

*Truly Global, Fully Reliable*



**K.U.N.Z.**

HANDELS - & PRODUKTIONS GMBH

MEDIUM SPEED  
GENERATOR SYSTEMS

## Heavy Fuel Oil Generators

Kunz Power Systems offers a range of turbocharged & intercooled Medium Speed Heavy Fuel Oil (HFO) Generator Sets running also on diesel, heavy fuel, vegetable oil, animal greases and at engine speeds between 720 rpm and 1000 rpm with outputs up to 3750 kW per unit and maximum 21 MVA power station. These HFO Generator Sets are engineered, designed and completely installed to operate in continuous power applications for base load power plants



**The advantage** of Medium Speed HFO Generator Sets is the considerably low maintenance and operating costs. For example, HFO sets can go more times longer between overhauls, between scheduled maintenance and one and much more times inexpensive to operate on a per kilowatt-hour basis compared to high speed diesels. Medium Speed Generator Sets are able to burn cheaper heavy fuel oil

while High Speed Generator Sets use the more expensive lighter fuel oils including distillate or diesel oil.

Another benefit is the unique flexibility of operation enabled by the cascading multi-engine structure of the Power Stations. As your needs change you can enlarge the plant size by adding new generator sets or removing existing ones. This also means that you can get started with a

smaller initial investment and expand later whenever it suits you.

As Kunz is an independent, Germany origin Generator Set Manufacturer, we can take advantage of working with premium worldwide engine manufacturers. Kunz is one of the few power providers that can guide you through to the correct application of engine type that would be most suitable for your project

### Power Stations Advantages

- Short planning , production and installing time
- High electrical efficiency
- Low fuel consumption and low quality requirements
- Expansion Capability
- Huge Operation Savings
- High - partial efficiency
- Minimal water consumption
- Fuel flexibility

### HEAVY FUEL OIL GENERATOR PRODUCT LIST

Generator Model Prime/ kVA	kVA Prime Power	Voltage/kV	Engine Brand Model	Alternator Brand Model	Basic Genset Weight approx/KG	Basic Genset Length approx/MM	Fuel Consumption at 100% load approx- L/H
KZS1500AA	1500	0,4	ABC 8DZC-750-179A	AVK DSG99 L2/8	28.165	5900	300
KZS2000AA	2000	0,4	ABC 12VDZV-750-160A	AVK DSG114 M1/8	36.100	5780	400
KSZ2500AA	2500	0,4	ABC 16VDZC-750-150A	AVK DSG114 L1/8	43.450	6780	600
KZS2000AA-M	2000	11	ABC 12VDZV-750-160A	AVK DIG150 K/8	37.950	5780	400
KZS2500AA-M	2500	11	ABC 16VDZC-750-150A	AVK DIG150 M/8	45.800	6780	600
KZS3000AA-M	3000	11	ABC 16VDZC-750-179A	AVK DIG156 K/8	47.750	6780	600

## ⋮ Designing And Delivering

Our experienced project managers with Germany-based design team have engaged in projects in many countries and installed various power stations. They will engineer the full project, select and procure the equipment and carry out the construction from A to Z

# “DESIGNING AND DELIVERING TURNKEY PROJECTS, GLOBALLY”



As a Germany-based producer, you will get a high quality system which make you feel German finishing at every part of it. Our designs use high quality components starting from engine to auxillary equipments such as modular units, seperators, boosters, ventilation units and control systems.

In Kunz we are flexible than any other company. Our German team will work with you to implement any product modifications that you need specifically for your project.

### **KUNZ Provides**

- Complete Engineering & Design
- Economic Considerations
- Concept Studies
- Project Development
- Manufacturing of the components
- Civil Work
- Quality Control & Functional Testing
- Logistic Organization
- Installation and Commissioning
- Documentation
- Operation
- After Sales Services

## Scope of Supply

### Gen-set Coupling

#### Phase 1

- Engine & Alternator Coupling
- Baseframe
- Anti vibration pads
- Lube Oil Circulation Tank
- Combustion Air Filtration



### Main Component & Auxiliary Set-up

#### Phase 2

- Remote Cooling Water System
- Ventilation System
- Plate Type Heat Exchangers
- Fuel & Water Treatment Skids
- Air Bottles & Compressors
- Bulk, Settling, Day, Oil & Sludge Tanks
- Project Management & Supervision
- Switch Over Module
- Separator & Booster Modular Units



### Electrical & Control System

#### Phase 3

- MV Switchgear & Transfer Panel
- Neutral Earthing Panels
- LV Distribution Panels
- Transformers
- Generator Set Control Module
- SCADA System
- DC Battery Supply
- Black-Start Generator



### Civil Works & Erection

#### Phase 4

- Soil Investigation
- Water Analysis
- Assembling at site
- Main Power House Building
- Tank Farm
- Switchgear & Control Room
- Substations
- Administration Building
- Workshop & Storage Room
- Mechanical & Electrical Installation



### Commissioning & Maintenance

#### Phase 5

- Commissioning Services
- Site Supervision
- Product Training
- Operational Services
- Spare Parts Supply
- After-Sales Service Agreement



## ☺ Diesel Oils And Heavy Fuel Oils

### Two Major Fuels

Diesel Oils and Heavy Fuel Oils are two major fuels that are burned in compression ignition engines. Distillate Oils, mostly called Light Fuel Oils (LFO), is a very high quality distillate traditionally used in stand-by operation and baseload power plant applications. In addition LFO often used in a smaller high speed engines.

### Inexpensive Fuel

Heavy Fuel Oil (HFO) is burned in medium speed engines and it is an important fuel especially for large diesel power plants.

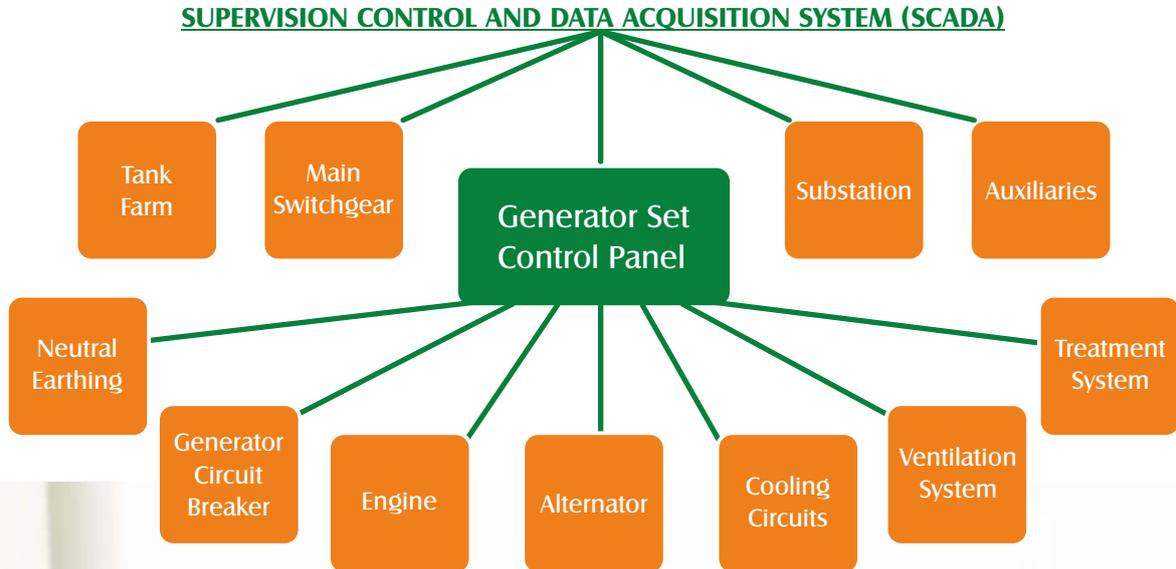
As a residual product, HFO is a relatively inexpensive fuel (its costs around 30% less than distillate fuels such as LFO, MDO). It thus becomes the standard fuel for not only Marine engines but also big capacity power stations.

### Viscosity (cSt)

HFO may be burned in certain KUNZ generator sets. The heavier the oil, the greater is its viscosity. Viscosity is a measure of the fluids ability to flow or be pumped and it is expressed in centistokes (cSt). Average engine manufacturers limit the heavy fuel oil viscosity 700cSt@50°C. Fuel treatment and heating required before burning in the engine in order to lower the viscosity down to suitable level for engine fuel systems.



## Control Systems



Kunz Power Systems provides a wide spectrum of control equipment and systems which is not only simple generator control panel but also complete site wide Supervision Control and Data Acquisition Systems (SCADA). It is critical that operators have access to a reliable safe and intelligent control system at all times. Thus, control

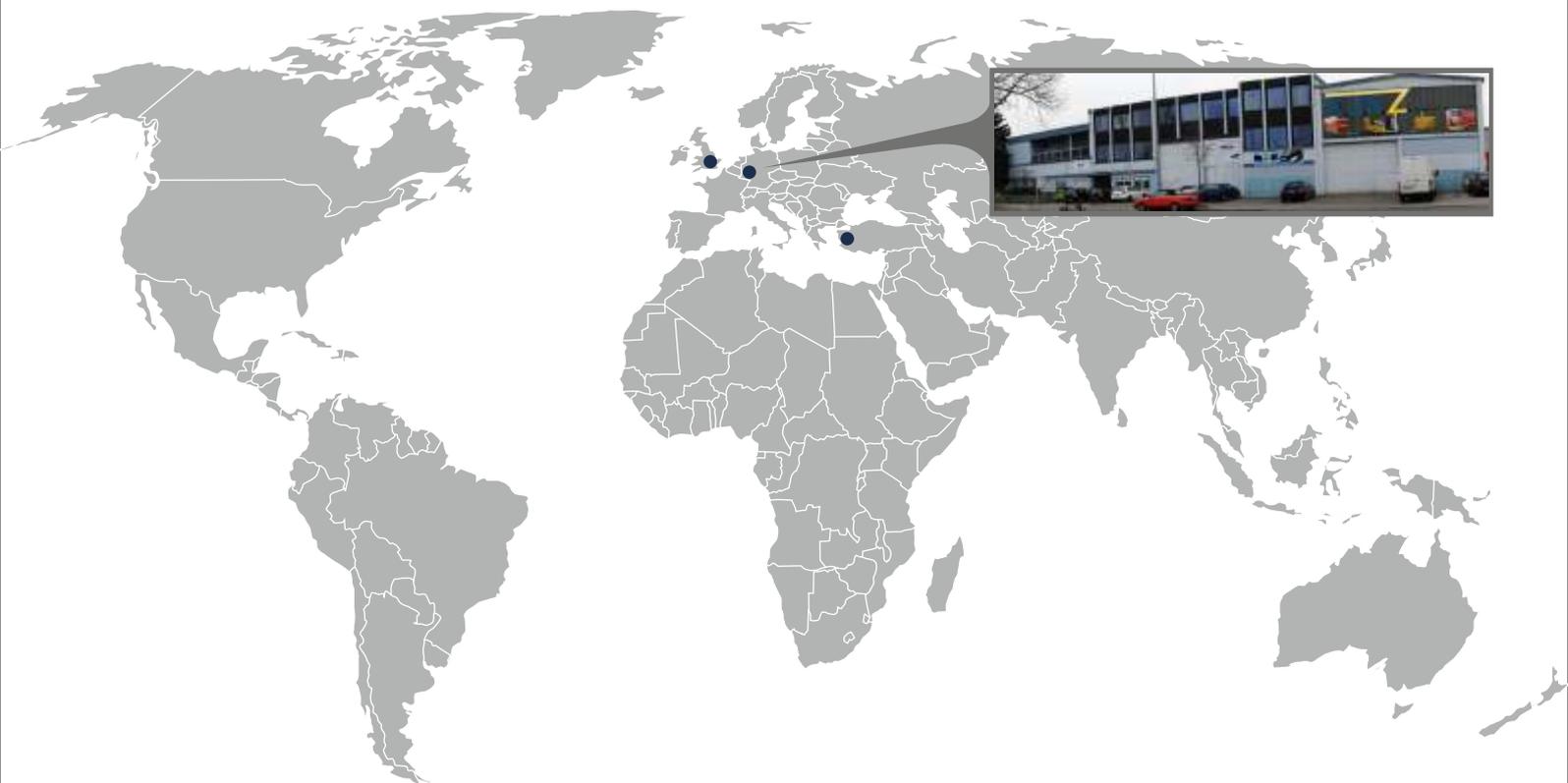
systems must be user-friendly and sufficiently comprehensive to deliver precise data required to keep the power system generate efficiently.

While providing local generator control panel for the control, monitoring and protection of the engine, alternator and all associate systems, Kunz designs and builds a specific control room

which is located inside the power house but in the quieter environment of a plant control room.

This main control room on site consists SCADA systems which provides centralised full monitoring and coordinating of all systems including generator sets, switchgear, tank farm and all the auxiliaries at the plant.

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