Ω
LED	Yes

### AC,DC Current measuring input

Measuring range	0...±500mA
Accuracy	50 μA
Resolution	15 μA
Input impedance	10K Ω
LED	Yes

### Binary inputs

Type	AC + DC analog voltage inputs (current measurement with external current clamps or shunt resistors)
Number	8
Nominal input ranges (RMS values)	0 ... 120 V    0 ... 20 V    0 ... 3 V
Amplitude accuracy	1 mV    3 mV    10 mV
Sampling frequency	5KHz
Transient input buffer	Infinitive
Input impedance	150 k Ω //100pF
Measurement functions	(AC + DC), V (AC + DC), phase, frequency, power, harmonics, transient
Input overload indication	Yes
Input protection	Yes
Max. input voltage	300 Vpk
Galvanic isolation	4 groups (2+2+2+2)
LED	Yes

# 3- Brief List of Specifications

## Different testing Rooms

**Tester Modules**

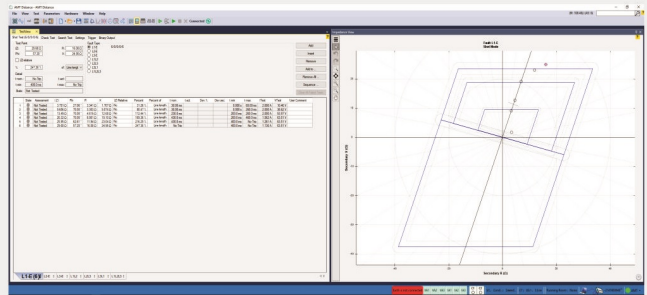
- AMT Sequencer
- Quick
- AMT Overcurrent
- AMT VI Starting
- AMT Distance
- AMT Differential
- AMT Diff Harmonics
- AMT Meter
- AMT Transducer
- AMT Synchronizer
- VCC
- Preferences
- Recovery
- What's new
- Contact us
- About
- Help

**Relay Modules**

- Instrument Test
  - CT Current Transformer(CT)
  - CB Circuit Breaker(CB)
  - CVT Capacitor Voltage Transformer(CVT)
  - Transformer
  - Cable
  - RTD
  - RTD Test Template
  - FTC Function Test
- AMR Side Sync

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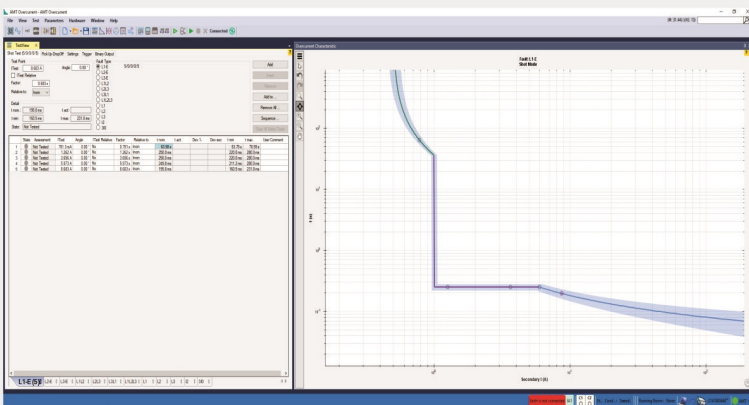
**AMT Distance** Used To test the impedance functions.



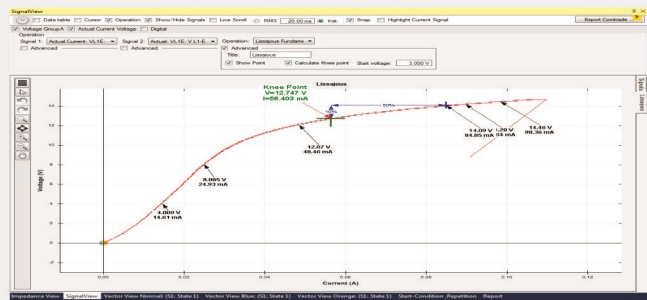
**VCC** Used to successively run the tests designed for a relay.

Software interface for VCC testing, showing test configuration and hardware check options.

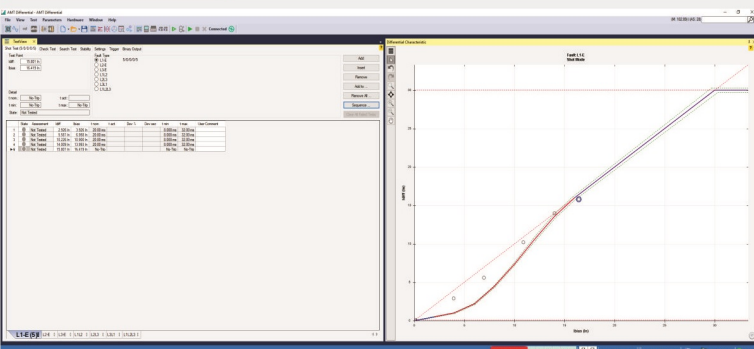
**AMT Overcurrent** Used to test Current functions like 51/50/67 etc.



**Current Transformer** Used to test various classes of CT.



**AMT Differential** Used to test the differential function.



**Circuit Breaker** Used to MV & HV Circuit breakers tests.

Software interface for Circuit Breaker testing, showing test results and hardware status.

**Transformer** Used to perform different transformer tests.

Software interface for Transformer testing, showing test settings and results.

**AMT Sequencer** Used to design test tests that employ the Normal, Quick, Step Ramp, Continuous Ramp, Harmonic, Transient,...

Software interface for AMT Sequencer testing, showing test sequence and waveforms.

## 4- List of Clients

Company Name	Qty	Company Name	Qty	Company Name	Qty	Company Name	Qty	Company Name	Qty	Company Name	Qty
Specialized Holding	5	Peyman West (IRN)	9	Pishtaz tamin tajhiz garb company(IRN)	1	Shahrood University(IRN)	2	Relay Maker	8	Mr.Iranian(IRN)	1
Tavanir (IRN)	3	METANIR (IRN)	20	Mashhad Tadbir (IRN)	1	of Shahid Chamran University of Ahvaz(IRN)	1	Arma Pooyesh analysts company(IRN)	1	Mr.Sabzalian(IRN)	1
Grid Management (IRN)	1	Fars Power Maintenance (IRN)	5	Power Substation Contractor	33	Mazandaran University of Science and Technology(IRN)	1	Mehvar Azma (IRN)	3	Nasr Engineer(IRN)	1
Tehran Water and Wastewater Treatment (IRN)	1	Arman Niro Hormozgan (IRN)	3	Intis(HRV)	1	Semnan University(IRN)	1	Hemianfen(IRN)	3	Mr.Mirmohammadi (IRN)	1
Consulting	3	Niroo Faraz Jonub Shargh(IRN)	4	ariyaghodratkavir(IRN)	1	Amir Kabir University(IRN)	2	Persian Processing Energy Power(IRN)	1	Utility	2
NAPCO(IRN)	1	Azarakhsh Transmission Power (IRN)	5	Peyman Niroo (IRN)	1	University of Science and Technology(IRN)	1	Trading	1	Industrial Lines Development (IRN)	1
Moshanir (IRN)	1	Betanir (IRN)	12	Hemmat Karan Engineering Technical (IRN)	1	Babol Noshirvani University of Technology (IRN)	1	Iran Mal International Development (IRN)	1	MAPNA Railways Development (IRN)	1
Monenco Iran Consulting Engineers(IRN)	1	Oil Contractor	5	Arya Petronir Novin (IRN)	1	Persian Gulf University(IRN)	2	Oil Refinery	7	Transformer	3
Regional Electric	19	Petro Sanaat Jonoob(IRN)	1	Nasr Niroo Yazd company(IRN)	2	Razi University(IRN)	2	Tabriz Oil Refining (IRN)	1	Alvand Tavan Energy (IRN)	1
Sistan and Baluchestan Regional Power (IRN)	1	OICO company(IRN)	1	Mohammad Hadad(SWE)	1	Power Distribution	15	South Pars Gas Complex Sixth Refinery (Phases 15 & 16)(IRN)	1	Niroo Trans Sepahan (IRN)	1
Kerman Regional Electric (IRN)	1	Talash Gostar Energy Development Management (IRN)	1	Mr. Jafari(AFG)	2	North Kerman Electricity Distribution (IRN)	1	Isfahan Oil Refining (IRN)	2	picheshsimtoos(IRN)	1
Azerbaijan Regional Electricity(IRN)	2	Mapna Neyr Perse(IRN)	1	Mr. Khalilinia(IRQ)	1	Ahvaz Power Distribution company(IRN)	1	South Pars Complex Phase 12(IRN)	2	Agency	1
Bakhtar Regional Electric (IRN)	1	mogpc company (IRN)	1	Mabna Sanat Arian(IRN)	1	Shiraz Electricity Distribution (IRN)	1	South Pars Gas Complex (Phase 5)(IRN)	1	GenEko(HRV)	1
Semnan Regional Electric (IRN)	2	Petrochemical	15	Sane Shargh(IRN)	1	Great Tehran Electricity Distribution (IRN)	2	Gas	1	Power Plant Services	4
Hormozgan Regional Electric (IRN)	1	Petro Kimia Ibn Sina (IRN)	1	Mabna Nirou(IRN)	1	Alborz Electric Power Distribution (IRN)	1	District 3 of Tehran Gas Transmission Operations (IRN)	1	Iran Power Plant Investment (SANA)(IRN)	1
Zanjan Regional Electric (IRN)	1	Kangan Petro Refining (IRN)	1	Parsian Group(IRN)	1	Tehran Province Electric Power Distribution (IRN)	1	producers of electrical panels	6	MAPNA Operation and Reconstruction (IRN)	1
Mazandaran Regional Electric (IRN)	1	Marjan Petrochemical (IRN)	1	Power Technology Pyramids (PTP)(IRN)	1	Isfahan Distribution (IRN)	1	Taban Tablou East (IRN)	1	Atomic Energy Engineering and Manufacturing (IRN)	1
Gilan Regional Electric (IRN)	1	Jam Petrochemical (IRN)	1	Ertebat Andishan Sanaat Sefahan(IRN)	1	Isfahan Province Electric Power Distribution (IRN)	1	Supply board(IRN)	2	Ahar Power plant services (IRN)	1
Yazd Regional Electric (IRN)	1	Lorestan Petrochemical (IRN)	1	Peyman Khotoot Shargh(IRN)	1	Hormozgan Province Electric Power Distribution (IRN)	1	Ista Noavaran Niro company(IRN)	1	Industrial Automation	1
Isfahan Regional Electric (IRN)	1	Shiraz Petrochemical (IRN)	1	Pars Power (IRN)	2	East Azarbaijan Province Electric Power Distribution (IRN)	2	Electro Kavir (IRN)	1	Iran Supply and Control Systems(IRN)	1
Khorasan Regional Electricity (IRN)	5	Fajr Petrochemical (IRN)	2	Roshangostar Toos(IRN)	1	West Azarbaijan Province Electric Power Distribution (IRN)	1	Noavaran Bargh Aria(IRN)	1		
Fars Regional Electricity (IRN)	1	Fresa Chemistry (IRN)	1	Aria Power Transmission (IRN)	1	South Khorasan Province Electric Power Distribution (IRN)	1	Subsidiaries	1		
Power Plant	16	Damavand Petrochemical (IRN)	1	Karmania Voltage (IRN)	1	North Khorasan Province Electric Power Distribution (IRN)	1	Subsidiary 1(IRN)	1		
Touss power generation management company(IRN)	1	Isfahan Petrochemical (IRN)	1	Niru Danesh Espadana(IRN)	1	Steel	17	Real Person	26		
Powerhouse of the Dahlato Combined Cycle(IRN)	1	Bakhtar Petrochemical (IRN)	1	Faraniroo Engineering company(IRN)	1	Sangan Iron Ore Complex(IRN)	1	Mr. Mohsen Kaviani Baghbadarani(IRN)	1		
Shahid Mofateh Power Generation (IRN)	1	Pars Petrochemical (IRN)	2	Kiyan Isatis Pars (IRN)	1	Golgohar Mining & Industrial(IRN)	1	Mr Rahimi(IRN)	1		
Bandar Abbas Power Generation (IRN)	1	Arvand Petrochemical (IRN)	1	Raysanat Sasan (IRN)	2	Arfa Iron and Steel (IRN)	1	Mr. Aslani(IRN)	1		
Zahedan Power Generation (IRN)	1	Engineering	21	Matin Nirou Zagros(IRN)	1	bonab steel industry complex(IRN)	2	Mr. Sadeghi(IRN)	1		
Montazeri Power Generation Management (IRN)	1	power equipment azma company(IRN)	1	Kava Power Zagros (IRN)	1	arvand jahanara steel co(IRN)	2	Mr. Ghasabian(IRN)	1		
Isfahan Power Generation Management (IRN)	1	Matin Asia Energy Development (IRN)	1	Petro Pars Power (IRN)	1	Safa Nicu sephan (IRN)	1	Mr. Roshani(IRN)	1		
Mashhad Power Generation Management (IRN)	1	Kavosh niroo gostar pazz company(IRN)	1	Niroo Azma Payam(IRN)	1	Pasargad Steel (IRN)	1	Mr alipoor(IRN)	1		
Besat Power Generation Management (IRN)	1	hana energy Iranian company (IRN)	1	Ray Avin Fav (IRN)	1	Zarand Iranian Steel (IRN)	1	Mr Arjmand(IRN)	1		
Shahid Rajael Power Generation Management (IRN)	1	Erika Industrial Varna (IRN)	1	University	27	Mobarakeh Steel (IRN)	1	Mr Shamshiri(IRN)	1		
Neka Power Generation Management (IRN)	1	Hefaz Sanat Arya (IRN)	1	Tabriz University(IRN)	1	Saba Steel(IRN)	1	Mr.Sahrayian(IRN)	1		
Kish Water & Power (IRN)	1	Yam Electric (IRN)	1	University Of Isfahan(IRN)	1	Sirjan Iranian Steel (IRN)	1	Mr.Salar Farshid(IRN)	1		
Thermal Power Plants Holding (TPPH)(IRN)	1	Tavanmand Consulting Engineering (IRN)	1	Yazd University(IRN)	1	South Kaveh Steel Kish (IRN)	1	Mr kasiri(IRN)	1		
Sardasht Hydropower Plant(IRN)	1	Nogaran Ghodrat(IRN)	1	University of Birjand(IRN)	1	SSICO(IRN)	1	Mr Monajemi(IRN)	1		
Kashan Combined Cycle Power Plant(IRN)	1	Orumieh Sanjesh Sehat (IRN)	1	Damghan University(IRN)	1	chadormalu steel company(IRN)	1	Mr Molaei(IRN)	1		
Khorramshahr Combined Cycle Power Plant(IRN)	1	Arianir Engineering (IRN)	3	Sharif University of Science and Technology Research(IRN)	2	South Rouhina Steel Complex(IRN)	1	Mr.Jafari(IRN)	2		
Regional Electrical Company for Repairs	90	Nivand Energy Pooya (IRN)	1	Sistan University(IRN)	1	Copper Industry	3	Mr.Solymanpour(IRN)	1		
TANANIR (IRN)	9	Behbood Sanat Niroo Consulting Engineers(IRN)	1	Tehran University(IRN)	2	Niroo Sanat Sarcheshmeh (IRN)	1	Mr.Hassan Dehghan(IRN)	1		
Bootia Niroo(IRN)	7	Power Grid Solution (AUS)	1	Shahid Bahonar University Of Kerman(IRN)	1	ShahrBabak(IRN)	1	Mr.Estaki(IRN)	1		
Akhtar bargh (IRN)	10	Parto Parsian Energy (IRN)	1	Shahid Beheshti University(IRN)	1	Fulmen(IRN)	1	Mr.Gohardani(IRN)	1		
Gilan Land Electrical Engineers (IRN)	2	Bakhtar Consulting Engineers (IRN)	1	Scientific and Applied Training Center of Kerman (IRN)	1	Research Institute	1	Mr.sarkhosh(IRN)	1		
Tanesh(IRN)	4	Atrak Pars Gostar Structure(IRN)	1	University of Lorestan(IRN)	1	Power Research Institute(IRN)	1	Mr.Zafarani(IRN)	1		