



Durali System Design & Automation Co.

Reliable Partner in R&D

May2019



DSDA

DURALI SYSTEM DESIGN & AUTOMATION Co.,



"Most of projects done by DSDA have been executed for the first time in Iran (or even in the World). The products presented here show only a parts of capacities and capabilities of our resources."

One of the important achievements of DSDA is "Coaching and Flourishing young Elite Talents of Sharif University of Technology".

DSDA



Brief Introduction

'Durali System Design & Automation Company' has been established to meet engineering and Innovative needs of its clients.

DSDA has been shaped to improve design, performance, automation level and technology of industrial machinery and systems under management of "Dr. Mohammad Durali" (professor of "Sharif University of Technology").

DSDA utilize its capabilities of local and overseas commercial connections together with the cooperation of young graduates of "Sharif University of Technology" and a group of qualified manufacturers to provide special and innovative system/equipment to satisfy industrial needs of its clients.

DSDA started its activities as "Creativity Workshop" in "Sharif University of Technology" 25 years ago and continued as "Durali System Design & Automation Center" in "Sharif Technology Services Complex" since 2010. Continuing growth of DSDA Center lead to the birth of DSDA Company as a "Knowledge Enterprise" at "Sharif Science & Technology Park" in 2016.

Mission

- To understand the needs of the Clients;
- Providing Innovative and Non-conventional Solutions for Design, Manufacturing and supply, Commissioning and Delivery of Final Product;
- Commercializing Innovative Ideas by utilizing State of the Art Technology;
- Intensifying Accuracy & Precision, Quality and Competitiveness of final Product;
- Making Value in meeting needs of Local industry;
- Localizing updated Knowledge and Technology;
- Being Active in International Market;
- Working with the best Enthusiast and Elite Talents;
- Continuing Services through responsive after sale service.



• **CEO & Owner**
Dr. Mohammad Durali

- PhD: MIT (1980), MSc: MIT (1976), BSc: Sharif University of Technology (1975)
- 38 years of academic Experience;
- 58 years of Industrial Experience;
- Executed more than 50 large scale Design and Automation Projects;
- More than 100 Articles in Mechanical Engineering;
- Consulted in more than 40 industrial projects;
- Delivered advises to several industry for executing Innovative Idea.

Engineering and Technical Consultancy and Services

DSDA is capable of finding solutions for technical problems of the customers based on its acquired Knowledge and Experience.

Following project are samples of works done by this team to meet technical requirement of the Clients:

- Presenting solution and measurement of efficiency of Shahid Rajaei Hydro Power Plant;
- Quality Evaluation and remaining Life calculation of Karun III Hydro Power Plant Installed Gearbox of Main Crane (4×150 tones);
- Preparing report on present situations and investment potentials of renewable Energy development in Iran;
- Design of "Burner Rig and coating life assessment laboratory for Gas Turbine Blades".
- Design of Spin Tester for testing disks of Large Gas Turbines;
- Design of Transportation lines of IKCO RD assembly line;
- Design of Irregular Sea Wave Generator for Flume and wave Pool; Systems;
- ...



DSDA

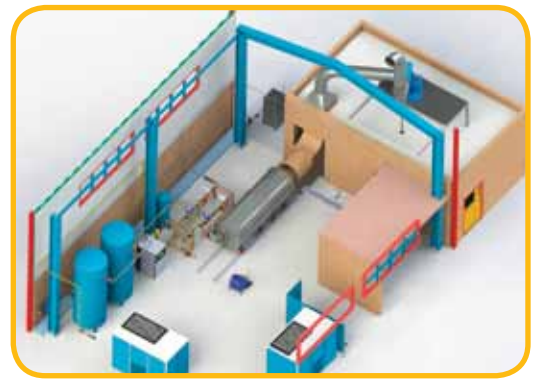
DURALI SYSTEM DESIGN & AUTOMATION CO.

**Total Solution
(Understanding the
needs to Innovative
Delivery of
Products)**

**Engineering
and Technical
Consultancy and
Services**



▶ Vibration Measurement & Monitoring Test



▶ Burner Rig's Layout Lab Design



▶ Design of Layout Spin Tester Lab

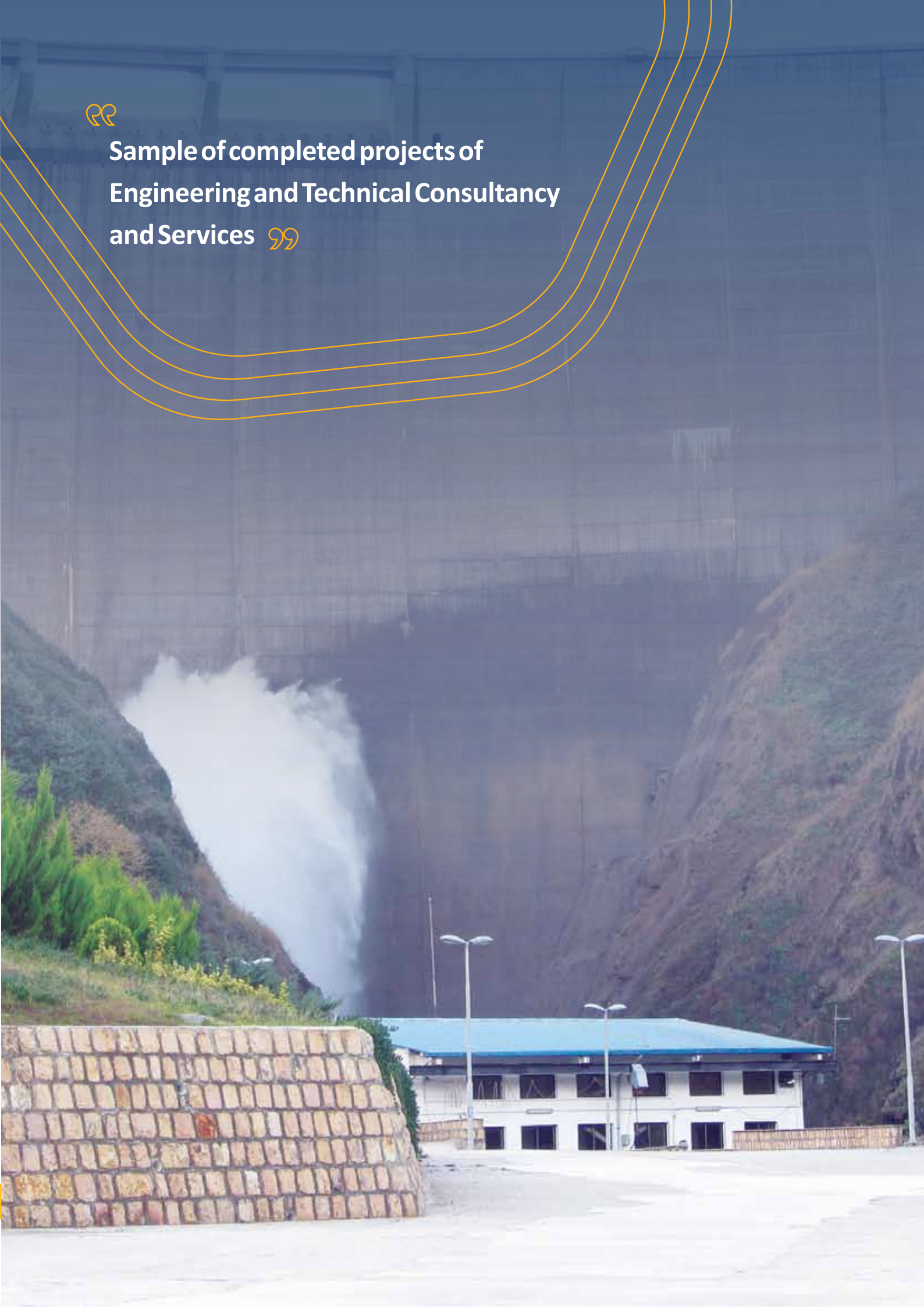


▶ Design of 10 megawatts of CODAD Gearbox

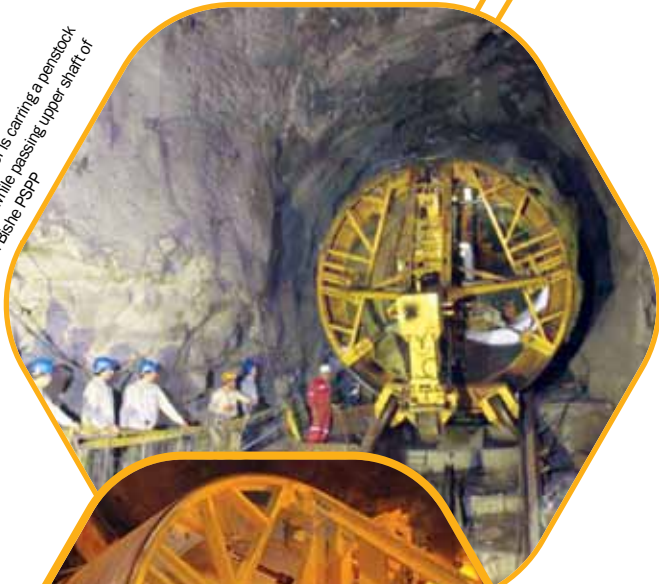
▶ Shahid Rajaei Dam & HEPP



**Sample of completed projects of
Engineering and Technical Consultancy
and Services** 



Segment Carrier is carrying a penstock segment while passing Upper Shaft of Siah Bishe Popp



Siah Bishe Popp segment carrier in on-loading Area

Uma Oya project, Sri Lanka Memorial photo with Employer at completion of work



Uma Oya project, some of erection Facilities above pressure shaft

● **Design & Supply of Erection System for Penstocks of Inclined Pressure Shaft of Siah Bishe Pump Storage Power Plant**

Siah Bishe PSPP has two inclined Pressure shafts with 500 meter length in its waterways. Erection of Steel Lining of the pressure Shafts was a key point and bottle neck activities of the project due to numerous execution difficulties (5m Diameter, inclination, Heavy weight of steel segments weight, required accuracy and...).

DSDA delivered Erection System that had a key role in decreasing erection time, reaching to high accuracy and quality (Delivered equipment are: Segment Carrier, Segment Erector, Erection and welding platforms and Elevator for logistic and manpower transportation).

● **Design and supplying erection system for steel linings of Pressure and Surge Shafts of UmaOya HPP Project**

Uma Oya project is a multipurpose development project (water transmission between two basins, generating electric Power and Flood Control) in Sri Lanka that is under execution by Farab Company. Waterways of this project contain a Pressure Shaft with rare height of 620m and a Surge Shaft of 140m height. Because of technical necessity (critical path of the project and safety of erection personnel against rock fall from shaft wall), design and supplying of Erection System was ordered to DSDA. An Innovative solution patented by DSDA that contrary to usual practice (transporting the segment from top to bottom and erection from bottom to top), the segment of steel lining are transported from bottom of shaft upward and are welded to each other while hanging to a saddle on top of the shaft.

During erection, all personnel are safely inside the steel lining protected from falling stones and water splash. The erection of this steel lining is done successfully in 2017 to 2018 within its time frame.

Total Solution (Understanding the needs to Innovative Delivery of Products)

(Design, construction, commissioning and delivery)

DSDA is Capable of complete execution of the following process:

- 1 "Understanding the needs of the Clients
- 2 Design of System/Equipment to meet the requirement
- 3 Execution of Supply and manufacturing of the System/Equipment
- 4 Commissioning
- 5 Delivery of the Final Product to the Clients"
- 6 after sales service

Sample of completed projects

• Design and Manufacturing of Hydraulic SynchroLifter 150t ton

This special purpose machine is used for lifting of heavy equipment vertically during on loading/offloading from trailers or bogies when required crane is not available. Light weight, low volume and easy to use are bold characteristics of this machine. This machines was ordered for offloading of Step Up Transformers and heavy Spherical Valves of Siah Bishe Pump Storage Power Plant.



Offloading On loading of GSU transformers of Siah Bishe PSpmp



Offloading On-loading of Spherical Valves of Siah bishe PSpmp

● Hydro Turbine

DSDA is designing and manufacturing hydro turbines since 2011 and has designed, manufactured and delivered micro hydro power plants in 3 types (axial, Pelton and Banki) including complete electrical and control equipment (generators, DCS, inlet valve and etc.) since 2011.

Based on the acquired knowledge and experience, DSDA is capable of design, manufacture, installation and commissioning of main equipment of hydro power plant (from water inlet to tailrace and substation) with Banki, Pelton, Francis and axial turbines in the capacity range of 10KW to 6000KW per unit.

Manufacturing of Pelton Runner



Ready to Execute Design with Pelton Turbines (up to 6 MW)



Monji Micro Turbine (Pelton 30KW)

Ghal-E-Chal Micro power plant Banki-Cross Flow-Turbine 50 kw



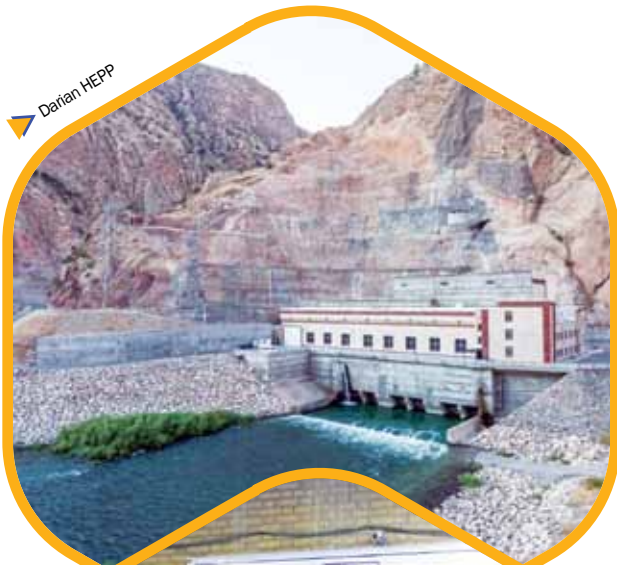
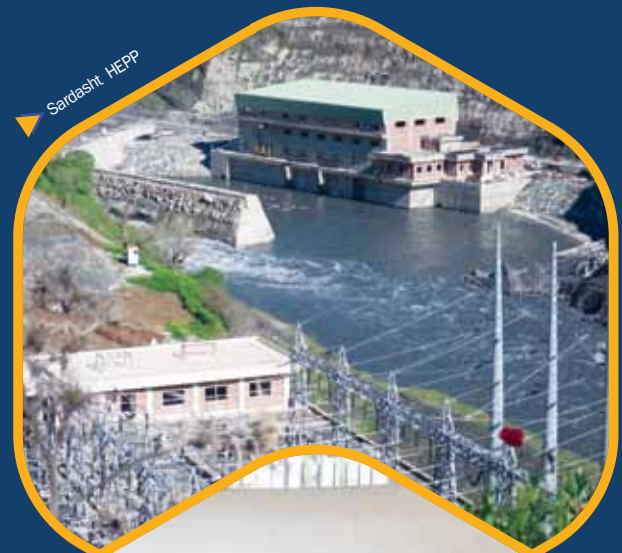
Ready to Execute Design of power plant with Banki (cross Flow) Turbines (up to 6 MW)

● Governor

DSDA started research on Governor System in 2009. Governors are one of sensitive and important parts of Hydro Power Plants that control turbine speed, load, and pressure fluctuation in waterways. First Governor was designed, manufactured, commissioned and delivered to Client on 2014 for Azad HEPP (10MW). Next Governor System delivered for Darian HEPP (210MW) and Sardasht HEPP (150MW). Governors of Azad HEPP and Darian HEPP have been successfully under operation.

The governors are capable of controlling several power plant operation modes like: Power Control, Control of Wicket Gate openings, Island Control, Water level and flow control.

The Governors are designed and delivered using of qualified instruments and control equipment and they meet all IEC and IEEE standards requirements.





- **Machinery for Performance stage**

In modern performance stage and theater Hall, special equipment and machinery are using to prepare more possibility for best imagination of what in mind of theater director. DSDA recently developed technology and knowledge of these equipment and machinery and received orders for execution of system of these equipment for performance halls in Iran. These equipment included Fly bars, rotating stage, lifters, lights bridge and similar machineries together their control systems.



▶ Arrangement of Acoustic Robots Under Roof of Performance Hall

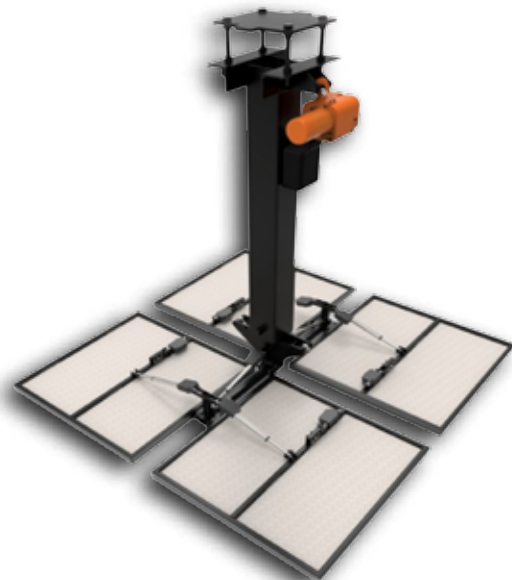
● Acoustic Robots (Saba Garden Performance Hall)

To achieve the best acoustic performance in variable layout Saba Performance Hall, Tehran Municipality ordered the design and manufacturing of acoustic equipment to be installed under the ceiling of the hall. This equipment changes the geometry of the ceiling by aid of robots having 4 large paddles capable of rotation around two axes and extending some 5m down from the ceiling. The surface porosity of

the paddles are variable, changing their acoustic properties from full reflective to full absorptive. Hence the required acoustic environment according to type of show in the hall (theatre, movie projection, live show, concert and etc.) is achieved. Sample of the robot has been fabricated and presented to the client. This system is an Innovative technology created by DSDA.



▶ Test operation of Acoustic Robot





- **Wave generator of Wave Pool of Azadegan Water Park**

Azadegan Water Park is first Aqua Park in Iran with all its equipment made in Iran. One of the main attractions of the aqua park is the Wave Pool that excitingly simulates sea waves for park visitors. Design, manufacturing and installation of its Wave Generators were ordered to DSDA on 1996. This project was executed and brought to operation in 9 months from a sheet of architectural drawing.

Other Projects:

In addition to aforementioned Projects, there are some other projects in service field of "Total Solution" that their names are introduced in following list;

- Implementing method for measuring of efficiency of Shahid Rajaee Hydro Power Plant;
- Design and Manufacturing of Recording and Alarming System for Bearings of Shahid Rajaee Hydro Power Plant;
- Larestan Observatory;
- Dezashib Observatory;
- Design and manufacturing of Cable Climber;
- ...



- **Design, Fabrication, Commissioning and Operation of Test Stand for Efficiency Measurement of Large Air Coolers (Radiators) of Hydro Generators**

Air Coolers in Hydro Power Plant Generators have extensive effect on their efficiency. In this regards according to request by FARAB Company, suitable Wind Tunnel for measuring thermodynamic data of the Air coolers was designed, Fabricated, Commissioned, delivered and Operated by DSDA.



- **6 DOF Simulator (Hexapod)**

One of recent product of DSDA is 6 DOF Stewart Simulator. DSDA designed a simulator with 3 ton capacity, 1m off board load mass center, top acceleration of $10m/s^2$ and 5Hz band width.

A sub-scale prototype was fabricated and assembled in 2018. Based on experience and capability of DSDA in design and supply of special systems and using qualified components, DSDA is able to design and fabricate simulators, electrical and electrohydraulic stabilizers and compensators based on Stewart Mechanism.

**'We are Pioneer
in innovative Services
and Products In Iran'**

**Unit 4, No. 33, Sadeghi St.,
Azadi Ave., Tehran, Iran**

Tel: +98-21-66059245

Fax: +98-21-66059627

info@dsdaco.com

<http://dsdaco.com>