



POWERING MONGOLIA

Baya Bayantsagaan

WAGNER ASIA EQUIPMENT



Current Electricity Demand in Mongolia

Consumption

2007-2011 increased on an average of 6% per year. Ministry of Mineral Resource of Mongolia estimates that overall electricity demand is expected to grow at 14% in the future.

Southern Mongolia

A presentation by the Ministry of Mineral Resources and Energy of Mongolia forecasts total demand from major customers in the South Gobi region of around **870MW** to **1130MW**.

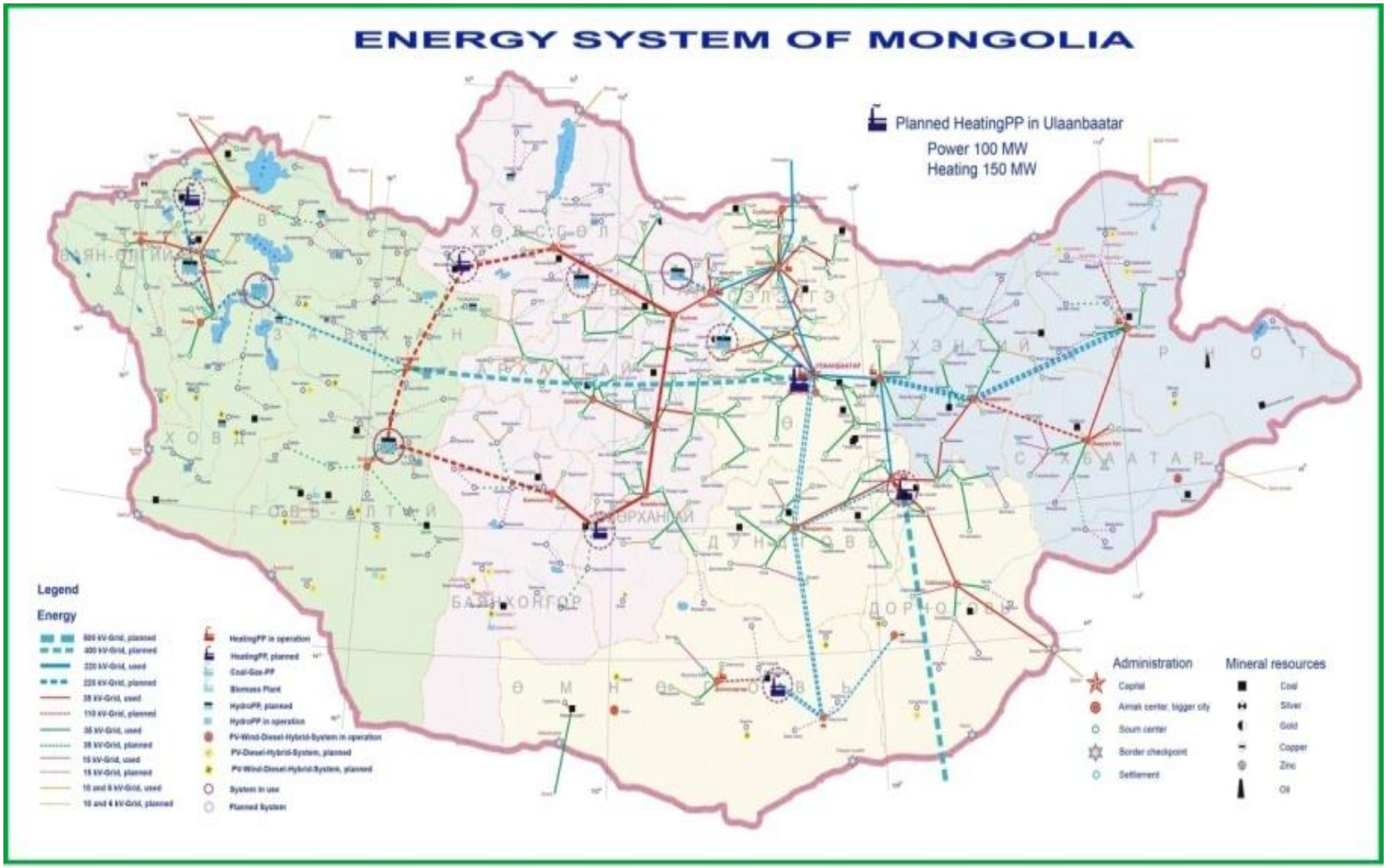
Forecast electricity demand from major South Gobi mines:

Major Mines	Demand (MW)
Oyu Tolgoi Copper	200-310
Tavan Tolgoi coal	100-250
Tsagaan Suvarga	50
Dalanjargalan	80
Zamyn Uud Free Zone	40
Sainshand Industrial Park	400
Total	**870-1130**

Source: The Ministry of Mineral Resources and Energy of Mongolia

CAT

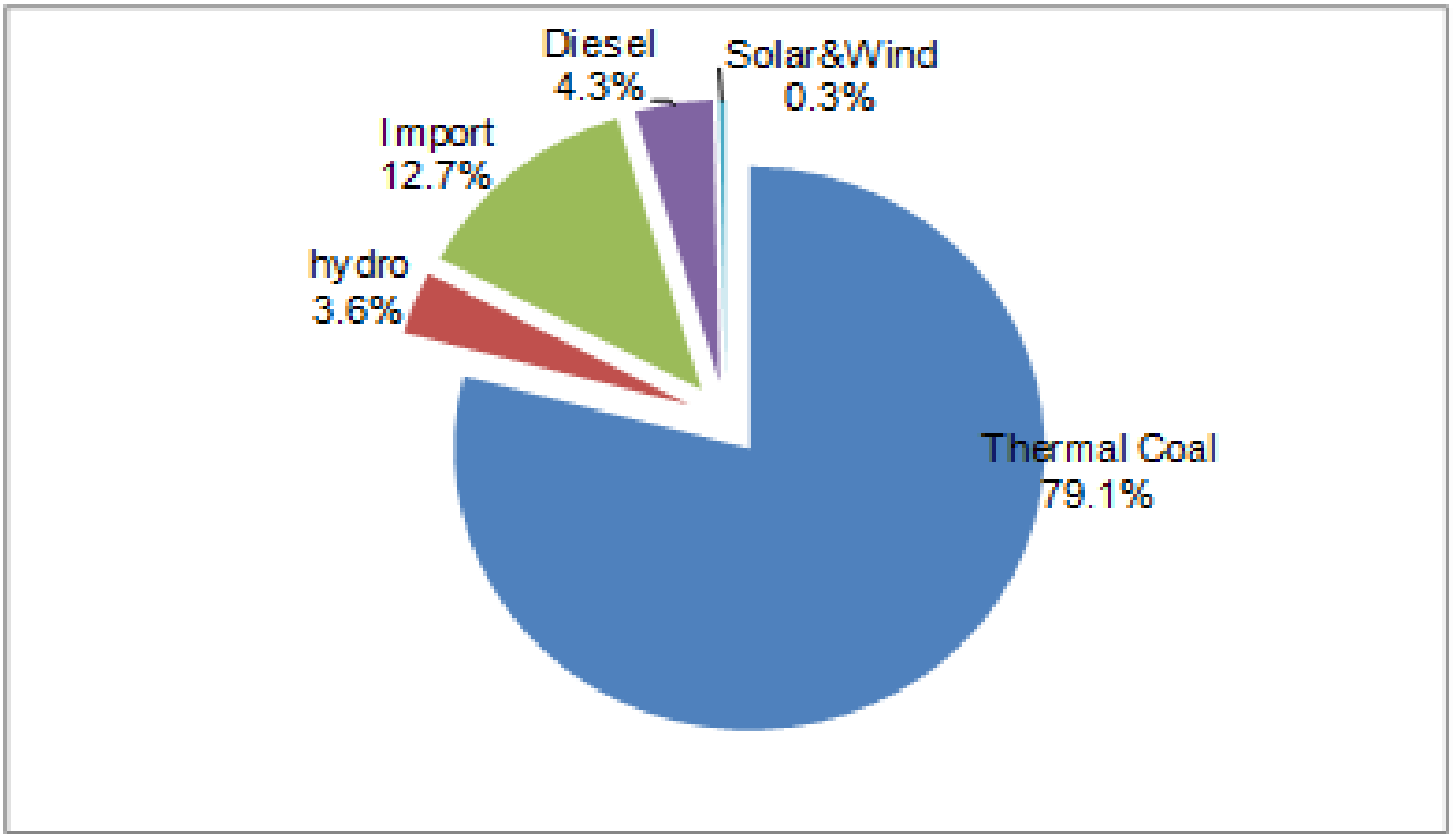
Power Supply in Mongolia



Source: *Energy Regulatory Autahority of Mongolia*

Electricity Generated by Source in Mongolia

Coal Fired Power Plants - Critical to Mongolia Energy System



Source: Mongolia national renewable energy program

Excellent in Product Support

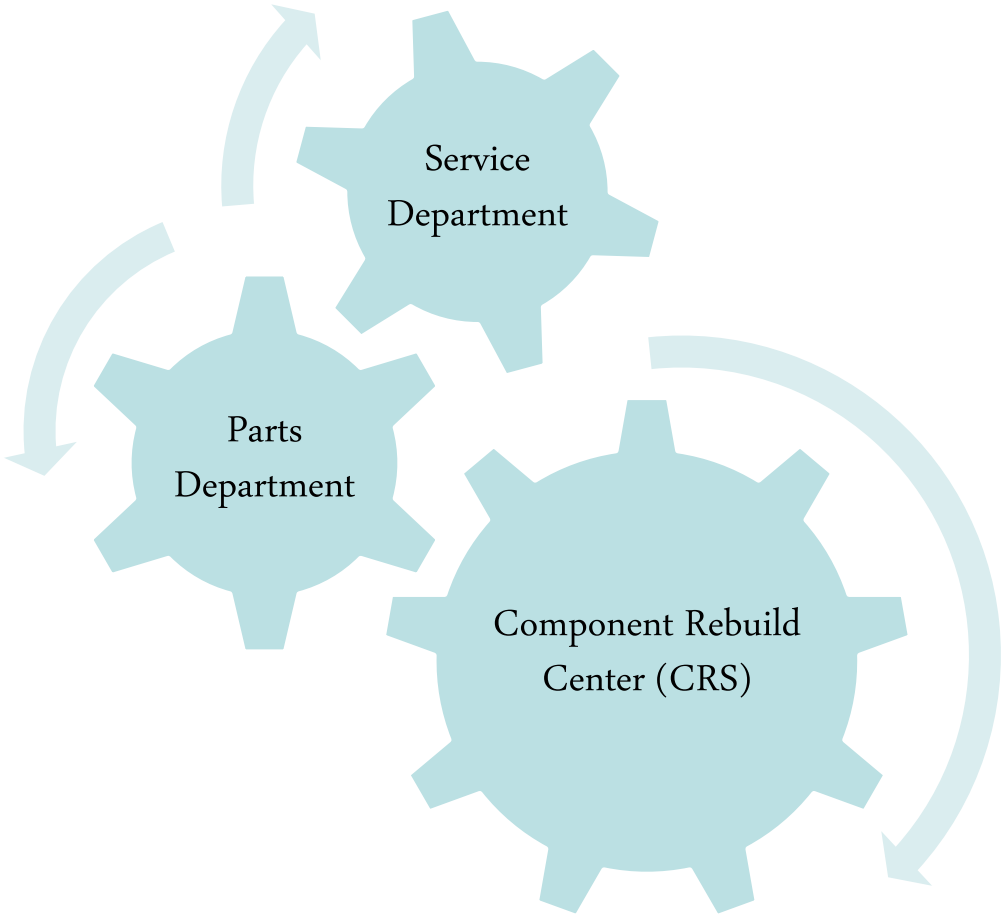
Wagner Asia Equipment LLC

in Brief

- Operating in Mongolia for 16 years
- We have more than 1,000 employees
- Top 16th business entity of Mongolia
- We are the largest U.S invested Company in Mongolia
- We have held the number 1 ranking in Caterpillar's DCSSI, for the CIS and Mongolia Region, for Six years in row
- TOP Entrepreneur –2011 –"Best Foreign Investment Company"

Our Key Business Success!

Excellent Product Support Mechanism…



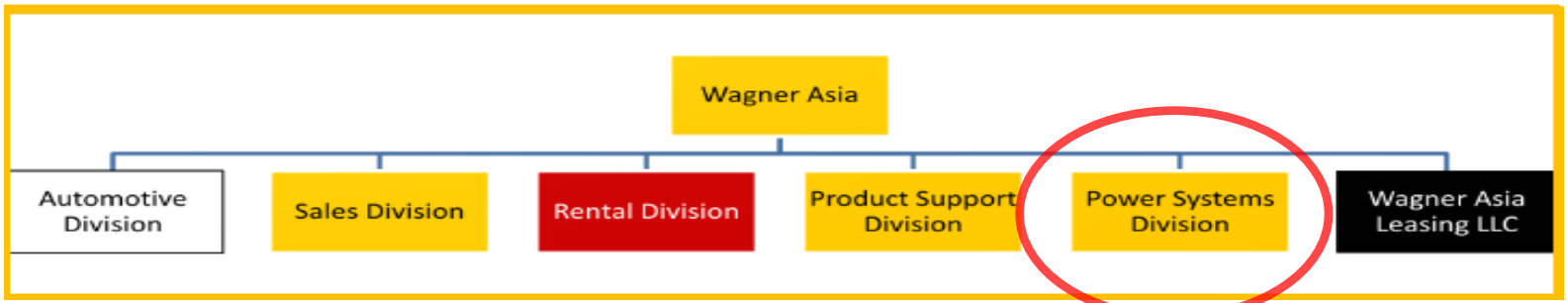
Business Milestone

History....

- 2 Expats
- 8 Technicians
- 19 Mongolian Employees
- Rented Office and Warehouse

Today....

- 15 Expats
- 194 Technicians
- 1002 Mongolian employees
- Own Facilities and Leased Lands
  - Ulaanbaatar
- 3 Leased Land areas
- WAA –2 facilities
- WAE Main –5 facilities
- West End –3
- Rents Facility -1



Excellent in Product Support

Wagner Asia Power System

WAGNER ASIA EQUIPMENT LLC CAT

in Brief

- Founded in 2011 with only 6 employees
- First company to offer complete power system solution in Mongolia (from start up to commissioning)
- Currently, we have more 50 employees and half of them are technicians:
    - All technician are certified by Caterpillar

Business Core Competence

We offer first complete power system solution in Mongolia!!!

Our core products

- Diesel Generator
- Gas Generator and Gas Turbine – (Coke Oven Gas and Special Gas)
- Locomotive – Progress Rail

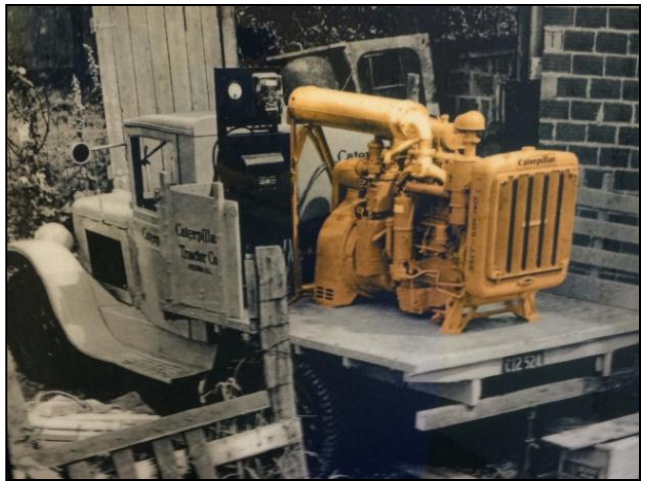
Our core service

- Engineering design
- Installation, commissioning and startup
- Maintenance
- Repairs
- Operation
- CSAs

Caterpillar Power in Mongolia

CATERPILLAR Electric Power Division

- 70+ years experience
- 135,000 MW (181M hp) installed worldwide
- $3.3 billion in 2011 sales
- 9th largest division within Caterpillar
- Customer focused solutions
- Global manufacturing and presence



Excellent in Product Support

Alternative Power Generation by using:

- Coke Oven Gas (COG)
- Coal Bed Methane (CBM)
- Coal Mine Methane (CMM)

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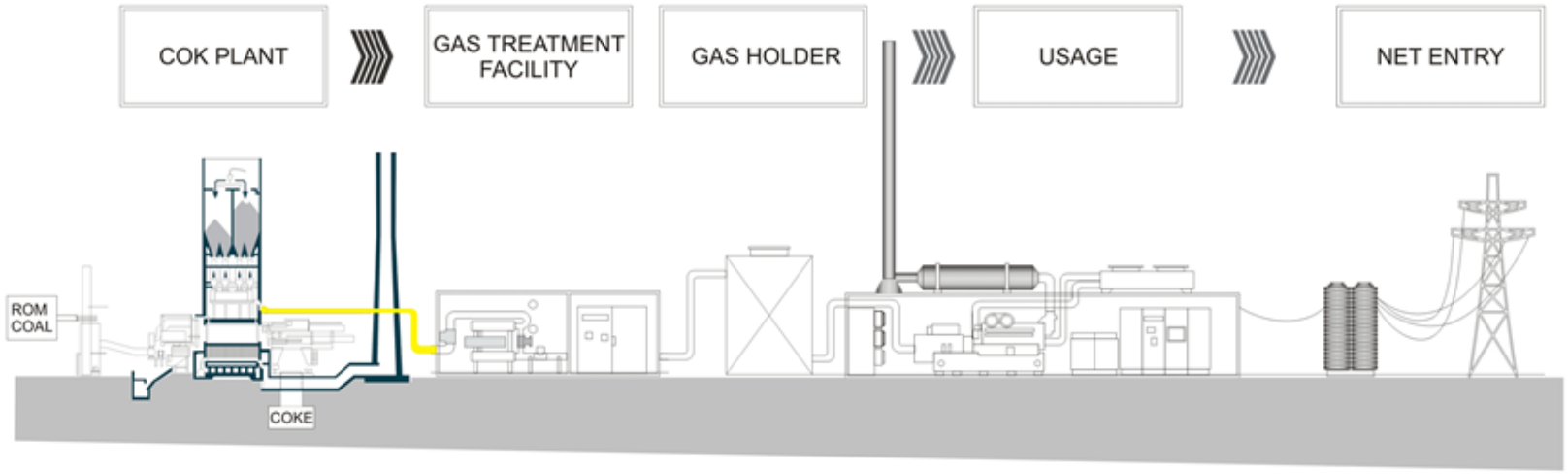
COG Power Generation



Advantages of COG Power Generation

- Sustainable Power
  - Fuel and Emissions Savings at Coke Plant and Power Plant
  - Eliminates Coke Oven Gas Flaring
  - Improves Health and Safety of Employees
  - Improves Image of Industry
  - Reduces Primary Fuel Consumption
- Possible to produce by products such as coal tar
- Lowering overall electricity costs
- Turns waste gas into steam power generation
- High Reliability and Availability
  - Lowers Operational Cost
  - Higher Income per each Cubic Meter of Coke Oven Gas

Caterpillar Global Experience – Gas Genset

Genset/Engine (R 023):

- 5 x CG260-16

Segment/fuel type:

- Semi coke oven gas

Customer/Operator:

- The Italiana Coke SpA, Italy

Total output:

- 25.0 MWel

Installation/Commissioning:

- 2010

Caterpillar COG Global Experience – Gas Turbine

Turbine Type

- 4 x Taurus™ 60
- 2 x Titans ™ 130

•Fuel Application

- Coke Oven Gas

•Customer/Operator:

- Shandong Jinneng Coal Company, China

•Total output:

•53MW

•Installation/Commissioning:

- 2006

•CHP

- Yes

Existing Coking Plants in Mongolia

Eldev Coking Plant	Capacity of 75,000 TPA Semi Coke Output
Darkhan Coking Plant	Capacity of 50,000 TPA Semi Coke Output
ENK Coking Plant	Capacity of 1,200,000 tones wash coal per year and Coal Coking Plant with Capacity of 300,000

Planned Coking Plants in Mongolia

Signum Industrial Coking Plant

A coke plant with annual capacity of 2.2 million tones of coke is to be established in Sainshand area in Mongolia. As the bankable feasibility study conducted by Chinese Metallurgical Group Corporation shows, the plant includes coal preparation system, coke-making facility consisting of 4 x 55 ovens with 6m high coke oven batteries, CDQ facility, coke handling system and gas purification facility.

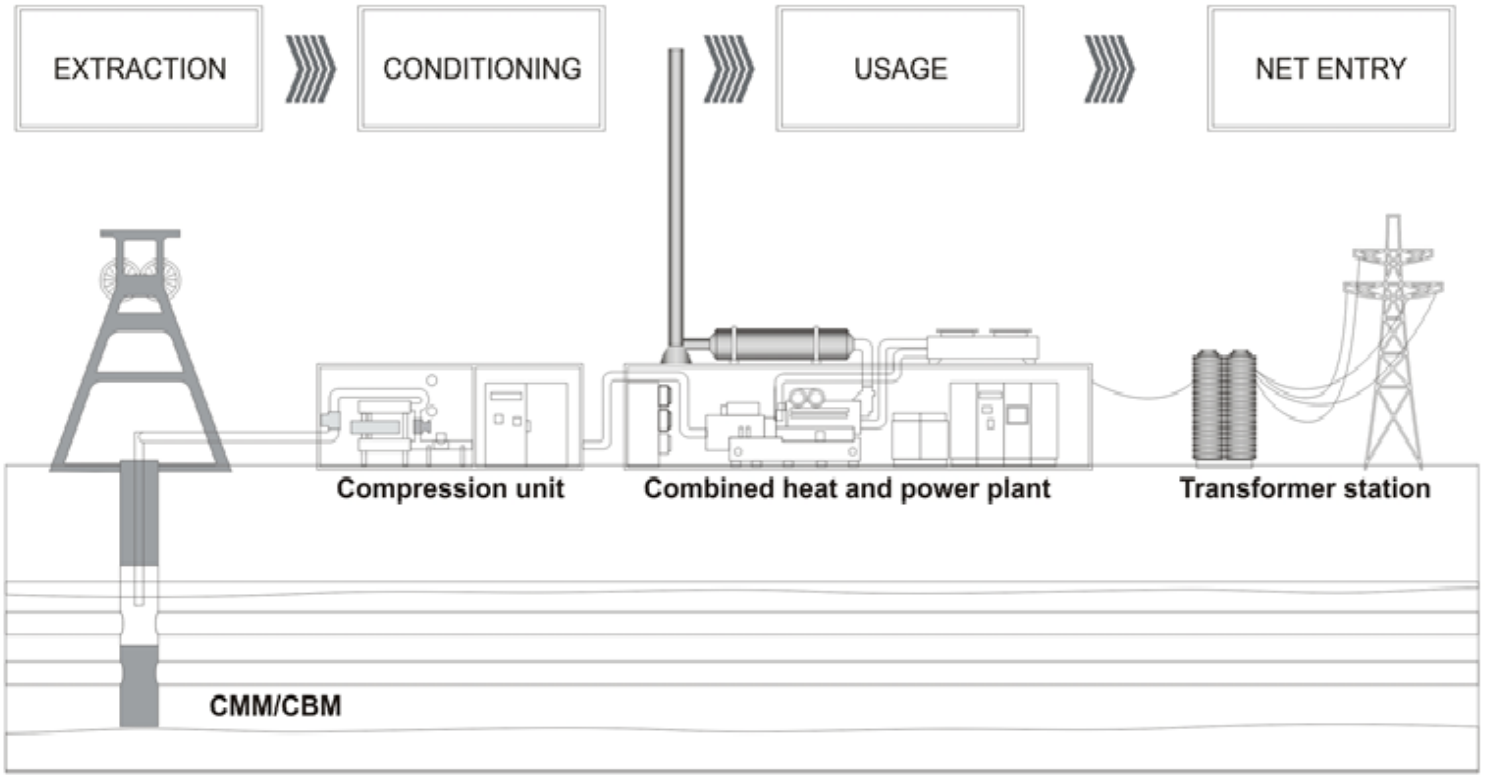
Reduction of Greenhouse Gas Emissions

	Production Scale (TPA)	Average Annual ERs (CO2e/y)	Total Estimated ERs by 2020 (CO2)	Total Estimated ERs by 2030 (CO2)
Sharyn Gol Coking Plant	50,000	26,485	185,395	450,245
Eldev Coking Plant	75,000	39,728	278,096	675,376
ENK Coking Plant	1,200,000	635,640	4,449,480	10,805,880

	Production Scale (TPA)	Average Annual ERs (CO2e/y)	Total Estimated ERs by 2020 (CO2)	Total Estimated ERs by 2030 (CO2)
Signum Industrial Coking Plant	2,200,000	1,165,340	8,157,380	19,810,780

		Average Annual ERs (CO2e/y)	Total Estimated ERs by 2020 (CO2)	Total Estimated ERs by 2030 (CO2)
	Total	1,165,340	8,157,380	19,810,780

CBM and CMM Power Generation



Advantages of CBM & CMM Power Generation

- Save the environment by capturing and using methane
  - Methane is up to 25 times more powerful than CO2 as a greenhouse gas
- Making profit by using coalmine gas
  - Generation of electricity
  - Generation of heat
  - Generation of coldness
- Generation of CO2-certificates by avoiding methane emissions
  - Clean Development Mechanism (CDM)
  - Joint Implementation (JI)
- More safety
  - Prevention of pit explosions (at 4-16% CH4 in the air, danger of explosion)
  - More comfortable working conditions
  - Higher productivity of a coal mine
- Potential of 7000MWw worldwide, hardly 10% used energetically

Caterpillar CMM Global Experience – Gas Genset

- World Largest CMM Power Plant
- Power Generated and Sold to Utility

  840,000 MW-hour/year
- Heat Recovery in Winter

  33,600 GJ
- Carbon Credit

  4.5 MMTCe to the World Bank's Prototype Carbon Fund/year

Gas Genset

•60 x CG3520C

•Fuel Application:

•Coal Mine Methane

•Customer/Operator:

•Shanxi Jincheng Mining Company, China

•Total output:

•120MW

•Installation/Commissioning:

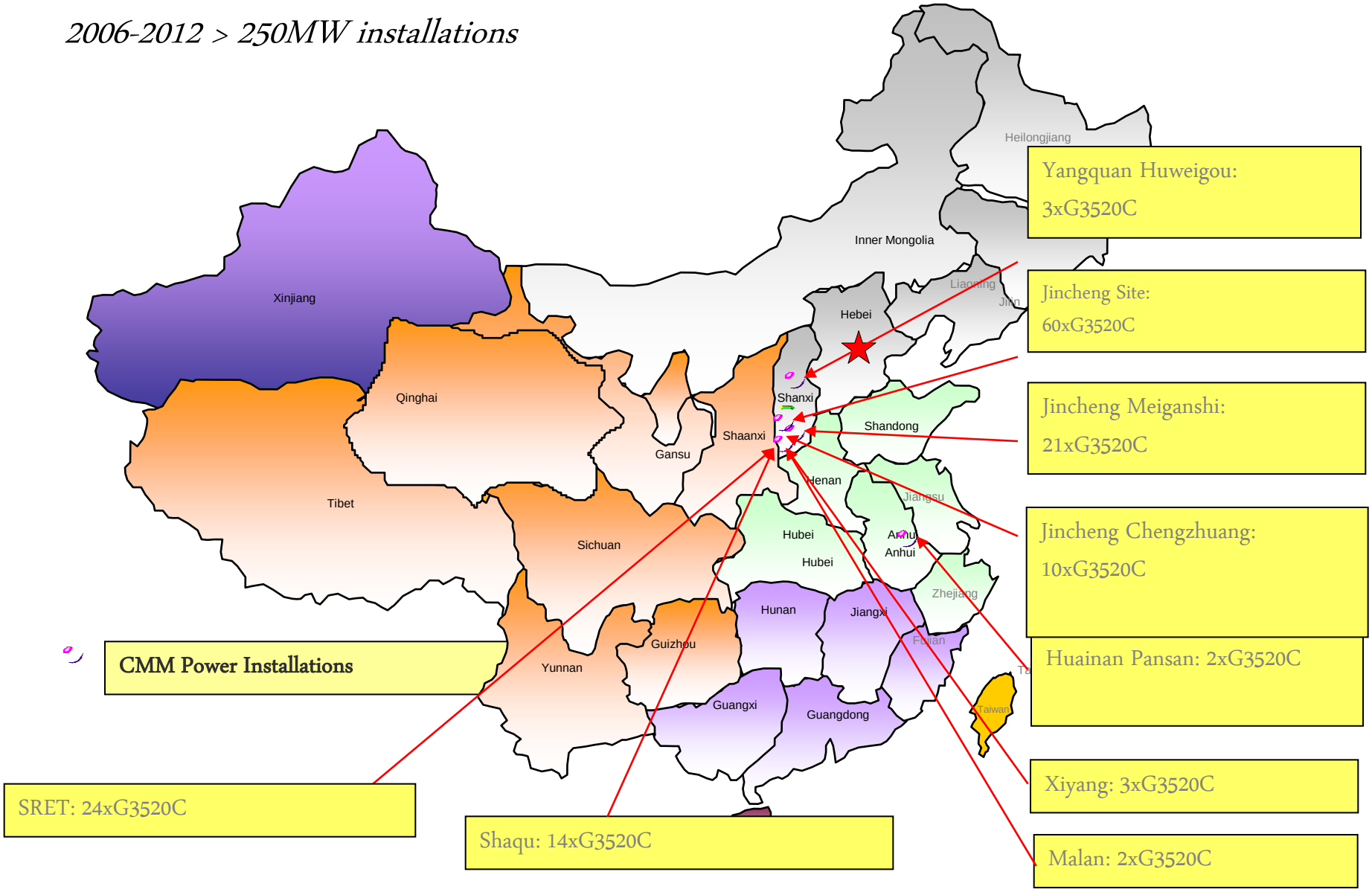
• 2010

•CHP

• Yes

CMM Power Generation Sites in China

2006-2012 > 250MW installations



Caterpillar CBM Global Experience – Gas Genset

Gas Genset

- 6 x CG170-12
- **Fuel Application**
- Coal Bed Methane
- **Customer/Operator:**
- HD Supplier, Inc, USA
- **Total output:**
- 5.4MW
- **Installation/Commissioning:**
- 2008

Possible CBM and CMM candidates in Mongolia

Ордууд	Чийглэг, %		Үнслэг	Дэгдэмхий	Хүхэр	Илчлэг, ккал/кг	
	Ажлын	*Агаарт хатаасан*	*Хуурай, %*	*daf, %*	*Хуурай, %*	*Ажлын*	*daf*
Нүүрсхоттор	1.4-2.1	0.7-0.8	19-36	31-44	0.3-0.5	4,100-5,000	7,560-8,430
Хартарвагатай	16.0	3.0-5.0	15-25	40-45	0.5	5,500	7,450
Хөшөөт	7.0	3.0-4.0	10.6-22.5	20-27	0.5	5,400-6,300	8,590
Зээгт	10.0	0.2-13.3	18.4	30-34	0.4	4,880	8,200
Могойнгол	6.5	5.0-6.0	18.0	34.6	0.9	5,300-5,600	7,350
Сайхан Овоо	4.5-7.0	0.1-12.0	21.7	10.0-46.0	0.6	6,100	7,290-8,700
Өвөрчулуут	30-40	10	6.0-25.0	43	< 1.0	3,500	7,000
Баянтээг	5.2	2.2	22.6	51.9	1.0	4,680	7,230
Тэвшийнговь	30.5	11.0	20.9	45.5	0.7	3,370	6,450
Тавантолгой	6.9	0.1-2.5	14.9	32.8	0.8	5,100-5,500	7,700-8,400
Шарынгол	18.0	3.0	22.0	45.0	0.6	3,900-4,200	7,200
Налайх	21.0	5.0	16.5	45.0	0.7	3,900	6,620
Багануур	33.0	9.2	18.0	44.6	0.4	3,200-3,500	7,070
Шивээ Овоо	43.6, 34.5	6.0, 10.4	17.3, 8.7	45.7, 44.0	0.7	2,690, 3,610	6,660, 6,700
Чандгантал	30.6	12.3	11.7	46.5	0.9	3,000-3,400	6,580
Талбулаг	30.0	9.5	14.0	47.0	0.8	2,850	6,000
Адуунчулуун	45.2	9.4	16.7	48.1	1.1	2,400	6,480
Нарийнсухайт	5.0	1.0-2.8	5.0-30.0	28-40	0.4		7,500
Улаан Овоо	13.4	7.3	11.2	46.0	0.3	4,270	7,370
Хөөт	13.8	7.5	14.5	43.0	0.7	4,100	7,030
Өвдөгхудаг	36.0	7.0-9.0	13.9	45.0	2.8	3,070	6,300
Амангол		-	-	-	-		

Conclusion

The leaders and people of Mongolia have long-recognized its potential as a modern, booming economy and international firms continue to embrace it as evidenced by massive and increasing foreign investment. With this expansion, Mongolia's critical energy shortages are expected to become more and more pronounced as new draws strain the existing supply and further increase reliance on costly and unstable imports. To sustain its impressive development, it is vital that the Mongolian government address the energy situation by utilizing their abundant coal resources and that they do so in the most efficient, modern and clean facilities technology has developed.






Thank you