



arising innovations...





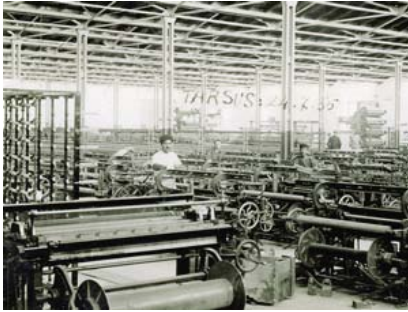
arising innovations, creating alternative solutions...
meeting customer needs.



The Group's traditions...
New Generation's innovations.



history



Cukurova Holding, established in 1923, is one of the leading business conglomerates with diverse interests in numerous industries ranging from automotive, paper, chemicals, textiles, telecommunications, construction, banking, insurance, media, and services to maritime transportation and information technology services. The Holding reinforced its leading position by supporting Businessmen and Contractors in their businesses, and contributing to the development of the Continents. Cukurova's reputation secret is not only hidden in the experience gained through out its history but also in its innovative team spirit aiming to be the best.

group



Cukurova Group's core business areas are; power generation & energy, telecommunications & information technologies, industry and financial services.

The Group has more than 140 companies and 32000 employees meeting the Customer needs with operations across 30 countries. With regard to their management and strategic goals group companies enjoy a great deal of autonomy-a unique element that associates them with the philosophy and the ideals of the Group. Unlike the other business groups around the globe foundations of the Cukurova rest on its autonomous character greatly contributing to its success.

power generation



The innovative and challenging Power Generation Team is proud of being a member of a strong and long-established family, Cukurova Holding.

This young and high spirited New Generation is committed to work with high energy, enthusiasm, optimism, persistence, pride and joy in order to meet global PG business requirements. Necessitating them to integrate the innovations in both technology and services, with their Group's heritaged business traditions, they are not only aware of their Duties to live in the Global Community but also their own individuality and autonomy to keep task pleasure.

vision



Cukurova PowerGeneration Team is dedicated to meeting with individual customers needs in a changing global world.

During providing customized unique solutions for global world's power demand, contribution to maintain diversity of the life is the fundamental element of our vision.

mission



Our duty ... is to develop the services, design the systems and manufacture the products to meet the expectations for quality, performance, delivery and support.

Our method...is harmonious and synergistic cooperation between our employees, shareholders, business partners and the Customers.

Our goal... is Cukurova to be the only answer when question comes to the PowerGeneration Solution.

Our joy... is our achievements providing long-term customer relations all over the world.

philosophy



Cukurova's greatest assets are our customers, brand, innovative spirit, tradition and the future... beyond tomorrow.

Today, harmonious integration of teamspirit & individual passions, experience & innovations sustain our success in supplying diversity of demands in a global world.



brand



In global competition of the brands, rather than aiming to be a winner, Cukurova aims customer satisfaction first with its product quality & performance, complemented by the highest standard of aftersales support.

Since 1923, over than 80 years, Cukurova maintained its traditional brand reputation always arising by providing excellent services and establishing long-term relationships with the Customers.

capacity



Cukurova is one of the leading Turkish genset manufacturers, and it consistently captures approximately half or more of all orders for the gensets ranging over 1000kVA in its mother country.

In early 1970s Cukurova Group, following the developments in the country, started to import generators. This was the first step of Group in PG business. During nearly 40 years the Group also established its own brand; The Cukurova Power Generators launched in 1983 in Izmir Factory.



Cukurova Jenerator A.S. was established in 2007 to be able to achieve well set growth plans in the global market of the diesel generator sector.

With an investment of over than 20,000,000.-USD, Cukurova Jenerator A.S. constructed its new facility in the Izmir Aegean Free Zone which is located on a 33,500 m² site with an area of which 10,600 m² is allocated for assembling operations. The production capacity has been planned to be 5000 units annually for the product range including 15-2250 kVA indoor/outdoor diesel generator sets with 50 Hz/60 Hz frequencies with standard 380 V-415 V and alternative voltages available depending on the application.



Cukurova Jenerator A.S. designs, manufactures and installs environmentally friendly solutions for residential, commercial and industrial uses. It offers technology-based innovative solutions reaching beyond the specifications and expectations of its customers. The Company's production line supplies the need for emergency and continuous use of generators. The standard Cukurova diesel generators ranging between 15-2250 kVA for instance, are designed for more than 2,000 different customised applications in construction, agriculture, general industry, telecommunication and defense sectors as well as other miscellaneous market sectors with provisions of the mass production.



customisation

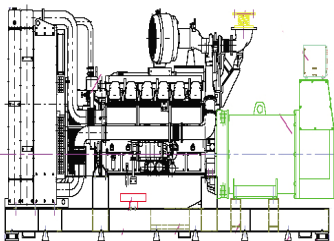


As Our Customers operate around the world we're always facing a wide variety of environmental conditions and customer specifications. Although having high quality & performance but not being necessarily adequate, our core products are mostly customised with alternative improvements beyond the expectations since it's now the only way to achieve long term customer satisfaction.

For a long time the identity of Customer needs and specifications always outweigh our standard core product provisions. This necessitated us to modify our Quality Management System with respect to the terms of Personalized Marketing which is an extreme form of Product Differentiation. Today Cukurova's Verification & Validation processes are checking core products, services or systems to meet particular customer specifications and all are supported by our Relational Database Management System or simply as we say ORACLE system.

Today's interactive technologies allow our customers to communicate with our design and engineering teams at all stages of product and project's development. This consistency, assigning the Customer as a dedicated project team member, provides us long-term strong relationship. Cukurova's capacity is not limited to solid facilities, buildings and production areas, since versatile engineering is to be the complementary and indispensable part of this term.

design



The whole members of Cukurova team works in harmonious integration to meet the Customers' quality and performance expectations. Design engineers are dedicated to originate and develop functional, stylish and cost effective versatile solutions In order to handle every requirements of the project, highly experienced CAD designers start with a thorough understanding the project and are organized to get the optimum solution on budget.

Identifying the need, creating alternative solutions and presenting the ultimate outcome; system, product or service, is not only their duty but also their great pleasure every time. Thorough this process, the communication with the Customer is very important to identify the needs comprehensively for the ultimate solution and sometimes surprisingly since in return they exceed limits of the expectations.

Cukurova is committed to be pioneer in power generation bearing responsibility of its strong brand name with its every single genius design. Project management team ensures that design is not only the outward appearance of the genset but also the reflection of power. Cukurova means the culture for seamless solutions with sophisticated, advanced and to-day design features to ensure safety and ease of the Customer.





Offering customizable solutions and going beyond the expectations requires highly specialised engineering teams in power generation market. Cukurova engineering team prove their capability and technical know-how by applying the most challenging projects successfully. They take pride in engineering innovative and cost-efficient generation systems that powering many facilities all over the globe with no borders. They cooperate in all aspects of the projects with the Customer, analyze the systems and gather specifications with robust data structures to gain the ultimate solution.

The differentiation for Cukurova from the competition list appears with their engineering creating and executing an interdisciplinary process to ensure that the Customer needs are satisfied in a high quality, trustworthy, cost efficient and schedule compliant manner throughout a systems's entire life cycle, from development to operation disposal. This non-sequential process consists of comprehensive tasks;

- state the problem
- investigate alternatives
- model the customised outcome (system, product, service)
- integrate
- launch the outcome
- assess performance
- re-evaluate

which are being performed in parallel with our QA system's Verification & Validation processes all in Oracle: Relational Database Management System. Cukurova's engineering is a robust approach to the design, creation, and operation which consists of identification and quantification of the outcome goals, creation alternative design concepts, performance of design, selection and implementation of the best design, verification that the design is properly built and integrated, and post-implementation assessment of how well the outcome meets the goals.

Cukurova's development process requires contribution from diverse technical disciplines

- configuration management
- control engineering
- industrial engineering
- interface design
- operations research
- reliability engineering
- performance engineering
- safety engineering
- security engineering
- software engineering

into a unified team effort, forming a structured development that proceeds from concept to production to operation and, in some cases, through to termination and disposal.

From project inception to solution to installation to test&inspection to follow up, Cukurova engineering team is committed to carry the Customers' demands a step further.

production



The challenge of Cukurova's production is to meet individual customer demands while remaining competitive by producing on an industrial scale. Our customized production offers prospects for growth and employment. To achieve utmost flexible quality production and efficiency, this challenge is supported with new technologies and highly qualified, carefully selected, dedicated employees. As a result, our customers know that they can heavily rely on the quality of our products at all points with also reference of our proven reliable, versatile, high performed systems powering many kind of facilities all around the world. Cukurova develops flexible production techniques for efficient customized production to outweigh the identity of Customer needs and specifications always.

We have a close control of every aspect of production because everything is designed and manufactured by our people and our dependable, leading business partners. Cukurova assembling philosophy is a comprehensive approach to integrate world's well-known manufacturer's as one.

Cukurova invest in the most important asset of the company, to its employees because we are aware that building an efficient and satisfied team is as important as building a high-technology and performed production facility. We provide high quality working environment to our employees to keep their motivation and pleasure for increased efficiency and company loyalty. There are, of course a number of reason for our success but we always believe the main importance is to maintain the social interaction with our employees.

Cukurova maintains and continually improves the internationally recognised quality standard at all its manufacturing premises. An integrated operating system tracks every element of the business, from the initial design and engineering, through work-in-process to order of raw material, delivery of the good at the promised time up until all the interactions with our customers to ensure the consistency of customer satisfaction.

Necessitating us to modify our Quality Management System with respect to the terms of Personalized Marketing which is an extreme form of Product Differentiation. Today Cukurova's Verification & Validation processes are checking core products, services or systems to meet particular customer specifications and all are supported by our Relational Database Management System or simply as we say ORACLE system.



quality management system



Cukurova Power Generation , being innovative part of our Cukurova Group, manufactures high performance customised power systems and provides ultimate services for during life-cycle of their products with low cost availability for Customers' operations worldwide.

Cukurova Power Generation, CPG, has adopted the 'process approach' in implementing the Quality Management System whose key applications summarised below will be powered by Oracle Enterprise Content Management System starting from 2010.

- Policies and procedures
- ISO 9001 documentation management
- Material safety and data sheet management
- Contract and case management
- Creation and distribution management of large manuals and training information
- Intranet consolidation
- Call center and self-help
- Customer support sites
- Marketing asset and brand management
- Partner/dealer extranets

CPG business planning process consists embedded 4 layers with multi-dimensional structure ensuring the organisation to have sufficient resources available to enable CPG to achieve its business and quality objectives and enhance customer satisfaction by including, as part of the OBP, capital resource plans as well as plans for acquisition and training of human resources.

Our plans typically include product, process, and manufacturing roadmaps and performance plans, contingency plans, quality and continual improvement objectives, information on customer requirements and financial plans.

Successive levels of management then set goals and objectives for their organizations in an iterative process with the operating units presenting their plans to management. The plans are shared with other organizations for feedback and alignment.

Quality Planning is integrated to our business processes, and is used in business planning, product and process development, process management, acquisition of process equipment, and in the design and construction of new facilities. Each organization will provide and maintain the infrastructure necessary to achieve conformity to product requirements.

The topics of our Quality Manual are listed below and can be reviewed upon request.

- Quality system documentation
- Quality policy
- Management responsibilities
- Organization
- Business planning
- Management review
- Review of customer requirements
- Purchasing and supplier management
- Quality planning
- Product development
- Manufacturing process development
- Change management
- Process management
- Inspection, measurement & test
- Product identification and traceability
- Corrective and preventive action
- Document and data control
- Quality records
- Assessments
- Training

documentation



From simple text documents to highly complicated engineering designs Cukurova PG System's professional and user-friendly documentation solutions are available for its customers with the ultimate functionality in different document types and file formats to explain the merged capabilities and specifications of power system.

The customer needs are always unique and enhanced solutions should be designed for the peculiarities exceeding the standard product to satisfy them. Documentation is part of this job to ensure presenting the ultimate outcome; system, product or service is correctly applied where they are used.

Documentation is the interface to explain the merged capabilities of power system inside out to its customers for operation and maintenance. Dimensional product drawings, electrical system wiring drawings, function-load test reports, technical spec sheets, user and maintenance manuals and quality documents are prepared according to the requirements of specifications and site conditions. In case of any amendment is needed for the specifications or for site conditions the related immediate and optimum solution is studied and reflected to the system and documentation.

The documentation is designed by our application experts to assist various user profiles of the system, from daily operator to installation and project designers, at every stage of the operations and application to gain the ultimate benefit from the system. The complete, dependable, user-friendly, honest and up to date information is provided with an index for easy and effective accessibility to the required information.

The customer requires documentation for everything it will need to operate and maintain; not only for daily simple operation but also created to meet long-term needs of the system lifetime. Professional documentation provides efficiency, saves time, limits installation costs and the most importantly leads the success of the power system operation.

Just a few years ago, we decided to relieve our business from paper-based and digital content as they generate large quantities of business documents, such as customer profiles, purchase orders, forms, scanned invoices and contracts. Cukurova has chosen Content Management solution which allows organizations to create, effectively capture all types of digital and paper-based content, -documents can be imported quickly from a great variety of applications -Microsoft Office, AutoCAD, scanned documents and documents from e-mail systems are a few examples-, reliably archive content in a centralized system, keep all versions of a document in the right sequence, indexing for search, manage, cleanse and distribute content to individuals in the appropriate format, and preserve or dispose of content to control the content lifecycle. Supporting the entire content lifecycle by applying the appropriate amount of control and adding additional features support for users during each life cycle phase allows us to manage our operations efficiently.



service&spare parts



As being a power generation company, Cukurova is well aware of its responsibility for after sales services and spare parts. We are always in customers' service together with our locators, to find the solution immediately. We both offer complete equipment management solutions and supply for the total support the Customer needs, for maximum efficiency and performance. After sales service provides professional maintenance, speedy repairs and supply of spare part.

Cukurova products are renowned for their dependability, quality and performance. This is based on excellent products and customer support.

Cukurova's approach for service and spare parts is straightforward. Cukurova exists to power your system with uninterrupted and problem-free power generation system. To this end, as being a responsible power generation company, Cukurova is aware that the basic importance in power generation market is at after sales services. Cukurova is not with Customer only during the sales process but their honest business approach is delivered to all customers after sales as well. Cukurova business run on the principles of a set of values and policies that guide our behaviour for customer satisfaction.

working conditions



+50°C

Cukurova diesel generator sets are designed to operate in ambient temperature up to +50degC. Tropical type cooling systems are mounted to the engines to obtain reliable operation at heavy conditions such as desert lands.



-35°C

Our products are also compatible for cold weather ambient temperature down to minus 35degC. Auxiliary heating equipment such as alternator anticondensation heaters, fuel heaters are used in production process.



@3500m absl

All our products are designed to operate up to 3500m above sea level.



configurable core products



Cukurova assembling line has comprehensive product range in 2 groups with; PN-PC and VN-VL series’ providing one-source responsibility and low life-cycle costs for the generating systems.

Cukurova, assigns its business partners with utmost care and diligence with its experience and technical know-how. Prime mover engines and alternators are supplied from the worldwide leading manufacturers.

The ready to run sets are factory-built, production tested and complies with the relevant requirements of the standards.

The assembled gensets are the core of our power systems that should deliver dependable power to a wide range of output requirements.

	PN_series	PC_series	VN_series	VL_series
<i>no of models</i>	27	12	16	20
<i>stby range</i>	15-2250kVA	15-275kVA	90-700kVA	90-700kVA
<i>engine</i>	Perkins	Perkins	Volvo	Volvo
<i>alternator</i>	Stamford	MeccAlte	Stamford	Leroy Somer



PN-PC series with Perkins engines

For about 20 years Cukurova have manufactured P-series, Perkins driven sets ranging between 15-2250kVA, with the highest levels of performance and reliability. The engine manufacturer's global distributors&dealers network has always kept the parts and support close to our customers in cooperation with us which played major role in P-series achievements throughout the world. For our genset applications Perkins has a comprehensive range of Elektropak™ specifications complete and ready to run. We trust in their dedicated production volume, more than 90,000 diesel and gas engines specifically for electrical power generation.

PN_series

Gen. Model	Engine Brand & Model	Alternator Brand & Model		cont.baseload	prime	Standby
				kVA	kVA	kVA
CUKUROVA CJ15PN	Perkins 403D-15G	Stamford	BCI164C	NA	12	13
CUKUROVA CJ22PN	Perkins 404D-22G	Stamford	BCI184E	NA	19	21
CUKUROVA CJ33PN	Perkins 1103A-33G	Stamford	BCI184G	NA	30	33
CUKUROVA CJ50PN	Perkins 1103A-33TG1	Stamford	UCI224D	NA	46	50
CUKUROVA CJ70PN	Perkins 1104A-44TG1	Stamford	UCI224F	NA	66	72
CUKUROVA CJ90PN	Perkins 1104A-44TG2	Stamford	UCI224G	NA	81	89
CUKUROVA CJ110PN	Perkins 1104C-44TAG2	Stamford	UCI274C	NA	100	110
CUKUROVA CJ150PN	Perkins 1006TAG	Stamford	UCI274E	NA	139	150
CUKUROVA CJ165PN	Perkins 1006TAG2	Stamford	UCI274F	NA	149	165
CUKUROVA CJ200PN	Perkins 1106C-E66TAG4	Stamford	UCI274G	NA	180	194
CUKUROVA CJ250PN	Perkins 1306C-E87TAG4	Stamford	UCDI274J	208	229	250
CUKUROVA CJ275PN	Perkins 1306C-E87TAG6	Stamford	UCDI274K	230	250	275
CUKUROVA CJ400PN	Perkins 2206C-E13TAG2	Stamford	HCI444E	281	350	400
CUKUROVA CJ450PN	Perkins 2206C-E13TAG3	Stamford	HCI444F	306	400	450
CUKUROVA CJ500PN	Perkins 2506A-E15TAG1	Stamford	HCI544C	358	464	508
CUKUROVA CJ550PN	Perkins 2506A-E15TAG2	Stamford	HCI544D	412	513	562
CUKUROVA CJ670PN	Perkins 2806A-E18TAG1A	Stamford	HCI544E	465	610	665
CUKUROVA CJ720PN	Perkins 2806A-E18TAG2	Stamford	HCI544F	518	670	720
CUKUROVA CJ800PN	Perkins 4006-23TAG2A	Stamford	HCI634G	587	732	807
CUKUROVA CJ900PN	Perkins 4006-23TAG3A	Stamford	HCI634H	646	811	904
CUKUROVA CJ1100PN	Perkins 4008TAG2A	Stamford	HCI634J	812	1024	1110
CUKUROVA CJ1400PN	Perkins 4012-46TWG2A	Stamford	PI734B	995	1258	1385
CUKUROVA CJ1500PN	Perkins 4012-46TWG3A	Stamford	PI734B	1084	1364	1500
CUKUROVA CJ1650PN	Perkins 4012-46TAG2A	Stamford	PI734C	1203	1511	1658
CUKUROVA CJ1900PN	Perkins 4012-46TAG3A	Stamford	PI734E	1441	1725	1893
CUKUROVA CJ2020PN	Perkins 4016TAG1A	Stamford	PI734E	1464	1844	2020
CUKUROVA CJ2250PN	Perkins 4016TAG2A	Stamford	PI734F	1638	2058	2250



PN-PC series with Perkins engines

PC_series

Gen. Model	Engine Brand & Model	Alternator Brand &		cont.baseload	prime	standby
		Model		kVA	kVA	kVA
CUKUROVA CJ15PC	Perkins 403D-15G	Mecc Alte	ECO 3-2LN/4	NA	13	14
CUKUROVA CJ22PC	Perkins 404D-22G	Mecc Alte	ECO 28-1LN/4	NA	20	22
CUKUROVA CJ33PC	Perkins 1103A-33G	Mecc Alte	ECO 28-VL/4	NA	30	32
CUKUROVA CJ50PC	Perkins 1103A-33TG1	Mecc Alte	ECO 32-1L/4	NA	46	51
CUKUROVA CJ70PC	Perkins 1104A-44TG1	Mecc Alte	ECO 32-3L/4	NA	66	73
CUKUROVA CJ90PC	Perkins 1104A-44TG2	Mecc Alte	ECP 34-1S/4	NA	82	90
CUKUROVA CJ110PC	Perkins 1006TG2A	Mecc Alte	ECP 34-2S/4	NA	105	115
CUKUROVA CJ150PC	Perkins 1006TAG	Mecc Alte	ECP 34-2L/4	NA	141	156
CUKUROVA CJ165PC	Perkins 1006TAG2	Mecc Alte	ECP 34-2L/4	NA	150	164
CUKUROVA CJ200PC	Perkins 1106C-E66TAG4	Mecc Alte	ECO38-1SN/4	NA	180	196
CUKUROVA CJ250PC	Perkins 1306C-E87TAG4	Mecc Alte	ECO38-3SN/4	209	225	250
CUKUROVA CJ275PC	Perkins 1306C-E87TAG6	Mecc Alte	ECO38-1LN/4	232	250	275

VN-VL series with Volvo engines

Volvo Penta has one of the strongest engine brands and the largest dealer networks with more than 5,000 dealers globally. Technical quality, reliability and worldwide support are the key factors why Cukurova has selected Volvo Penta engines for V-series' 90-700kVA generators for more than 10 years.

Volvo Penta's are well balanced to produce smooth and vibration-free operation with low noise level, featured with high torque. To maintain a controlled working temperature in cylinders and combustion chambers, the engine is equipped with piston cooling. The engine is also fitted with replaceable cylinder liners and valve seats/guides to ensure maximum durability and service life of the engine.



VN-VL series with Volvo engines

VN_series

Gen. Model		Engine Brand & Model		Alternator Brand &		cont.baseload	prime	standby
				Model		kVA	kVA	kVA
CUKUROVA	CJ90VN	Volvo	TAD530GE	Stamford	UCI224G	NA	83	91
CUKUROVA	CJ110VN	Volvo	TAD531GE	Stamford	UCI274C	NA	99	110
CUKUROVA	CJ150VN	Volvo	TAD532GE	Stamford	UCI274E	NA	128	143
CUKUROVA	CJ170VN	Volvo	TAD731GE	Stamford	UCI274F	NA	154	170
CUKUROVA	CJ200VN	Volvo	TAD732GE	Stamford	UCI274G	NA	182	200
CUKUROVA	CJ220VN	Volvo	TAD733GE	Stamford	UCI274H	NA	200	220
CUKUROVA	CJ275VN	Volvo	TAD734GE	Stamford	UCDI274K	NA	247	275
CUKUROVA	CJ300VN	Volvo	TAD940GE	Stamford	HCI444D	NA	281	309
CUKUROVA	CJ330VN	Volvo	TAD941GE	Stamford	HCI444D	NA	300	330
CUKUROVA	CJ350VN	Volvo	TAD941GE	Stamford	HCI444E	NA	328	360
CUKUROVA	CJ400VN	Volvo	TAD1241GE	Stamford	HCI444F	NA	377	412
CUKUROVA	CJ450VN	Volvo	TAD1242GE	Stamford	HCI444F	NA	400	450
CUKUROVA	CJ500VN	Volvo	TAD1640GE	Stamford	HCI544C	NA	460	504
CUKUROVA	CJ550VN	Volvo	TAD1641GE	Stamford	HCI544D	NA	507	556
CUKUROVA	CJ630VN	Volvo	TAD1642GE	Stamford	HCI544E	NA	575	633
CUKUROVA	CJ700VN	Volvo	TWD1643GE	Stamford	HCI544F	NA	637	705

VL_series

Gen. Model		Engine Brand & Model		Alternator Brand &		cont.baseload	prime	standby
				Model		kVA	kVA	kVA
CUKUROVA	CJ90VL	Volvo	TAD530GE	Leroy Somer	LSA 43.2 L8	NA	80	88
CUKUROVA	CJ90VL	Volvo	TAD530GE	Leroy Somer	LSA 44.2 VS3	NA	85	94
CUKUROVA	CJ110VL	Volvo	TAD531GE	Leroy Somer	LSA 44.2 VS45	NA	100	111
CUKUROVA	CJ150VL	Volvo	TAD532GE	Leroy Somer	LSA 44.2 S75	NA	128	142
CUKUROVA	CJ165VL	Volvo	TAD731GE	Leroy Somer	LSA 44.2 M95	NA	150	165
CUKUROVA	CJ165VL	Volvo	TAD731GE	Leroy Somer	LSA 44.2 L12	NA	154	171
CUKUROVA	CJ200VL	Volvo	TAD732GE	Leroy Somer	LSA 46.2 M3	NA	181	201
CUKUROVA	CJ220VL	Volvo	TAD733GE	Leroy Somer	LSA 46.2 M5	NA	200	223
CUKUROVA	CJ275VL	Volvo	TAD734GE	Leroy Somer	LSA 46.2 L6	NA	246	274
CUKUROVA	CJ300VL	Volvo	TAD940GE	Leroy Somer	LSA 46.2 L9	NA	280	300
CUKUROVA	CJ300VL	Volvo	TAD940GE	Leroy Somer	LSA 46.2 VL12	NA	283	312
CUKUROVA	CJ340VL	Volvo	TAD941GE	Leroy Somer	LSA 46.2 VL12	NA	315	341
CUKUROVA	CJ350VL	Volvo	TAD941GE	Leroy Somer	LSA 47.2 VS2	NA	328	360
CUKUROVA	CJ385VL	Volvo	TAD1342GE	Leroy Somer	LSA 47.2 VS2	NA	353	387
CUKUROVA	CJ400VL	Volvo	TAD1343GE	Leroy Somer	LSA 47.2 VS2	NA	379	414
CUKUROVA	CJ450VL	Volvo	TAD1344GE	Leroy Somer	LSA 47.2 S4	NA	410	450
CUKUROVA	CJ500VL	Volvo	TAD1345GE	Leroy Somer	LSA 47.2 S5	NA	455	500
CUKUROVA	CJ550VL	Volvo	TAD1641GE	Leroy Somer	LSA 47.2 M7	NA	500	558
CUKUROVA	CJ630VL	Volvo	TAD1642GE	Leroy Somer	LSA 47.2 L9	NA	573	632
CUKUROVA	CJ700VL	Volvo	TWD1643GE	Leroy Somer	LSA 49.1 S4	NA	629	698

standard features & equipments

- Diesel Engine – Industrial type
 - Cooling Radiator – Tropical type
 - Radiator Fan Cage
 - Starter Motor
 - Mechanical or electronic speed governor
 - Battery charging alternator
- Alternator – Brushless, Single Bearing,
 - Class H Insulation System
 - Automatic Voltage Regulator
- Automatic Control Panel
 - Digital automatic control module
 - Runhourmeter, emergency stop button
- Industrial type silencer
- Flexible Exhaust Connection
- Block water heater
- Lubrication oil drain valve
- Starter Battery – Lead Acid Type
- Heavy duty fabricated steel base frame
- Lifting points on the base frame
- Anti-vibration mountings
- Engine lubrication oil
- Antifreeze
- Replacable air, oil and fuel filters
- Documents supplied with each genset
 - Function and load test reports
 - Operating and maintenance manuals
 - Spare parts book
 - Electrical installation drawings
 - Room layout drawings



optional features & equipments

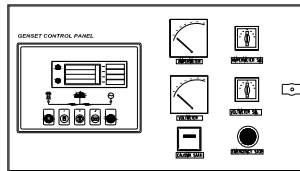
- Generator
 - Anti-condensation heater
 - Excitation System
 - Permanent Magnet Generator
 - Digital Voltage Regulator
- Enclosures
 - Weatherproof Enclosure
 - Sound attenuated enclosure
 - Container type enclosure
- Fuel tanks
 - External fuel tank
 - Sub-base fuel tank
 - Automatic and manual fuel transfer systems
 - Electronic fuel level indicator
- Residential type silencer
- Seismic vibration isolator
- Automatic load transfer panel
- Load distribution panel
- Protection circuit breaker
- Manual and fully automatic synchronization systems
- Remote monitoring and control
- Remote annunciator
- Static battery charger
- Air starter
- Remote radiator
- Heater
 - Battery heater
 - Coolant heater
 - Control and alternator space heaters
- Lube oil drain pump
- Circuit breakers
- Job-site trailer
- Step-up transformer
- Catalysts

power with no control...it's just danger.



PCS-i^{3S}

integration



Cukurova's power control systems are designed to achieve reliable, secure, efficient, user-friendly, cost-effective operation of the power generation systems.

Offering the optimum solution suiting perfectly to any system demand; for single or multiple uses, for standby, emergency or continuous applications with easy-to-use basic instrumentation, all necessary protection devices, indications of operational status, all are completely integrated to secure the operation. Each control system is customizable to the customer specifications for safe, secure and simple functionality.

Cukurova's Customers operate around the world and their demand for individually customised power products with particular project solutions have been increasing. Although the major components of our systems; engine, alternator, control module, etc. are mostly similar components of our projects, Cukurova's systems mainly differentiate from each other in the Control Design having vast varieties to meet our Customers' needs.

Unlike trying to manufacture basic components with one brand name, Cukurova has focused on comprehensive control design engineering with innovative solutions for the ultimate integration of components. These integrated components are the reputable products of world-wide well known manufacturers and this approach has set Cukurova design engineers free to select the most suitable component for a particular project design. Cukurova engineers have numerous alternatives with wide variety of the component specifications.

Unlike enforcing to fit the vast variety of customer needs to one brand's limited components provisions, Cukurova's Control Philosophy is to provide the ultimate power solution with the provisions of different components having low cost multi-source worldwide availability during the entire life-cycle.

Furthermore, unlike having one source's limited aftersales network, Cukurova integrates also the service teams of global component manufacturers with our supply contracts having strict commitments of them to act as a dedicated member of Cukurova team. Cukurova Power Control Systems enable Cukurova Customer to have low cost uninterrupted availability of parts and services worldwide.

Our Customers in the extremes of location have to ensure the health and safety of employees and other people affected by their business activities. Today new regulations' complexity is increasing and Cukurova consistently implements safety technologies in Power Control systems. With improved diagnostics this offers reduced downtimes and thus increased system availability which are vital for embedded profitability of our Customer's facilities.

The latest developments of information and communications technologies and the expansion of global networks have made the data exchange between the systems as much as between people. Unlike on-site aggregation of subsystems, Cukurova Power Control Systems; PCS-i^{3S}, integrates the customised product to the life in a simple, safe and secure manner by the use of latest information and communications technologies. Through modern communications technology, our Control Systems are melded into an integrated intelligent networking providing the Customer remote services and preventive maintenances as well.

CBC



Cukurova's basic control panels are designed to provide advanced automatic control of diesel sets, that include non-electronic and electronic engines.

The panel design provides also intelligent functionality giving the user advanced engine monitoring and protection features.

The microprocessor control allows accessing critical performance data to communicate with building managements systems.

The basic control panels have the capability to monitor:

- under speed,
- over speed,
- charge alternator failure,
- emergency stop,
- low oil pressure,
- high engine temperature,
- fail to start,
- fail to stop,
- loss of speed sensing signal,
- low fuel,
- over current,
- under/over generator frequency,
- under/over generator volts
- low/high DC
- battery volts.

Engine faults are indicated via LED indicators, LCD displays and audible alarms. Upon detection the modules shut down the engine, only allowing a re-start once the fault condition has been removed.

FEATURES

- Automatic start
- Automatic load transfer
- Automatic mains failure
- Electronic engine connection
- RS232 & RS485 remote communications
- Modbus RTU
- Analogue inputs
- Audible alarm indication
- Back-lit character & 4-line text LCD display
- Configurable alarms & timers
- Configurable auxiliary inputs
- Digital inputs
- Emergency stop functions
- Engine history event log
- Engine exercise mode
- Engine parameter warning
- Engine protection
- Front panel mounting
- Front panel programming
- Full engine diagnostics
- Generator operating status warning
- Hid till lit alarm icons
- LCD alarm indication
- LED alarm indication
- Manual start
- Multiple language options
- PC configurable
- PIN protected programming
- Power save mode
- Remote monitoring
- SMS messaging



CSP



Cukurova's Synchronisation Systems are designed and developed to meet complex power system requirements with simple and flexible operational performance.

The use of new technology controllers for both single and multiple gen-sets operating in standby or parallel modes with various HW modifications allow the Customer to select the optimum type for a particular application.

Built-in synchronizer and digital isochronous load sharer offer total integrated solution for gen-sets in standby, island parallel or mains parallel with native cooperation of up to 32 gen-sets.

Powerful graphic display with user-friendly control allows even new users to find quickly the required information.

Integrated fixed and configurable protections;

- 3 phase integrated generator protections (U + f)
- IDMT overcurrent + Shortcurrent protection
- Overload protection
- Reverse power protection
- Earth fault protection
- 3 phase integrated mains protections (U + f)
- Vector shift protection
- All binary/analogue inputs free configurable for various protection types:
 - HistRecOnly
 - Alarm Only
 - Warning
 - Off load
 - Slow stop
 - BreakerOpen&Cooldown
 - Shutdown
 - Mains protect
 - Sensor fail
- Additional 160 programmable protections configurable for any measured value to create customer-specific protections

Features

- Support of engines with ECU (J1939, ModBus and other proprietary interfaces); alarm codes displayed in text form
- AMF function
- Automatic synchronizing and power control (via speed governor or ECU)
- Baseload, Import/Export
- Peak shaving
- Voltage and PF control (AVR)
- Generator measurement: U, I, Hz, kW, kVAr, kVA, PF, kWh, kVAhr
- Mains measurement: U, I, Hz, kW, kVAr, PF
- Inputs and outputs configurable for various customer needs
- RS232/RS485 interface with ModBus support; Analog/GSM/ISDN/CDMA modem support; SMS messages; ECU ModBus interface
- Event-based history (up to 500 records) with customer-selectable list of stored values; RTC; statistic values
- Integrated PLC programmable functions
- Interface to remote display unit (IG-Display)

Standby system with soft return remote supervision via internet

Comap IntelliSys NT®

with

- 1× IG-NT
- 1× IG-AVRi + IG-AVRi-TRANS/LV
- 1× IG-IB

- Stand-by emergency genset accomplishes power supply to essential load during power drop.
- Controller automatically starts the genset in case of mains failure and switches load to generator. When mains returns, it synchronizes the generator back, softly unloads it and stops the engine.
- Generator automatically synchronizes to mains in Test mode. Test mode can be used to check the genset condition and to provide uninterrupted power supply in case of expected mains failure.
- Status of the genset is displayed in the distribution point.
- Service contractor connected via Internet and IntelliSupervisor PC software has complete information on status and performance of gensets. Each important alarm immediately pops-up on PC screen.
- IntelliSupervisor is used for supervision of complete fleet of gensets located on many sites.
- History file with performance log stored in IG-EE allows easy backtracking and problem solving.
- Seamless communication with engine's electronic injection control unit, all important values and alarms are visible on screen of IntelliGen and stored to the history file in plain language.

Multiple gensets in parallel to grid remote monitoring and supervision via internet

Comap IntelliSys NT®

with

- 3× IG-NT + IGS-NT-LSM+PMS dongle
- 3× IG-AVRi + IG-AVRi-TRANS/LV
- 1× IM-NT
- 1× IG-IB + IG-IB3 dongle

- Fully automatic system reduces electric energy bill by keeping the mains power below high tariff level during peak hours.
- At the same time it accomplishes emergency standby power in case of mains failure.
- Remote control and monitoring uses available factory LAN for connection between a Power house and a Control room.
- Service contractor connected via Internet and IntelliSupervisor PC software has complete information on status and performance of gensets. Each important alarm immediately pops-up on PC screen.
- IntelliSupervisor is used for supervision of complete fleet of gensets located on many sites.
- Wide range of engine and generator protections, including vector-shift protection.
- Automatic forward and reverse synchronisation with soft load ramp-up and ramp-down during changeover.
- Active and reactive load Import/export control and load-sharing.
- Automatic optimization of number of running sets according to loadPeak loping controlled by built in Scheduler, engines automatically run during peak period.
- Automatic equalization of running hours of particular engines
- History file with performance log stored in IG-NT allows easy backtracking and problem solving.



Complex installations multiple grids

Comap IntelliSys NT®

with

- 4× IS-NT + IGS-NT-LSM+PMS dongle
- 4× IG-AVRi + IG-AVRi-TRANS/LV
- 3× IM-NT
- 1× IG-IB + IG-IB7 dongle

- Automatic optimization of number of running sets according to loadPeak loping controlled by built in Scheduler, engines automatically run during peak period.
- Essential load is fed by two mains feeders during normal operation to accomplish maximum reliability of the power delivery. Bus-tie breaker (BTB) is closed.
- Complex switching algorithm running in external PLC defines which breakers are opened and with are closed in dependence on availability of two mains and gensets.
- Reverse synchronizing on both feeders and on bus-tie breaker is accomplished by 3 InteliMainsNT modules controlled by external PLC.
- Active and reactive load-sharing can operate in two modes:
 - Sharing the load between all running gensets – if BTB is closed
 - Sharing the load in two independent groups – if BTB is opened
- Automatic power dependant start/stop can operate in two modes as well:
 - Running on all gensets – if BTB is closed
 - Running in two independent groups – if BTB is opened
- All controllers are interconnected by one CAN bus all the time, disregarded if BTB is closed or open, no need for relays reconnecting the CAN bus.
- Complete system is remotely controlled and supervised from Control room connected via company LAN and IG-IB to all controllers.

transfer panels



Cukurova Transfer Switches are an integral part of our power control and management systems for which we can offer a broad range of products from 40A through 4000A.

Whatever the customer needs are; for emergency, prime power or load-management applications, Cukurova project engineers are dedicated to design the most suitable power transfer system with safety integrated solution.

Cukurova project engineers' incorporation with the service engineers provides our project teams to have a life-cycle performance knowledge of their designs whether it is standart or customised power transfer app This enables them to update their experiences and adopt themselves to the fast changing, diverse customer needs all over the world.

CPC

sound attenuated enclosures&containers



Cukurova designs, manufactures sound attenuated weatherproof enclosures and containers; Cukurova Power Cages. The Power Cages are to protect generator systems against adverse weather conditions, extreme dust and temperatures, unwanted entries for the safety and security equipment, Customer's operation and people interface.

Having standard Power Cages suiting enormous variety of customer needs, Cukurova is also capable of manufacturing individually designed units meeting our customer's particular needs for noise control, safety and environmental protection.

The power generators are large, noisy and complex machines that requires special care where they are sited. Our enclosed power systems; Power Cages are manufactured 'ready to connect' in order to ease and speed up site installation and commissioning. This eventually reduces costs even in remote parts of the world where installation equipment, material and specialists are mostly limited and costly.

We supply factory tested complete packaged Power Cages with high standards complying with complex and costly safety and environmental regulations of very critical rural areas where these strict environmental and safety requirements limits our customers operations and make costly.

- Fully safety integrated robust design protecting complete system against excessive vibration and risk of fire
- 1.5mm to 3mm steel body preformed into sections and welded to form a rigid structure
- Provision of aspiration and cooling air flow via fixed sound treated weather louvres
- Acoustic 50mm resin-bonded mineral fibre faced with galvanised perforated steel or galvanised steel mesh applied all inside walls, doors and roof.
- Provision of acoustic splitters and baffles to comply with strict environmental and H&S regulations
- Provision of wide variety of customized design applications not limited to; gravity flap lovvres, bird mesh, sand trap lovvres, filtration, AC/DC lighting, fire detection/protection system, filtration, needs of extreme cold/heavy fall environmental conditions
- enclosed or top mounted critical type silencer with complete heat insulation
- access via hinged, removable doors at 2 sides for easy maintenance, service and operation of the complete system
- lockable, flush mounted door latches
- cambered roof design preventing water accumulation
- available with skid mounted leak tested daily fuel tanks

exhaust silencers

- **Commercial**
- **Industrial**
- **Semi Residential**
- **Residential**
- **Super Critical**

incorporated with

- **Spark Arrestor**
- **Catalyst**

Dedicating to provide reliable and efficient power systems incorporated with our commitment to minimise environmental impact necessitates a comprehensive mechanical design to reduce emissions. Also our Customers' demand to the systems complying with emissions regulations is increasing and their related specifications include more strict requirements which are influenced by the legislation.

Whatever the brand and size of the diesel engine that we select for our systems's application duty;standby, prime, continuous, all internal combustion engines produce noise and pollutants having impact on environment during its operation.

We use fuel efficient, clean, high technology diesel engines in our power system design and it is complemented with our engineering to design or to select correct type of silencer with optimum specifications; meeting or exceeding environmental needs of the project while keeping the investment and operation costs minimum.

We provide broad range of Exhaust Silencers manufactured with reactive, absorptive principles which can also be incorporated with Spark Arrestors and Catalysts. Besides having standart product avaiability with high quality, we can offer customised silencers manufactured individually for particular needs.

Depending on the need for attenuation level, our silencers are classified into following categories;

- Commercial
- Industrial
- Semi Residential
- Residential
- Super Critical

which can be incorporated with Spark Arrestor and Catalyst.

Depending on the site conditions we can adopt inlet/outlet positions, provide heat absorptive packing, etc. to speed the installation and to reduce cost while keeping the peformance of diesel engine at maximum level.

All our silencers are welded design, sturdily contructed in carbon steel sheet and plates, painted externally with high heat black paint to ensure a longer service life, and can installed horisontally or vertically. The optional features; dual inlets/ outlets, inspection openings, mounting brackects, support gussets, lifting lugs, special material of construction; aluminized steel or stainless steel are available with our engineering team's free of charge consultancy services.

CUKUROVA

PowerGeneration



CUKUROVA JENERATOR SANAYII TICARET A.S.

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