

## **INGC Company**





## **COMPANY TODAY**

Modern engineering and manufacturing company, founded in 2010

# Area of the production facility **16 acres**

more than 400 employees

INGC is certified for compliance with ISO 9001-2018. Certification of production for compliance with **ASME** 

#### **PRODUCT LINE**



#### **CENTRIFUGAL COMPRESSOR UNITS**



**GAS TURBINE POWER UNITS** 



SCREW COMPRESSOR UNIT



RECIPROCATING COMPRESSOR UNITS



PACKAGED EQUIPMENT



AUTOMATION AND ELECTRICAL DISTRIBUTION SYSTEMS

### «IRTYSH» CENTRIFUGAL GAS COMPRESSOR UNITS

- Power range from 4 to 34 MW
- Different climatic categories
- New construction and modernization of existing CS
- Application at booster, pipeline and injection
  applications
- Driver: gas or steam turbine, e-motor
- In-house design and manufacturing

#### Totally delivered more than

## 50 units

(with Thermodyn, Nuovo Pignone, Siemens, Solar Turbines, NPO Iskra centrifugal compressors )



# GAS COMPRESSOR UNITS DESIGN



#### MODULAR CONSTRUCTION

#### SHELTERING OF HANGAR TYPE



#### **GPU MAIN SYSTEMS AND COMPONENTS**

- **1** Drive cooling system
- **2** Air-intake system
- **3** Valve vent
- 4 Exhaust system
- 5 Compressor unit
- 6 Gas turbine lubrication system
- **7** Compressor washing system
- 8 Barrier gas preparation system
- 9 MCC and PLC unit
- **10** Buffer gas preparation system
- **11** Fire fighting system
- **12** Gas turbine unit
- **13** Fuel gas preparation system
- **14** Gas monitoring system



#### GAS TURBINE POWER UNITS

- Current frequency is 50 -60 Hz
- Operation both in isolated networks having kV or 10 kV voltage, and in parallel with the power system
- Power quality at the terminals complies with GOST 31144-2013

Power ranges from





## MAIN SYSTEMS AND COMPONENTS OF THE GAS TURBINE POWER UNITS



- **1** Air-cooling unit
- 2 Air-intake system
- 3 Electrical unit
- **4** Shell pressurization system
- 5 Valve vent
- 6 Exhaust system
- 7 Turbine section
- 8 Generator section

### RECIPROCATING COMPRESSOR UNITS

- Power ranges from 30 to 8000 kW
- Pressure is up to 60 MPa
- Drive: gas engine, electric motor and steam turbine
- In-house design and manufacturing of system and components of the reciprocating compressor units

#### Totally delivered more than

## 45 units

with Ariel, Dresser-Rand, Nuovo Pignone, Cameron reciprocating compressors



## RECIPROCATING COMPRESSOR UNITS DESIGN





#### HANGAR DESIGN



**FRAME MOUNTING** in the Customer's hangar/shelter

## MAIN SYSTEMS AND COMPONENTS OF THE RECIPROCATING COMPRESSOR UNITS

- 1 Engine air-intake filtration system
- 2 Exhaust system
- **3** Compressor
  - Ladders and platforms
- **5** Lube Oil system
- 6 Skid
- Engine
- 8 Separators
- **9** Pulsution vessels



### **MODULE COMPRESSOR UNITS**

- Centrifugal motor-compressor;
- Power range 300 to 6000 kW
- Module design
- No oil system
- No oil trace in the compressed gas
- Short commissioning time
- 5 years interval between major service







#### **CAPACITIVE AND SEPARATION EQUIPMENT**

#### Pressure is up to 35 MPa. Volume is up to 100 m<sup>3</sup>

#### **VERSIONS**:

- Filling
- High pressure
- Separators
- With internal baffles
- With mixing devices
- With inner coating (epoxies, gumming)
- Other as per Customer's Technical Assignments

#### **MATERIALS**:

- Carbon steel
- Corrosion-resistant steel
- Titanium
- Special steels and alloys

The vessels are designed and manufactured in accordance with the requirements of ASME, GOST, federal rules and industrial safety regulations.







## **DESIGN BUREAU**

- Development of design and engineering documentation, technical specifications;
- Mechanical, thermal and gas-dynamic calculations;

## Own Design Bureau more than 50 persons

- Design of automation and power supply systems, lighting, power equipment, and instrumentation equipment
- Development of engineering documentation in accordance with: GOST, ESKD, SPDS, and with the basic requirements of API, ISO, ASTM and ASME standards;
- Processing of foreign documents for compliance with GOST, RD for the production localization;
- Designer supervision in all cycles of project implementation;



### **DESIGN BUREAU**

Creative, innovative approach to design can be confirmed by the patents for invention and utility models

There are **24** patents and utility models for "Irtysh" GCU.

#### **PLC and software**

development based on any hardware components using the controller equipment of any vendor and considering the Customer's preferences.

**«Sirius»** information and control system of in-house design for the compressor units control.

#### PRODUCTION

- Total area of the production base is 16 acres;
- Assembly workshop is 55000 ft<sup>2</sup>;
- Machining workshop is 27000 ft<sup>2</sup>;
- Painting and packaging workshop is 16000 ft<sup>2</sup>;









#### **PRODCUTION AREA**

#### In 2020, territory of the production area was expanded up to 17 000 feet<sup>2</sup>

- New administration buildings were constructed 13000 feet<sup>2</sup>
- Outdoor storage area was expanded 39000 feet<sup>2</sup>
- New gantry crane of 16 ton capacity was purchased.



- Blank production and machine assembly workshop 2 9600 feet<sup>2</sup>
- Administration and amenity rooms and auxiliary areas 3660 feet<sup>2</sup>
- Surface preparation workshop 14 700 feet<sup>2</sup>
- Procurement and finished product packaging workshop 6500 feet<sup>2</sup>

Construction of metalware and electrical equipment warehouse of 4300 feet<sup>2</sup> area

## **PRODCUTION AREA**



#### **PRODUCTION POTENTIAL**

Full-cycle production of compressor units and gas compressor units is performed at INGC facilities in the following sections:

1. Blank preparation section (metal cutting and plasma cutting, lathe, milling and drilling operations)



2. Welding and assembly section (welding, mocking-up, assembly of steel structures and process equipment)



#### **PRODUCTION POTENTIAL**

3. Machine assembly section (packaging of the systems, installation of the process equipment and argon arc welding)



4. Electrical section (assembly of the switchboard equipment and performance of electrical work package)



#### CS and LOW-VOLTAGE PACKAGE MODULE SYSTEMS INTEGRATION

- Low-voltage package module cabinets
- Fire alarm and automation cabinets
- Heating and ventilations automation and control cabinets

- Lighting panels
- Power distribution panels
- Metering panels
- Circuit-breaker panels

Own «Sirius» information and control system for recip and centrifugal units operation



#### **PRODUCTION POTENTIAL**

Full-cycle production of gas compressor units and compressor units is performed at INGC facilities in the following sections:

5. Section of the vessel equipment automatic submerged-arc welding

6. Packing section





## **PRODUCTION POTENTIAL**

7. Finished products storage area. Storage and shipment area.



### TECHNICAL SUPPORT AND SERVICE

- Erection supervision work
- Commissioning and start-up
- Maintenance service
- Delivery of spare parts
- Equipment modernization

Specialists of the company have valid certificates and accreditation for performing work on the equipment of such companies as **Caterpillar, Ariel, Nuovo Pignone, John Crane, Eagle Burgmann, Thermodyn, Solar**, etc.

For operation of INGC equipment supplied, SP kits and consumables are delivered as well as warranty and post-warranty maintenance is performed.





## **QUALITY SYSTEM**

INGC products have all necessary certificates of conformity and other authorization documentation applicable in the Russian Federation and CIS countries.

INGC is certified for compliance with ISO 9001-2018

In 2019, certification of INGC production compliance with

**ASME** standard was completed (Certificate ASME U Nº58452 is valid till 17.01.2023).

#### YUZHNO-RUSSKOYE OIL, GAS AND CONDENSATE FIELD BCS1 (1 and 2 PHASE)

**Four GCU-16** for operation of the booster compressor shop 1, in terms of extension of CGTP of Yuzhno-Russkoye oil and gas field.

Drive: gas turbine GTU-16P, Compressor: Centrifugal NC-16 DCS-02 «Ural»

Capacity: 16 MW Discharge pressure: 7,4 MPa (g) Production rate: 25,1 billion nm<sup>3</sup> / year

Severneftegazprom LLC (2012)

Installation and commissioning of GCU with a drive, compressor and hangar. Replacement of compressor replacement flow passage.



#### YUZHNO-RUSSKOYE OIL, GAS AND CONDENSATE FIELD BCS2 (3 PHASE)

**Six "Irtysh" GCU-1602** for operation as part of booster compressor station 2.

Drive: gas turbine GTU-16PA

Compressor: Centrifugal NC-16 DCS-02 "Ural"

Capacity: 16 MW Discharge pressure: 7,6 MPa (g) Production rate: 25,1 billion nm<sup>3</sup> / year

Severneftegazprom LLC (2019-2020)

Installation and commissioning of GCU with a drive, compressor and hangar.



#### AKYRTOBE BOOSTER COMPRESSOR STATION

Three GCU-18 in individual shelters for boosting compressor station «Akyrtobe», Kazakhstan Drive: Gas turbine NK-16-18STD "KMPO", OJSC (Kazan) Compressor: Centrifugal BCL356/A Thermodyn S.A.S (GE Oil & Gas) Capacity: 18 MW Discharge pressure: 9,8 MPa (abs) Production rate: 1,986 billion nm<sup>3</sup> / year

KazTransGaz JSC (2016-2018)

Erection supervision and commissioning of GCU with a drive, compressor and hangar shelter. DGS installation.



#### MODERNIZATION OF URENGOY CONDENSATE PRE-TRANSPORTATION PREPARATION PLANT

Two GCU-10 and one GCU-6 in the common shelter Drive: PS-90GP and D-30EU-6 Delivered by UEC Aviadvigatel JSC (Perm)

Compressors: centrifugal, STC-SV series by Siemens AG, FRG Capacity: 10 and 6 MW Discharge pressure: 7,3/7,3 MPa Production rate: 170276 and 76494 m3/h

Gazprom Pererabotka LLC (2017-2018)

Erections supervision, installation and commissioning of GCU with a drive, compressor and hangar shelter. GCU preservation and depreservation.



### ICHEDINSKOYE FIELD

**Two GTEA-6** complete gas turbine electric units of block-modular execution.

Drive: Gas turbine Taurus 60-7901 (Solar Turbines) Generator unit: 3Y131-1010944 Kato Engineering, US

Capacity: 5,74 MW Rated voltage: 6,3 kV

Irkutsk Oil Company LLC (2018)

Erection supervision and commissioning of GCU with a drive and generator



#### YARAKTINSKOYE / ICHEDINSKOYE FIELD

**Two GTA-6PM** complete gas turbine electric units of block-modular execution.

**Drive:** Gas turbine D-30KU/KP (Saturn Gas Turbines, Rybinsk)

Compressor: centrifugal BCL356/A with DGS and oil bearings by Thermodyn S.A.S Generator unit: T series (Electrotyazhmash-Privod) Capacity: 6 MW Rated voltage: 6,3 kV Irkutsk Oil Company LLC

(2019) Erection supervision during GCU dismantling in Yaraktinskoye OGCF and commissioning of GCU with a drive and generator in

Ichedinskoye OGCF



#### **SEMANTEPE BCS**

#### **Two GCU-8**

Further development of Semantepe field with BCS extension in Yuzhny Urtobulok field (ENTER Engineering)

Drive: Solar Taurus 70 (Solar Turbines)

Compressor: 2BCL 406 (DHGE (Thermodyn SAS) Capacity: 7,8 MW

Discharge pressure: 5,5 MPa Production rate: 70375 to 383250 m3/h

Uzbekneftegaz JSC (2019)

Erections supervision and commissioning of GCU with a drive.



#### **ALIBECMOLA CS**

**Reciprocating CU** in the individual prefabricated shelter.

**Drive:** gas reciprocating engine Caterpillar G3508B, 515 kW, 1400 rpm

Compressor: Ariel JGE/2

Discharge pressure: 4.0 MPa (g.)

Production rate: 18000 nm3/h

KazakhOil-Aktobe (2011)

Erection supervision of the shelter, CU unit, auxiliary equipment with piping, commissioning and putting into operation.



### HYDROGEN PRODUCTION UNIT

Three reciprocating CUs, steam-turbinedriven, a part of hydrogen production unit.

**Drive**: steam turbine GE Nuovo Pignone SC1-6, 4 MW

**Compressor**: GE Nuovo Pignone 2HG/2

Discharge pressure: 9,3 MPa (g)

Production rate: 55000 nm3/h

Angarsky Petrochemical Plant (2013)

Installation and assembly of steam turbine units, compressor, condensing unit, lubrication and cooling units. Regular represervation.



## KOVYKTINSKOYE OGCF

**Reciprocating CU**, ready-to-operate, of modular construction.

**Drive**: LOHER of 250 kW power, 1000 rpm

Compressor: Ariel JGJ/4

**Discharge pressure:** 9,8 MPa (g.)

Production rate: 1000 nm3/h

Gazprom dobycha Irkutsk LLC (2012)

Installation of CU unit and air-cooling unit of gas with piping, Commissioning and putting into operation. Koutine maintenance.



#### YURUBCHENO-TOKHOMSKOYE FIELD

**Twelve reciprocating CUs** in the individual shelters for oil-associated gas compression and further injection into formation.

**Drive:** Caterpillar G3616 LE, 3700 kW, 1000 rpm

Compressor: Ariel KBU/6

Discharge pressure: 28,0 MPa (g.)

Production rate: 23000 nm3/h

Vostsibneftegaz JSC (2016)

Erection supervision of the helter, CU units, air-cooling unit of gas and engines, exhaust system, low-voltage package module and ACS. Regular reconservation



#### CHINAREVSKOYE GCF

Three reciprocating CUs of modular construction, ready-to-operate. Reinforcement block and air-cooling units of gas with piping are installed outside.

**Drive:** Siemens, 1150 kW, 960 kV, 1500 rpm

Compressor: Ariel JGJ/6 (2 stages)

Discharge pressure: 4,2 MPa (g.)

Production rate: 12000 std m3/h

Zhaikmunai LLC (2018)

Erection supervision of CU units, air-cooling units of gas with piping, commissioning and putting into operation.



#### PYREINOYE BOOSTER COMPRESSOR STATION

Ready-to-operate in-frame **reciprocating compressor unit** located in the enclosure of hangar type.

**Drive:** Caterpillar G3612, 2,64 MW, 750-1000 rpm

Compressor: Ariel KBZ/4

Discharge pressure: 11,20 MPa (g)

Production rate: 260,42 thous. Sm3/hr

Sibneftegaz LLC (2018)

Erection supervision of the compressor units, gas air cooler with piping, adjustment and start-up.



## ICHEDINSKOYE FIELD

**Three reciprocating CUs KY** of modular construction, ready-to-operate. Reinforcement block and air-cooling units of gas with piping are installed outside.

**Electric motor:** BA355MLC4БУ2,5, 450 kW, 1500 rpm

Compressor: Ariel JGJ/4

Discharge pressure: 0... 40 MPa (g.)

Production rate: 4600 st m3/h

Gazprommash Plant LLC (2020)



## NEFTEGORSKY GAS PROCESSING PLANT

**Packaged supply** of the unit of the feed gas compressor station, incl.: **four screw** and three reciprocating compressor units, ready-tooperate, on the frames for installation in the common shelter.

Drive: WEG 800 kW (2pcs) and 1700 kW (2pcs), 6 kV, 3000 rpm Compressor: HOWDEN WRVi-365 and WRVi-510 Discharge pressure: 0,6 MPa (g.) Production rate: 25000 nm3/h and 21000 nm3/h

Rosneft PJSC (2014)

Erection supervision of CU units in the shelter, air-cooling units of gas, separators, low-voltage package module and the rest equipment of the station.

![](_page_39_Picture_5.jpeg)

#### YURUBCHENO-TOKHOMSKOYE FIELD

**Four screw CUs**, ready-to-operate; the unit is located in the container of modular construction with installed supporting system. Air-cooling unit of gas and glycol with piping as well as control unit with ACS and lowvoltage package module are installed outside.

Drive: Siemens, 1150 kW, 6 kV, 3000 rpm Compressor: HOWDEN WRVi-321 Discharge pressure: 1,1 MPa (g.) Production rate: 6000 st m3/h

Vostsibneftegaz JSC (2018)

Erection supervision of CU units in the shelter, air-cooling unit of gas with piping, control unit, interunit connections

![](_page_40_Picture_5.jpeg)

### POVKHOVSKOYE FIELD

**Packaged screw CU** of modular construction, ready-to-operate. Air-cooling unit of gas with piping is installed outside on the frame integral with the unit.

**Drive**: Ruselprom, 160 kW, 6 kV, 3000 rpm

Compressor: GEA Grasso VP-V36S

Discharge pressure: 0,32 MPa (g.)

Production rate: 1500 st m3/h

LUKOIL-West Siberia LLC (2019)

Unit erection supervision and commissioning

![](_page_41_Picture_8.jpeg)

#### **CONGO REPUBLIC**

**Packaged screw CU** on the frame. Outdoor design.

Air-cooling unit of gas with piping is installed outside on the frame integral with the unit.

Drive: ABB M3GP , 450kW, 3000 rpm

Compressor: HOWDEN WRVi 255-110 38

Discharge pressure: 1,69...1,80 MPa (g.)

Production rate: 4228 St m3/hr

Perenco Rep S.A.R.L. (France) 2019

![](_page_42_Picture_8.jpeg)

#### SALES AND ENGINEERING

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![](_page_43_Picture_2.jpeg)

#### **PRODUCTION AND DESIGN BUREAU**

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