

IN THE NAME OF ALLAH

Part Saze Engineering Company's Introduction (۲۰۱۵ First Edition)

Table of Contents

۱. Preface	۲
۲. PartSaze Engineering Company	۲
۲.۱ Introduction	۳
۲.۲ Faculty of Part Saze Company	۳
Reza Karami Mohammadi.....	۳
Ali Niousha.....	۶
Hadi Ghamari	۱۲
Hoseyn Karegar	۱۳
Hojjat Karegar	۱۳
۳. Services of Part Saze Company.....	۱۴
۳.۱ Control of Structures with Dampers	۱۴
۳.۲ Structural Health Monitoring (SHM).....	۱۶
۳.۳ Retrofit and Rehabilitation of Structures	۱۷
۳.۴ Design and Consultant Services.....	۱۷
۴. Some of Reference Projects of Part Saze Company.....	۱۷

۵. Some of Approvals and Certificates Achieved by Part Saze Company..... ۲۳

۱. Preface

Iran has great potential in industrial solutions. Therefore with proper utilization it can be expected promotion in these fields although it must be noted that inherent needs of development are updated sciences and technologies. According to the current political conditions there are strong motivations for investment in Iran industrial fields.



The **Technology and Science Institute (TSI)** established with contributing of masters and members of faculty of major universities and Scientifics in May ۲۰۱۲ with the purpose of making a good connection between technology and science and also developing and generating of new sciences.

The **TSI** with hopes to blessing of god always tries to keep these novel objectives and is hopeful to achieve significant quota in progress and promotion of Iran.

The **Part Saze Co.** as the first branch of **TSI** in structural engineering has been established and approved as an official knowledge-based company by the technology and science bureau of the presidential of Islamic Republic of Iran at September ۲۰۱۴.

۲. PartSaze Engineering Company

(www.partsazeco.com)



۲.۱ Introduction

Control of structures and Structural Health Monitoring (SHM) are the main fields of Part Saze Company activities. Part Saze Co. is an official knowledge based company verified by the technology and science bureau of the Presidential of Islamic republic of Iran. The experts who work in company are educated and experienced at control and SHM fields in best universities and companies inside I.R.Iran and all around the world.

۲.۲ Faculty of Part Saze Company

Reza Karami Mohammadi

Reza Karami Mohammadi

Chairman, Technical Director

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A- ۱) Some of Academic Particulars

- Post Ph.D., ۲۰۰۲, Earthquake Engineering, Carleton University, Canada, Research
Subject: Influence of using uniform hazard spectra (UHS) on bridges of Canada.
- Ph.D., ۲۰۰۱, Earthquake Engineering, Sharif University of Technology, Iran,
Dissertation Title: Influence of structural parameters distribution on vibrational damage reduction.
- Master, ۱۹۹۲, Earthquake Engineering, Sharif University of Technology, Iran,
Dissertation Title: Behavior evaluation of sabblebag type connection in earthquake.
- Bachelor of Civil Engineering, ۱۹۸۸, Sharif University of Technology.

- Research Course, ۲۰۰۱, Tokyo Institute of Technology (TIT), learning about solutions of earthquake treatments and earthquake laboratories and etc.
- Publishing two books, more than eleven journal papers and more than fourteen conference papers, for example:
 - R. Karami Mohammadi, “Approximate Evaluation of Deflection Amplification Factor”, *J. Str. Eng., ASCE* Vol. ۱۲۸, No.۲, February ۱, ۲۰۰۲.
 - H. Moghaddam, R. Karami Mohammadi, “Ductility Reduction Factor of MDOF Shear-Building Structures”, *Journal of Earthquake Engineering*, Vol. ۵, No. ۳, pp. ۴۲۵-۴۴۰, ۲۰۰۱.
 - R. Karami Mohammadi, M. H. El Naggar, and H. Moghaddam “Optimum strength distribution for seismic resistant shear-buildings”, *International Journal of Solids and Structures*, Vol. n, No. ۴۱, pp. ۶۵۹۷-۶۶۱۲, ۲۰۰۴.
 - H. Moghaddam, R. Karami Mohammadi, “More efficient seismic loading for MDOF Structures”, *J. Str. Eng., ASCE* Vol. ۱۳۲, No. ۱۰, October ۱, ۲۰۰۶.
 - R. Karami Mohammadi, V. Akrami, and F. Nikfar, “Dynamic properties of substation support structures”, *Journal of Constructional Steel Research*, Vol.۷۸, pp. ۱۷۳-۱۸۲, ۲۰۱۲.
 - R. Karami Mohammadi, F. Nikfar, and V. Akrami, “Estimation of Required Slack for Conductors Connecting Substation Equipment Subjected to Earthquake”, *IEEE Transactions On Power Delivery*, Vol. ۲۷, No. ۲, April ۲۰۱۲.
 - R. Karami Mohammadi, V. Akrami, and F. Nikfar, “An improvement to seismic design of substation support structures”, *Structural Engineering and Mechanics*, Vol. ۴۵, No. ۶, ۲۰۱۳.
 - R. Karami Mohammadi, M. H. El Naggar "Modifications on equivalent lateral force method", *11WCEE*, Vancouver, B.C., Canada, ۲۰۰۴.
 - R. Karami Mohammadi and D. T. Lau, “Utilizing uniform hazard spectra for seismic performance evaluation of Highway Bridges in Canada”, *11WCEE*, Vancouver, B.C., Canada, ۲۰۰۴.
 - R. Karami Mohammadi and H. Lahijanlian, “Development of Fragility Curves for Bridge before and after Retrofitting by FRP”, Accepted to be published in *The third Congress of the International Federation for Structural Concrete (fib)* in Washington DC, in conjunction with the Precast/Prestressed Concrete Institute (PCI) Convention and the National Bridge Conference, ۲۰۱۰.

- R. Karami Mohammadi, M. Amini, “More Efficient Shear Building Model of Eccentrically Braced Frames”, *Sixth International Conference of Seismology and Earthquake Engineering*, Tehran, Iran, ۲۰۱۱.
- Associate Professor in Khajeh Nasir -e- Toosi University of Technology and teaching the following subjects from ۲۰۰۳:
 - Control of Structures.
 - Random Vibrations.
 - Dynamics of Structures.
 - Structural Analysis.
 - Mechanics of Materials.
- Teaching experience on Sharif University of Technology, University of Science and Culture, BHRC, Islamic Azad University Shahrekord branch and Research and Science branch and etc.

A- ۲) Some of Career Details

- Director of retrofitting and rehabilitation of power plants, dispatching and power transmission facilities, Moshanir Company, ۲۰۰۵ – ۲۰۱۱.
- Consultant for retrofitting and rehabilitation of schools, Renovation, expansion and equipping of schools of IRI. ۲۰۰۷-۲۰۰۹.
- Technical expert for design and erection of prefabricated concrete structures at Tose -e- Khanesazi Company ۱۹۹۳-۱۹۹۴.
- High consultant and technical supervisor in several companies for example: Transportation research center of ministry of roads, housing and urban

development of IRI ۲۰۰۴-۲۰۰۷, Takhsis Pars company ۲۰۰۳-۲۰۰۷, Behmansaz -e- Sabz -e- Pars company ۲۰۰۷-۲۰۰۹, Yazd state electric power distribution company ۲۰۰۷ – now, Mahshahr petroleum company ۲۰۰۷-۲۰۰۸.

- Grade A. structural engineer, grade A. supervisor engineer and grade A. executive engineer at Tehran municipality ۱۹۹۶-now.



Ali Niousha

B- ۱) Some of Academic Particulars

- PhD, ۲۰۰۱, Structural/Earthquake Engineering, Tohoku University, Japan. Dissertation Title: Study on Ground and Structural Vibration Reduction using Periodic Wave Barriers, GPA: A.
- Master, ۱۹۹۸, Structural/Earthquake Engineering, Tohoku University, Japan. Dissertation Title: Ground Motion Variation and its Effects on Structural Response at Geologically Irregular Site, GPA: A.
- Bachelor of Civil Engineering, ۱۹۸۹, Tabriz University, Iran, ۱۶.۴۴/۲۰.
- Ranked Top ۳ at B.Sc., Tabriz University, ۱۹۸۹.
- Japanese Governmental scholarship (Monbukagakusho shogakukin), ۱۹۹۶-۲۰۰۱ (monthly ۱۸۵۰۰۰ yen+ full tuition).
- Ranked ۱st at Master degree, Tohoku University, ۱۹۹۸.
- Best paper selected at SEE۶, Tehran, Iran, ۲۰۱۱.
- Architecture Institute of Japan (AIJ), since ۱۹۹۷.
- Organization for Engineering Order of Building – Tehran, Iran, since ۱۹۹۳.
- Publishing more than twenty journal papers and more than twenty conference papers, for example:
 - A.Niousha and M.Motosaka, System Identification and Damage Assessment of an Existing Building before and after Retrofit, Journal of Structural Engineering, Japan, Vol. ۵۳B, ۲۰۰۷.
 - A.Niousha and M. Imai, Displacement measurement of adjacent super high-rise buildings using

GPS, AIJ Journal of Technology and Design, Japan, No. 24, pp. 77-82, 2006.

- Y. Naito and A. Niousha, Long-term estimation of nuclear reactor buildings stiffness based on the vibration characteristics, Journal of Electric Power Civil Engineering, Japan, Vol. 3, No. 316, pp. 107-109, 2000.
- Y. Sanada, A. Niousha, M. Maeda, T. Kabeyasawa, M.R. Ghayamghamian, Building damage around Bam seismological observatory following the Bam, Iran Earthquake of Dec. 26, 2003, Bulletin of the Earthquake Research Institute Univ. of Tokyo, Japan, Vol. 79 pp. 90-100, 2004.
- Y. Sanada, M. Maeda, A. Niousha, Reconnaissance report on building damage due to the 2003 Bam-Iran earthquake. Journal of Seismology and Earthquake Engineering, Iran, Special Issue on Bam Earthquake, Volume 6: No. 1 pp. 91-100, 2004.
- A. Niousha et al. – System identification of a nuclear reactor building under fixed based condition using measured data, AIJ Journal of Structural and Construction Engineering, Japan, No. 083, pp. 79-76, 2004.
- Y. Naito and A. Niousha, Analytical Study on system Identification of Fixed Base Transfer Function for an Embedded Reactor Building, AIJ Journal of Structural and Construction Engineering, Japan, No. 079 pp. 31-38, 2004.
- T. Hikita, Y. Naito and A. Niousha, Dynamic Characteristics Estimation of Building during Microtremors Considering Rocking Motion of the Base. AIJ Journal of Structural and Construction Engineering, Japan, No. 006, pp. 37-44, 2004.
- A. Niousha and M. Motosaka- Ground motion reduction by periodic wave barrier, Journal of Structural Engineering, Japan, Vol. 47B, pp. 237-242, 2001.
- A. Niousha, Masato Motosaka- Dynamic response characteristics of the actual building subjected to the incident waves generated from air gun impactor. AIJ Journal of Technology and Design, Japan, No. 12 pp. 47-52, 2001
- A. Niousha and Masato Motosaka- Analytical Investigation of Ground Motions Directivity Focused on Irregular Underground Structure. AIJ annual meeting, Japan, Paper No. 21134, pp. 267-268, 1998.
- A. Niousha et al.- Investigation on the Vertical Motion of Actual Structure for Earthquake Observation Records and Impactor Test, Tohoku Journal of Natural Disaster Science, Japan, No. 30, pp. 81-86, 1999.
- A. Niousha, T. Sugimoto and M. Motosaka- Investigation on the Dynamic Characteristics of nine-story SRC Building Subjected to the Incident Wave Generated for Land Air Gun Impactor, Tohoku Journal of Natural Disaster Science, Japan No. 36, pp. 07-12, 2000.
- M. Motosaka, A. Niousha, A. Somer, M. Nishiyama, K. Kosa- Ground Motion Characteristics and

Structural Damage during the 1999 Kocaeli Earthquake, Turkey with Focus on Ground Motion Directivity, Tohoku Journal of Natural Disaster Science, Japan, No.36. Pp.31-36, 2000.

- M.Motosaka, A.Niousha, M.Nishiyama-Ground motion directivity and structural damage based on 'Minaret' damage survey during the 1999 Kocaeli earthquake Turkey, AIJ annual meeting, Japan Paper No. 21019, pp. 37-38, 2000.
- Niousha et al. – Microtremor Measurements and Analysis of a High-rise Building along railroad Tracks. B2- pp.860-870, AIJ annual meeting, Japan, 2002.
- A.Niousha and Y. Naito, System Identification of Partly Embedded Reactor Building Under Fixed-Based Condition, Annual Report of Kajima Research Institute (No.01), 2003.
- A.Niousha et al. - Reconnaissance Report on Building Damage of the 2003 Bam, Iran, Earthquake, AIJ annual meeting, Japan, No. 21006-7, pp.1111-1114, Part2-3, 2004.
- Tachibana et al. – Forced vibration test of an ABWR nuclear reactor building. AIJ annual meeting, Japan (No. 21067 pp. 1133-1134, Part1), 2004.
- A.Niousha et al. System identification of a RC building with intentional damages, AIJ annual meeting, Japan, (No.21040 pp.79-80), 2004.
- Buildings seismic vulnerability assessment of Hamadan city using Rapid Visual Screening method, ANCEE, May 2014 (Accepted).
- Niousha, F. Sinaeian; Effect of underground explosion in oil field exploration on rural buildings, ISAV2013, Dec. 2013.
- A.Niousha, Evaluation of Frequency Response Functions of Structural System under Various Base Conditions, Fourth International Conference on Seismic Retrofit, Tabriz, Iran, May 2012.
- A.Niousha, Damage Detection of Actual Buildings Using Dynamically Measured Flexibility Method, Sixth International Conference on Seismology and Earthquake Engineering ,SEE6; Tehran, Iran, 2011, (Selected as a best paper).
- T. Kitaori, A.Niousha et al., Forced Vibration Test of Existing Stack Using High Performance Oil Dampers: (Part 1) Plan and Result of the Test, AIJ annual meeting, 1998.
- A.Niousha, Structural Damage Localization based on Dynamically Measured Flexibility Method, 11th meeting on earthquake-resistant structure, Sendai, Japan, 2004.
- A.Niousha et al., Dynamic Characteristics of a SC Building in Kashiwazaki NPP site using Vibration Test-Part 1: Data analysis and system identification. 19th International Conference on STRUCTURAL MECHANICS in REACTOR TECHNOLOGY, Toronto, Canada (K09-2), 2004.
- Y. Naito and A.Niousha, Analytical Study on System Identification of Fixed Base Transfer Functions for an Embedded Reactor Building. 14th International Conference on STRUCTURAL

MECHANICS in REACTOR TECHNOLOGY, Beijing, China (Paper No. K.0-ξ), ۲۰۰۰.

- A.Niousha et al., System Identification of a Nuclear Reactor Building Under Fixed Base Condition Using Measured Data, ۱۸th International Conference on STRUCTURAL MECHANICS in REACTOR TECHNOLOGY, (Paper No. K.۶-ξ), ۲۰۰۰.
- Onouchi et al., Forced Vibration Test of an ABWR Nuclear Reactor Building - Data Analysis and System Identification, ۱۸th International Conference on STRUCTURAL MECHANICS in REACTOR TECHNOLOGY (Paper No.K۱۳-۳), ۲۰۰۰.
- A.Niousha et al. Analysis of dynamic characteristics of a tall building for microtremor using recursive modeling and spectral method, Fourth International Conference on Seismology and Earthquake Engineering; Tehran, Iran, (CDROM, Paper No. ۲۰۹), ۲۰۰۳.
- A.Niousha and M. Motosaka- Structural vibration reduction using periodic wave barriers, International workshop on wave propagation, moving load and vibration reduction, Japan, pp. ۷۷-۷۸, ۲۰۰۱.
- A.Niousha and Masato Motosaka- Ground motion and structural vibration reduction by periodic wave barrier as a passive isolation, ۳rd International Conference on Earthquake Resistant Engineering Structure, Malaga, Spain, Vol.III, pp.۱۹۱-۲۰۰, ۲۰۰۱.
- A.Niousha and M.Motosaka- Structure Vibration Using Land Air Gun Impactor, ۷th Shock and Vibration Symposium, Washington DC, (CD ROM), ۲۰۰۰.
- Masato Motosaka, A.Niousha- Ground Motion Characteristics in the Graben-like Irregular Underground Structure for Finite Moving Source with Different Slip Size, ۱۲th World Conference on Earthquake Engineering, Auckland, New Zealand (Paper No.۱۰۱۳), ۲۰۰۰.
- Masato Motosaka, A.Niousha- Analytical Study on Near-Source Ground Motions Considering Variable-Slip Rupture Source and Irregular Underground Structure, Third International Conference on Seismology and Earthquake Engineering; Tehran, Iran Vol. ۱, pp. ۳۰۰-۳۶۲, ۱۹۹۹.
- A.Niousha, Masato Motosaka - Spatial Variation and Directionality of Ground Motions Focused on Irregular Underground Structure, Third International Conference on Seismology and Earthquake Engineering; Tehran, Iran Vol. ۱, pp. ۳۶۳-۳۷۰, ۱۹۹۹.
- A.Niousha, Masato Motosaka -Analysis of the Ground Motions Directionality Focused on Irregular Underground Structure, International Symposium on the Effect on Surface Geology; Yokohama, Japan, Vol. ۲, pp. ۸۶۷-۸۷۲, ۱۹۹۸.
- M.Motosaka and A.Niousha, Analytical investigation of directivity of ground motion focused on irregular underground structure, proceeding of Sanriku Haruka Oki Symposium, Japan, pp.۱۴-۱۹, ۱۹۹۸.
- A.Niousha, Masato Motosaka - Analytical Investigation of Ground Motions Directionality

Focused on Irregular Underground Structure, 10th Japan Earthquake Engineering Symposium, Yokohama-Japan, Vol. 1, pp. 789-793, 1998.

- T.Hirasaka, A.Niousha, M.Motosaka, A.Shibata- Dynamic response characteristics of soil-structure interaction system due to incident waves generated by shaking table excitation, 10th Japan Earthquake Engineering Symposium, Yokohama-Japan, pp. 160-161, 1998.
- Assistant Professor, University of Science and Culture, Iran 2/2010- 2/2011.
- Assistant Professor, Azad University, Iran, 2/2011- 2012.
- Vibration Testing for Structural System Identification and Damage Detection, Amir Kabir University of Technology, 4/2014.
- Structural Damage Localization based on Dynamically Measured Flexibility Method, 11th meeting on earthquake-resistant structure, Sendai, Japan, 12/2007
- System Identification and Damage Assessment of an Existing Building Before and After Seismic Retrofit, International Seminar on Structural.
- System Identification was held by the EDRL, Sendai, Japan, 3/2007.
- Structural System Identification and Damage Detection, IEEA, Tehran, Iran, 8/2006.

B- 7) Some of Career Details

- Projects Quality Control Director, Projects Quality Control Management. Kayson Inc. Iran, 9/2010 – To Date.
- Deputy Engineering Director, Engineering Department, Aria PG Engineering Co., Iran, 7/2009- 9/2010.
- Design Manager, International Department, Oriental Consultants, Japan (Dubai), 2/2008 – 7/2009.
- *Senior Research Engineer, Kajima Technical Research Institute, Kajima Corp., Japan, 10/2001 – 4/2008.*
- *Researcher, Tohoku University, 4/1997- 9/2001*
- *Technical office Engineer, Technical Department, Kayson Company, Iran 7/1993 – 4/1997.*
- *Technical office Engineer, Technical Department, Foman Construction Company, Iran,*

۵/۱۹۹۱ – ۵/۱۹۹۳

- Structural Engineer, Design Department, Omran Mohit-e-zist Consulting Engineers, Iran, ۴/۱۹۹۰ – ۴/۱۹۹۱.
- Onagawa Unit-۱ BWR Reactor Building data analysis, system identification and building damage investigation using data of recent earthquakes (Japan, Tohoku Electric Power Company, ۲۰۰۳).
- Hamaoka Unit-۵ ABWR Reactor Building dynamic characteristics investigation based on vibration test, data analysis and system identification (Japan, Chubu Electric Power Company, ۲۰۰۳-۲۰۰۴).
- Higashidori Unit-۱ BWR Reactor Building dynamic characteristics investigation based on vibration test, data analysis and system identification (Japan, Tohoku Electric Power Company, ۲۰۰۴).
- Kashiwazaki SC Building dynamic characteristics investigation based on vibration test, data analysis and system identification (Japan, Tokyo Electric Power Company, ۲۰۰۴).
- Shika Unit-۲ ABWR Reactor Building dynamic characteristics investigation based on vibration test, data analysis and system identification (Japan, Hokuriku Electric Power Company, ۲۰۰۴)
- Real-time vibration monitoring of long period building using RTK-GPS (۲۰۰۳-۲۰۰۵).
- Seiroka Garden twin high-rise buildings dynamic characteristics investigation based on data analysis and system identification of past and recent earthquakes (۲۰۰۳-Present).
- Akihabara UDX building, buildings dynamic characteristics investigation based on vibration test and data analysis using microtremors (۲۰۰۶).
- Hamaoka Nuclear power plants (Unit ۳, ۴, ۵), dynamic characteristics investigation based on vibration test, data analysis of the existing stacks before and after reinforcement (Japan, Chubu Electric Power Company, ۲۰۰۶-۲۰۰۷).
- Effect of underground explosion in oil field exploration on rural buildings (Oil Exploration Dept., ۲۰۱۱-۲۰۱۲).
- Buildings seismic vulnerability assessment of Hamadan city using Rapid Visual Screening (RVS) method (۲۰۱۲-۲۰۱۳).
- Senior advisor at Kayson R&D (۲۰۱۲- To date).
- Committee member of Beton ۱۴۰۴ (BHRC, ۲۰۱۴- to date)

(www.bhrc.ac.ir/portal/Portals/0/PDF/beton/1404.pdf).

- R&D advisor at Vima Co. (<http://www.vima-ir.com/>), (۲۰۱۳-To Date)

Hadi Ghamari

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C- ۱) Some of Academic Particulars

- Ph.D. student, ۲۰۱۲-now, Earthquake Engineering, Khajeh Nasir University of Technology, Iran, Dissertation Title: Semi-active control of civil structures based on uniform damage distribution.
- Master, ۲۰۰۹-۲۰۱۲, Earthquake Engineering, university of science and Technology, Iran, Dissertation Title: Control of civil structures using structural health monitoring outputs.
- Bachelor of Civil Engineering, ۲۰۰۵-۲۰۰۹, Arak University, Iran.
- Placing ۱st at varamin city high school students, ۲۰۰۲.
- Ranked ۱۵th at Ph.D. entrance exam ۲۰۱۲.

C- ۲) Some of Career Details

- Part Saze Company technical supervisor.
- Design of more than ۵ structures using dampers.

Hoseyn Karegar



D- ۱) Some of Academic Particulars

- Ph.D. student, ۲۰۱۴-now, Earthquake Engineering, University of Science and Culture, Iran.
- Master, ۲۰۱۰-۲۰۱۳, Earthquake Engineering, Arak University, Iran, dissertation Title: Finite element evaluation of reinforced concrete shear walls with openings and equipped with FRP.
- Bachelor of Civil Engineering, ۲۰۰۵-۲۰۰۹, Arak University, Iran.

D- ۲) Some of Career Details

- Technical assistant in following lessons:
 - Structural analysis.
 - Design of reinforced concrete structures.
 - Dynamics of structures.

Hojjat Karegar

Hojjat Karegar

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E- ۱) Some of Academic Particulars

- Master, ۲۰۰۹-۲۰۱۲, Earthquake Engineering, University of science and technology, Iran, dissertation Title: Structural matrices profile reduction with optimum priority function using particle swarm optimization.
- Bachelor of Civil Engineering, ۲۰۰۵-۲۰۰۹, Arak University, Iran.

C- ۲) Some of Career Details

- Laboratory supervisor of Yekta Azma Company.
- Execution of steel deck floors in assistance with Borna Ista Company.
- Director of steel structures division of Kaveh Profile Company.
- Analysis of damaging effects of Persian Gulf waves on coasts in Dubai.

۳. Services of Part Saze Company

۳.۱ Control of Structures with Dampers

Control of structures is the acts done for enhance the safety and performance level of a structure. This may conclude using of braces, shear walls, moment connected beams, base isolation, dampers, active and semi active control algorithms and etc. Control of structures is divided into four major category by the performance of control system:

۱ – Passive control.

۲ – Active control.

۳ – Semi-active control.

۴ – Hybrid control.

TADAS dampers, friction dampers and viscous dampers are passive energy dissipation systems that Part Saze Co. uses for the passive control of structures.

TADAS dampers, friction dampers and viscous dampers are new emerging passive earthquake energy dissipation systems that have numerous advantages for different types of structures. These dampers can use in low to high rise structures with different types of lateral load resisting system such as moment resisting frame, shear wall resisting frame, braced frame and etc. Some of the most important benefits of these dampers are listed below:

- ۱- Enhance the safety level of structures by decreasing the damage due to earthquake in primary elements.
- ۲- Upgrade the performance level of structures by reducing the absolute accelerations and interstory drifts.
- ۳- Relieve the time and the cost of repairs after an earthquake due to less damage occurrence in primary elements at a structure equipped dampers.
- ۴- Decrease the total cost of construction. According to building codes such as ASCE, EC and etc. and by noting the dissipating nature of dampers the design lateral load can be reduced. This reduction leads to smaller section for most of structural primary elements and this means lower cost for construction. But at this point the cost of damper individually is an important factor and with using the expensive dampers it may the total cost of construction increases.
- ۵- Decrease the size of primary elements section of structure due to reduction in design lateral load. This is a very important option that TADAS damper brings to a structure. By reducing the size of beam and column sections the total height of structure is reduced and net area in floors is increased respectively.

TADAS damper is manufactured by Part Saze Co. with relative low cost during an exact and sensitive procedure and using high accuracy devices. Part Saze TADAS

dampers are tested in BHRC – Building and Housing Research Center – of Islamic Republic of Iran and passed all of the related codes regulations.

۳.۲ Structural Health Monitoring (SHM)

Structures must be monitored for several reasons:

۱ – Some of structures is most important and even a small damage may be destructive. In such structures with a severe event like earthquake the operation of structure may be stopped; so this is unacceptable.

For example hospitals, schools, towers, emergency centers, broadcasting centers, water supplementary system, urban management centers, nuclear power plants and all nuclear related buildings and etc.

۲ – In some earthquakes the major casualties is due to aftershocks. This is an important question: Is the Structure safe enough to stay in after an earthquake?

۳ – Knowing about remain lifetime of a structure may be useful for:

A – Owner (s)

B – Insurance institutions.

C – Structural engineering companies.

۴ – Evaluation of a structure actual condition is a big challenge that is needed for many structures.

۵ - If a structure needs retrofiting, having exact data about the location and the severity of damages is very useful.

SHM is a science for asking above challenges and questions.

Part Saze Co. is the first and the only engineering company in Iran that monitors structures using vibration data. For this purpose Part Saze Co. uses sensors and recorders of GeoSIG™ Company with corporation of Payesh Sad Iranian Company that is exclusive gold delegate of GeoSIG™ inside IRI for data acquisition and transmission and then the best algorithms are selected and personalized for data processing and analyzing.

۳.۳ Retrofit and Rehabilitation of Structures

Part Saze Co. provides the retrofit and rehabilitation plan for more than ۱۸۰ structures and infrastructures, for example Shahid Khaleghi Poor structure in Tehran that is affiliated on shipping of IRI retrofit plan. In this project TADAS dampers are used.

۳.۴ Design and Consultant Services

Part Saze Co. designs and erects more than ۲۰۰ steel and reinforced concrete structures in Tehran, Karaj and other cities of Iran.

۴. Some of Reference Projects of Part Saze Company

- Operating ۹ power plant retrofit and rehabilitation plan includes: Shahid Rajaei, Montazar -e- Ghaem, Kazeroon, Fars, Gilan, Tabriz, Neyshaboor, Lowshan and Hamedan and ۷ dispatching includes: Melli, Tehran, Markazi, Ahwaz, Kerman, Tabriz and Mashhad and ۱۶ power transmission post includes: Jalal, Lowshan, Montazar -e- Ghaem, Shahid Rajaei, Roodshoor, Tabriz, Tehranpars, Ziyaran,

Kan, Fars, Chenar -e- Shahijan, Firooz Bahram, Kazeroon, Malek Makan, Northern Rey.

- Execution of vibration control of Dorood cement company power transmission post.
- Seismic evaluation, retrofit and rehabilitation plan of non-structural and facilities of Yazd power transmission post No. ۱ and ۲, Yazd.
- Seismic evaluation, retrofit and rehabilitation plan of building and facilities of Shahab power transmission post, Kerman.
- Seismic evaluation, retrofit and rehabilitation plan of building and facilities of Sirjan power transmission post, Kerman.
- Seismic evaluation, retrofit and rehabilitation plan of building and facilities south-west dispatching, Kerman.
- High consultancy on retrofit and rehabilitation plan of countries schools.
- High consultancy on fabrication plan of rooms and menares of Imam Khomeyni's preparedness.
- Quantitative and qualitative evaluation, retrofit and rehabilitation plan of railroad bridges of Iran and preparing instructions for this process.
- Designing and fabrication of moving stands of Airbus and Boeing airplanes for Iran Air Company.
- Designing of ۹ story steel structure in Tehran using TADAS dampers.
- Designing of ۷ story steel structure in Karaj. TADAS dampers are installed in this project.



Figure ۱ - ۷ story steel structure in Karaj. TADAS dampers are installed in this project.

- Designing of ۱۳ story steel structure in Tehran. TADAS dampers are used in this project.



Figure ۲- ۱۳ Story steel structure in Tehran. TADAS dampers are used in this project

- Designing of ۳۰,۰۰۰ square meters ۱۶ story reinforced concrete structure in Tehran using TADAS dampers. In this project ۵۱۰ tons of steel bars weight needed for skeleton construction is reduced.

- Designing of ۱۳۰۰۰ square meters ۱۰ story steel structure in Isfahan. TADAS dampers are used in this project.

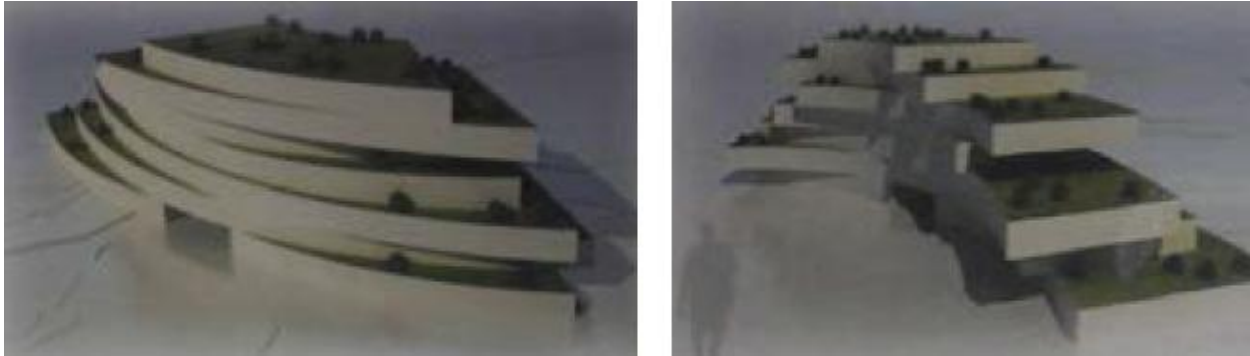


Figure ۳ – ۱۳۰۰۰ Square meters ۱۰ story steel structure in Isfahan. TADAS dampers are used in this project

- Designing of Gol -e- Gohar steel furnace in Sirjan with ۱۱۰ m height using viscous and TADAS dampers. In this project ۵۰۰ tons of total weight of skeleton steel is reduced.



Figure ۴ - Gol -e- Gohar steel furnace in Sirjan with ۱۱۰ m height using viscous and TADAS dampers.

Some of Approvals and Certificates Achieved by Part Saze Company


تاریخ: ۱۳۹۳/۷/۲۲	
شماره: ۹۲/۲۰۲۶	
پیوست: ندارد	

مدیریت محترم شرکت مهندسی پارت سازه سینار
باسلام،

با توجه به ارزیابی اولیه، این شرکت به عنوان شرکت دانش بنیان تویا شناخته شده و قابلیت ایفای نقش در اقتصاد دانش بنیان جمهوری اسلامی ایران را دارا می باشد.

به استناد وظیفه قانونی صندوق نوآوری و شکوفایی در پیشبرد اقتصاد دانش بنیان و توانمند کردن شرکت های این حوزه، امکان بررسی طرح های دانش بنیان آن شرکت و در صورت تصویب ارائه انواع خدمات در راستای انجام طرح های دانش بنیان آن و تعامل به منظور اجرای موفق آنها فراهم می باشد. در این راستا در صورت علاقه مندی می توانید ضمن مراجعه به سایت www.nsfund.ir اطلاعات تکمیلی را دریافت نمایید.

امید است با عنایت الهی، اقدامات آن شرکت در ایفای این مسئولیت مهم با شایستگی و موفقیت قرین باشد.

 بهزاد سلطانی
رئیس هیأت عامل

آدرس: تهران، زعفرانیه، خیابان شهید فلاحی، کوچه شیرکوه، پلاک ۱۱
تلفن: ۶-۲۲۴۱۴۱۹۳ دورنگار: ۲۲۴۱۴۱۹۲ وب سایت: www.nsfund.ir

Figure 6 - Part Saze Company approved as an official knowledge based company, certified by the Innovation and Development Fund of the Islamic Republic of Iran (10 October 2014).

فهرست شرکتها و موسسات مشمول استفاده از مزایای قانون

ردیف	تاریخ ثبت	شماره ثبت	نام شرکت / موسسه
1	1394/03/02	10102072625	مهندسی آسیا وت (سهامی خاص)
2	1393/07/08	10103022873	مهندسی آسین فولاد (سهامی خاص)
3	1394/02/05	14002870600	مهندسی آنگن صنعت آذربایجان (سهامی خاص)
4	1393/10/27	14003422745	مهندسی یازید پره از ان بان (با مسئولیت محدود)
5	1394/02/05	10320645216	مهندسی بازرگانی کاروش الکترونیک ماه (سهامی خاص)
6	1393/02/06	10101353620	مهندسی پارس سیستم (سهامی خاص)
7	1393/12/16	10103767150	مهندسی بسیار گستر آریا (سهامی خاص)
8	1393/07/08	10320894840	مهندسی پارت سازه سایتر (سهامی خاص)

تاریخ به روز رسانی: 94/03/05

فهرست شرکتها و موسسات مشمول استفاده از مزایای قانون:

Figure 6 - Part Saze Company approved as an official knowledge based company, certified by the Vice-Presidency for Science and Technology of presidency of the Islamic Republic of Iran (10 October 2014).

(daneshbonyan.isti.ir).

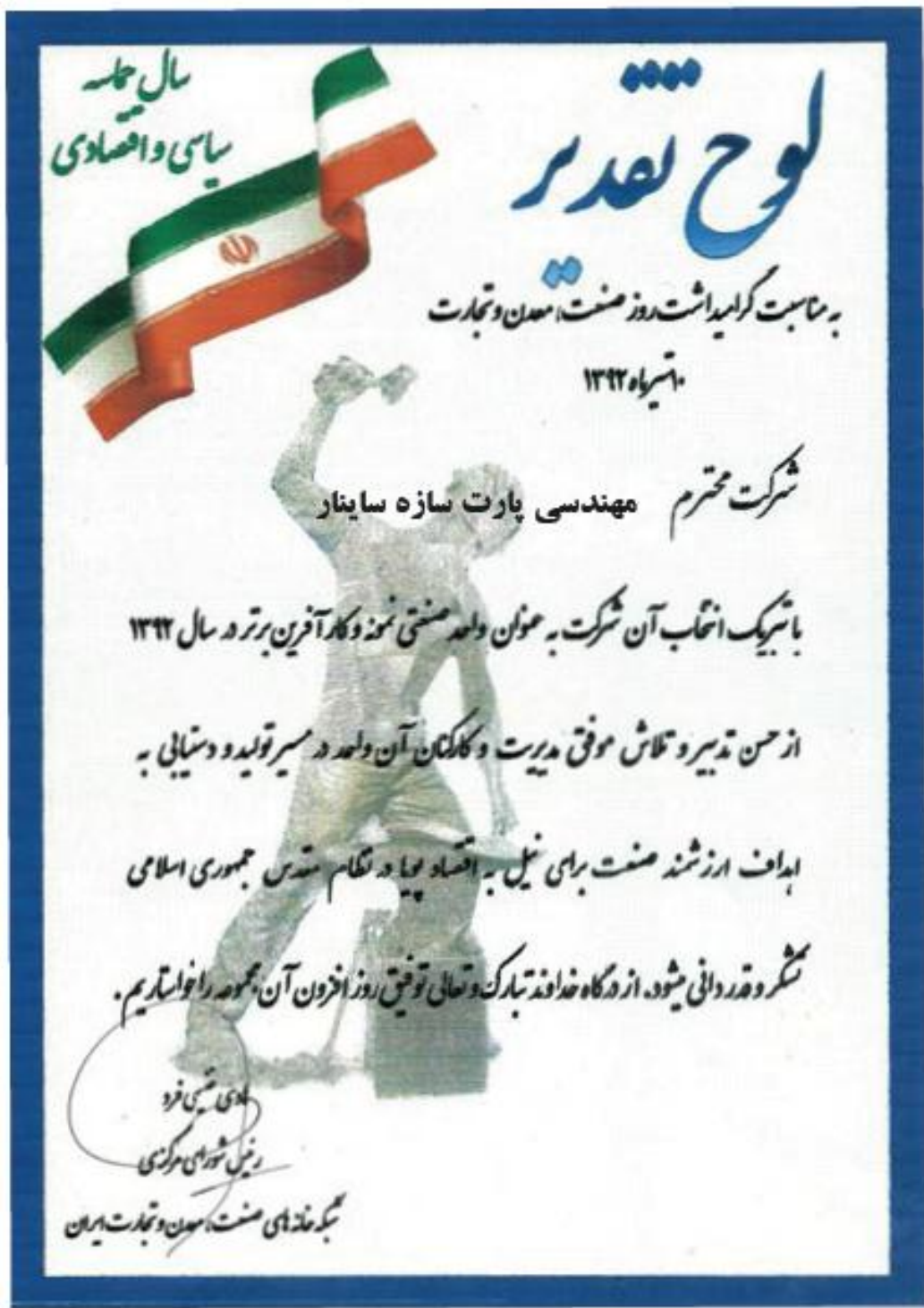


Figure ۷ – Part Saze Company officially approved as top entrepreneur, certified by the network of houses of Industry, Mine and Trade of the I.R.Iran (۲۰۱۲).



جناب آقای مهندس کارگر
مدیرعامل محترم شرکت پارت سازه ساینار

با سلام و احترام

در پاسخ به درخواست آن شرکت به شماره نامه ۹۳/۰۴۳۳ مورخ ۹۳/۵/۵، در خصوص دریافت نظریه فنی برای میراگرهای فلزی پره مثلثی، به اطلاع می‌رساند که بر اساس آزمایش‌های انجام شده در دیماه ۱۳۹۳ در بخش مهندسی سازه و ابنیه فنی این مرکز، دو نمونه میراگر فولادی پره مثلثی TADAS ارسالی از آن شرکت ضوابط پذیرش استاندارد ASCE41-13 را برآورده می‌نمایند. کاربرد این نوع میراگرها در بهسازی لرزه‌ای ساختمان با رعایت استاندارد ASCE41-13 و در طراحی و ساخت ساختمان‌های نوساز با رعایت آیین‌نامه ASCE7-10 بلامانع است.

محمود صفارزاده

معاون تحقیقات و فناوری



Figure ۸ – Part Saze Co. TADAS dampers License for using in new and existing buildings, certified by the Road, Housing and Urban Development Research Center of the Ministry of Road and Urban Development of the Islamic Republic of Iran (۲۳ May ۲۰۱۵).

۹۴,۴۲
۱۴۱۸۱

بسمه تعالی

قرارداد استقرار واحد فناوری در دوره رشد مقدماتی
مرکز رشد واحدهای فناوری - دانشگاه صنعتی خواجه نصیرالدین طوسی

طرفین قرارداد:

این قرارداد بین مدیر مرکز رشد دانشگاه صنعتی خواجه نصیرالدین طوسی به نمایندگی آقای دکتر امیر موسوی نیا که در این قرارداد به اختصار "مرکز رشد" نامیده می‌شود، از یک سو و واحد فناوری مهندسی پارت سازه سینار به شماره ثبت ۴۴۲۸۷۹ و شناسه ملی ۱۰۳۲۰۸۹۴۶۴۰ به مدیریت آقای حجت کارگر فرزند ابوالفضل تاریخ تولد ۱۳۶۵/۶/۳۰ محل تولد ساوه شماره شناسنامه ۶۰۰۸ شماره ملی ۰۶۰۳۲۸۵۴۴۹ به نشانی تهران، بلوار میرداماد، میدان مادر، خیابان بهروز، کوچه یکم، ساختمان مهر، طبقه اول، واحد ۱۱ که به اختصار "طرف قرارداد" نامیده می‌شود، از طرف دیگر با شرایط و مندرجات ذیل منعقد می‌گردد. نسخه ای از اساسنامه و آخرین آگهی تغییرات شرکت در روزنامه رسمی که به امضاء مدیریت واحد فناوری رسیده است، پیوست این قرارداد است.

تعاریف و اصطلاحات:

الف- مرکز رشد:

مرکزی است زیر نظر دانشگاه و تحت مدیریت متخصصین حرفه‌ای که با ارائه خدمات حمایتی از ایجاد و توسعه حرفه‌های جدید توسط کارآفرینانی که در قالب واحدهای نوپای فعال در زمینه‌های مختلف منتهی به فناوری متشکل شده‌اند و اهداف اقتصادی مثبتی بر دانش و فن دارند، پشتیبانی می‌کند.

ب- دوره رشد مقدماتی:

دوره‌ای حداکثر ۶ ماهه است که در آن به افراد و یا گروه‌های مستعدی که دارای ایده‌های نوآورانه صنعتی هستند، مشاوره و آموزش‌های لازم برای آشنایی با بازار، شناسایی گروه کاری، تثبیت ایده کاری و ایجاد هویت‌های حقوقی و مستقل داده می‌شود. در صورت موفقیت در این دوره مقدماتی، واحدهای نوپا می‌توانند متقاضی اسکان رسمی در دوره رشد مرکز رشد شوند.

ج- دوره رشد:

دوره‌ای حداکثر ۳ ساله است که طی آن، واحدهای فناوری مستقر در مرکز رشد به معیارهای رشد یافتگی دست یافته و پس از آن از مرکز رشد خارج می‌شوند.

د- هسته فناوری:

گروه کاری مستعد متشکل از دانش‌آموختگان در حوزه فناوری مورد نظر که دارای ایده نوآورانه صنعتی قابل تجاری شدن بوده و در صدد راه‌اندازی یک کسب و کار موفق در زمینه کاری خود می‌باشند و هنوز دارای شخصیت حقوقی مستقل نمی‌باشند.

ه- واحدهای فناوری:

واحدهای دارای هویت حقوقی مستقل از مرکز رشد بوده که با توجه به اساسنامه و یا سایر اسناد قانونی در زمینه تحقیقات کاربردی و توسعه‌ای، طراحی مهندسی، مهندسی معکوس، انتقال فناوری، ارائه خدمات تخصصی و در جهت تجاری کردن نتایج تحقیقات فعالیت می‌نمایند. این واحدها از جمله شامل شرکت‌های خصوصی، واحدهای تحقیق و توسعه صنایع و یا مراکز تحقیقاتی وابسته به دانشگاه‌ها یا دستگاه‌های اجرایی هستند.



Figure ۹ – The agreement between Part Sazeh Company and Khajeh Nasir -e- Toosi University of Technology for establishment in development center of KNTU (۲۳ June ۲۰۱۵).

شماره ثبت اختراع ۲۸۸۱۲۰۷۲۶
تاریخ ثبت اختراع ۱۳۸۸/۱۲/۱۸

توضیحات
شماره ثبت اختراع ۶۴۲۶
تاریخ ثبت اختراع ۱۳۸۹/۰۷/۲۵

۶۰۰
ریال

اداره کل ثبت شرکتها و مالکیت صنعتی

۰۹۲۸۶۲

کد (۳۰) الف (۱-۸۵) ت

کواهی نامه ثبت اختراع

سری الف/۸۵

طبق قانون ثبت اختراعات کواهی می شود اختراع راجح به

میراگر اصطکاکی سیلندری با مکانیزم ایجاد کونشن اجباری.

که در تاریخ در کشور شماره قلمش ثبت شده است

نام سهند صمدی شریفی - مسعود میرطاهری - امیر ایمان زندی -
دانشگاه خواجه نصیر الدین طوسی

تابعیت: جمهوری اسلامی ایران

تیم تهران مخ دولت بلوار کاوه مخ بهار جنوبی ک جمهوری انتهای شمالی مخ
یکوی کاوه پ ۲ ط ۲
که نسالی خود را در ایران به شرح فوق تعیین نموده است

برای مدت بیست سال ماه روز

به ثبت رسیده است این ورقه که یک نمره از توصیف و نقشه اختراع را به پست دارد مالک آن تسلیم کرد

رئیس اداره مالکیت صنعتی
۱۳۹۲/۱۱



Figure ۱۱ –KNTU Friction dampers License for using in buildings, certified by the Road, Housing and Urban Development Research Center of the Ministry of Road and Urban Development of the Islamic Republic of Iran (۲۶ September ۲۰۱۱) Page ۰۱.



۷- تولید میراگرها مستلزم در نظر گرفتن یک سیستم کنترل کیفیت جامع و تایید شده توسط مراجع ذیصلاح، در خط تولید کارخانه می باشد. از سوی دیگر لازم است تا قبل از استفاده از میراگرها در هر ساختمان، آزمایش های تعیین عملکرد، مطابق ضوابط بند ۸-۳-۸ دستورالعمل بهسازی لرزه ای ساختمان های موجود (نشریه شماره ۲۶۰ سازمان مدیریت و برنامه ریزی کشور- ویرایش ۱۳۸۵) بر روی حداقل دو نمونه در ابعاد واقعی از همان نوع و اندازهای که قرار است در ساختمان مورد نظر به کار رود، انجام شود. نمونه های آزمایش شده نباید در ساختمان به کار روند. این مجموعه آزمایش ها به غیر از آزمایش های محصول و کنترل های مربوط به خط تولید، کارخانه می باشند. کفایت عملکرد نمونه های مورد آزمایش باید مطابق با ضوابط بند ۴-۸-۳-۸ مرجع یاد شده مورد ارزیابی قرار گیرد.
خاطر نشان می شود این مدرک در برگرفته الزامات فنی سیستم پیشنهادی است که در هر پروژه باید با مسئولیت دانشکده مهندسی عمران دانشگاه صنعتی خواجه نصیرالدین طوسی رعایت شود.

با آرزوی توفیق الهی
سید محمود فاطمی عقدا
رئیس مرکز

رونوشت به:
دانشکده مهندسی عمران دانشگاه صنعتی خواجه نصیرالدین طوسی برای استحضار ✓

Figure ۱۲ – (b) KNTU Friction dampers License for using in buildings, certified by the Road, Housing and Urban Development Research Center of the Ministry of Road and Urban Development of the Islamic Republic of Iran (۲۶ September ۲۰۱۱) Page ۰۲.



Figure ۱۳ – KNTU Permission to Part Saze Company for using KNTU friction dampers in structures according to Part Saze Co. abilities in design of control systems. (۲۰۱۴)