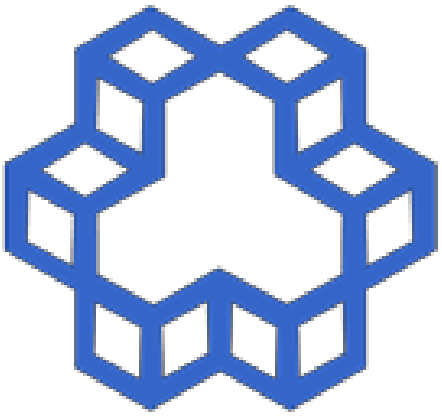


K. N. Toosi
University of Technology

Report of the

IranSakht

Exhibition Master:

Dr. Ali Nahvi

Student:

Mohammad Maleki

Abyaneh

Student Number:

9930723

Academic Term:

First Half of 2023-2024

Salman Sustainable Development Knowledge-Based Company

Provider of technical engineering services in the technology and durability of concrete, manufacturer of specialized laboratory equipment, quality control and durability of concrete, design, production of chemical and mineral additives, knowledge-based, technical knowledge, design and implementation of various types of special concretes such as self-compacting concrete, roller concrete, fiber concrete, prefilled concrete and geopolymer concrete

RCT3

Determination of Chloride Permeability of Concrete

General Features

It has 6 independent and separate outputs, each of which is connected to a cell, the ability to perform independent testing based on 6 international standards 3 different type of test by selecting the desired standard type.

- Ability to perform electrical conductivity tests according to ASTM C1760 standard automatically
- Ability to performRCPT testing based onAASHTO T277 ASTM C1202 and 355NT BUILD standard automatically
- Ability to choose the method of performingthe RCMT test based on the standard 375AASHTO T15 -and 492NT BUILD AUTOMATICALLY

- The possibility of testing without the need for a computer and only through buttons and a display embedded on the device with the ability to draw a graph of voltage, current, temperature and Coulomb flux at different time intervals and the possibility of preparing the test output inthe EXCEL environment as an independent file for each channel

Resiman

Concrete Special Electrical Resistance Measuring Machine

Features of the Roziman machine

- Electrical Resistance Measurement Device for Concrete Made in Iran
- Performing the test for determining the surface electrical resistance of concrete based on AASHTO T358 standard
- Measurement of Concrete Surface Specific Electrical Resistance Using Wenner Four-Point Method with 1.5" Electrode Distance
- The operation range of the device is from 6 to 999kΩ with a scale of 0.1 with a calibration range
- Possibility of use in humid environments

Rheoman118

Self-Density Concrete Remometer Efficiency Control Portable Laboratory Model

Features of the Rheuman 118 device

Determination of the rheological characteristics of fresh self-compacting concrete using the following:

- Flow Curve and Stress Growth Test Test)

-Yield stress: Static current stress of concrete (minimum stress required to start flowing from the rest state of concrete)

-Plastic viscosit: Plastic viscosity or viscosity (resistance of concrete to flow under increased shear rate)

-Shear stress: Dynamic flow stress of concrete (minimum stress required to maintain the flow of concrete)

-Thixotropy: condensation (ductility of the structure at rest of the concrete and failure of the structure during the flow of concrete)

- It has several types of concrete sampling containers and related blades according to the maximum size of different aggregates out of 12.5 to 37.5mm

- Connecting to a computer viaa USB cable and reporting concrete specifications in the form of an EXCEL file by inserting all the specifications

- Portable design with small dimensions, low weight and the possibility of moving the device to the concrete pouring site and controlling the concrete produced on site

Datis Energy

Datis Energy Industries Company was established by a group of mechanical, electronics, aerospace, chemistry and metallurgy engineers at the doctoral and master's levels. Before the establishment of the company, the team formed in the form of the mentioned group in various fields (design and manufacture of different types of laboratory devices, design and manufacture of various composite parts, design of various types of power plant and petrochemical systems, design and manufacture of various types of molds and fixtures, design and manufacture of various types of industrial devices, spray dryers, Supercritical extraction and... (They were active and with the establishment of the company in 2007, they have used all their power to improve the technical knowledge of the country in order to reach their highest position.

This group first started its activity in 2003 as a specialized group at Tarbiat Modares University. The extension of this successful activity led to obtaining the necessary legal licenses and registering Datis Energy Industries Company in the private sector of the country.

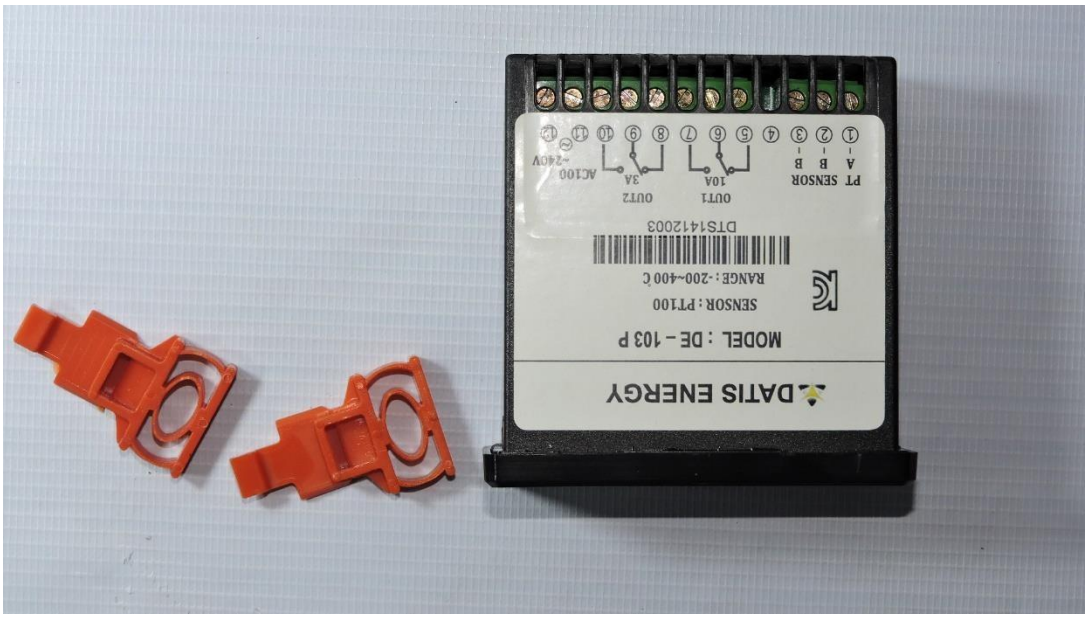
Humidity Controller ModelDE-201H

- **It has a digital sensor to measure humidity**
- **Humidity measurement with** 2 ٪ **accuracy**
- **Ability to display accurate ambient temperature**
- **Input Feeding**: **220V Municipal Power**
- **Controller in dehumidification and dehumidification mode**
- **Ability to use sensors with long cables up to ۵۰ meters**
- **Machine Size**: 34 * 76 *70 **mm**

- **Panel size**: 28 **x** 70 **mm**

Type K Temperature Controller Model DE-102K

- **Connecting to a Type K Sensor**
- **Temperature measurement range from** −100 **to** 1370 **degrees Celsius**
- **Input Feeding**: **220V Municipal Power**
- **Temperature measurement with ±1°C accuracy**
- **Temperature Control in Cooling and Heating Mode with ON/OFF Method**
- **Ability to use the sensor with a long cable**
- **Two 3- and 10-amp relays with N.O and N.C. outputs.**
- **The second relay can be used in four modes**: **Timer**, **ON/OFF**, **Absolute Alarm and Limit Alarm.**
- **Machine Size**: 34 * 76 *70 **mm**
- **Panel Size**70 *28**mm**



Azman Industrial Group

Established in 1983 and with the help of God Almighty, Azman Industrial Group is currently the largest designer and manufacturer of laboratory equipment in the country based on international standards ASTM, EN, BS, AASHTO, DIN andISIRI national standard in the field of building materials, which now continues to operate under the name of Azman Saz Mabna Company.

At present, آزمون in its factory complex with an area of 4500 square meters and with the cooperation of 75 experienced personnel, all the needs of consulting engineers, technical and soil mechanics laboratories, universities and higher education centers, factories producing building materials, research institutes, etc. and as a completely Iranian institution, proudly announces that the production of all equipment is based on the scientific achievements

of Iranian engineers and in this regard, it has taken a great step towards the independence of Iran.

 By using its staff of electronic engineers and programmers, it has been able to provide new solutions for software automation and laboratory hardware and provides these services with indigenous knowledge with the highest quality and accuracy.

Azman Saz Mabna Company is the first and only holder of the ISO 9001:2008 quality management certificate from Tuv Nord Company of Germany in the field of laboratory equipment, and the most important goal of this group in recent years is to improve the quality of products and their compliance with international and national standards. This goal is in order to achieve as much satisfaction as possible for customers and consumers.

 In the past years, in line with its activities in the construction and civil industry of Iran, it has succeeded in receiving dozens of statues and plaques of appreciation from the Iranian Concrete Association, the Iranian Concrete Research Center, and many universities and scientific centers of Iran, but we believe that the trust of the engineering community of our beloved country and their support for the products of this company is our greatest medal and achievement and the most important reason for our success.

Schmidt's hammer

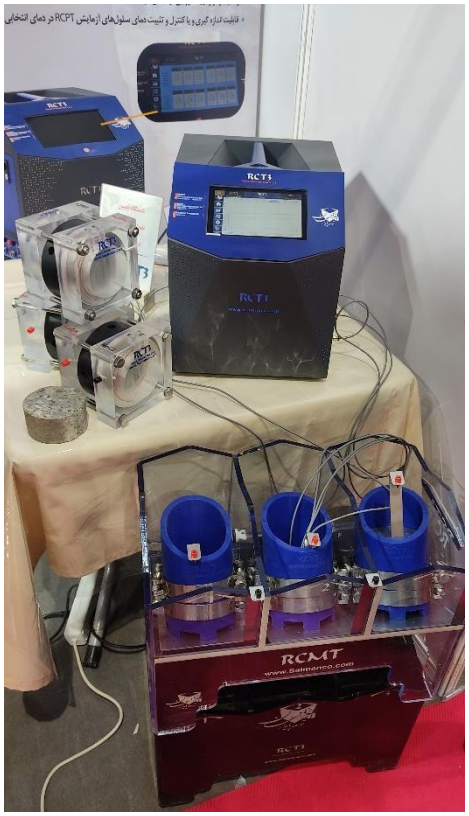
General Specification

One of the most important and effective factors in the quality of concrete is its compressive strength. The original Schmidt hammer is the first Schmidt hammer produced in the world by Procea Company and is the most widely used hammer to determine the compressive strength of concrete. This hammer calculates the return energy that depends on the hardness of the concrete surface by applying a blow to the concrete surface with a certain energy. It is known that with the help of curves on the hammer based on the direction of impact applied to the surface, the amount of compressive strength in N/mm2 can be obtained from the R-read.

Examples of photos I took in person:

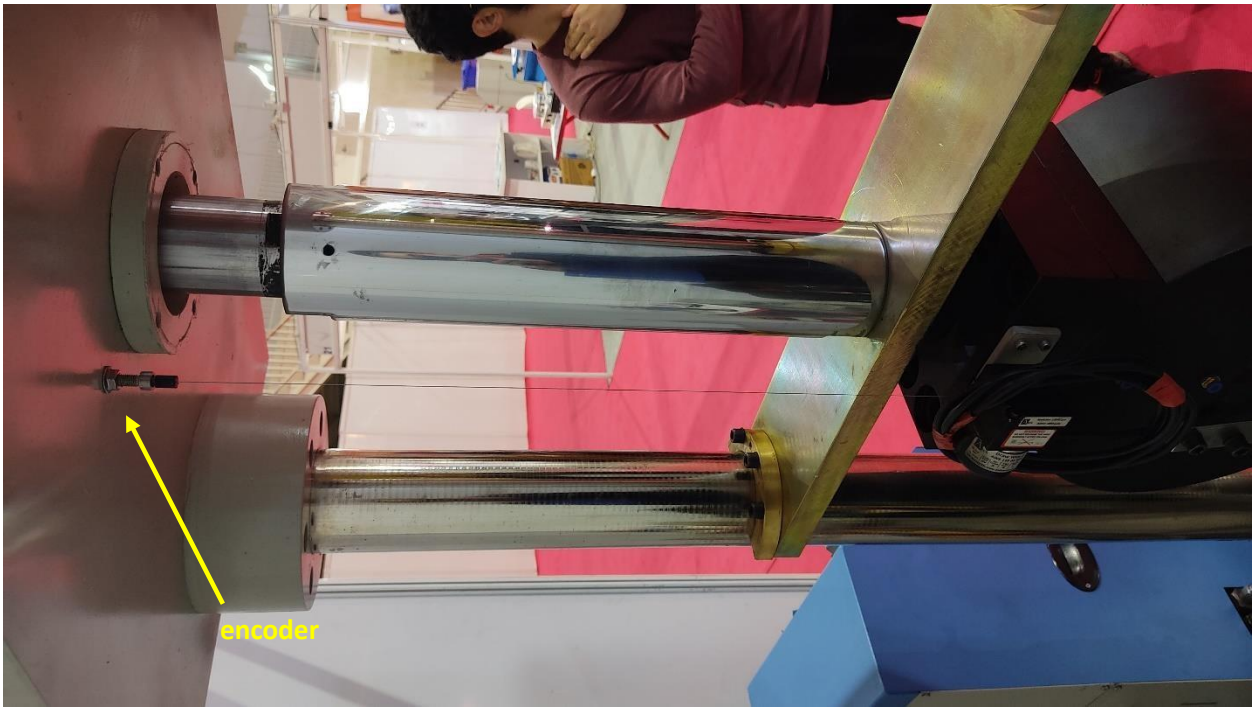
-Rebar Tensile Testing Machine:

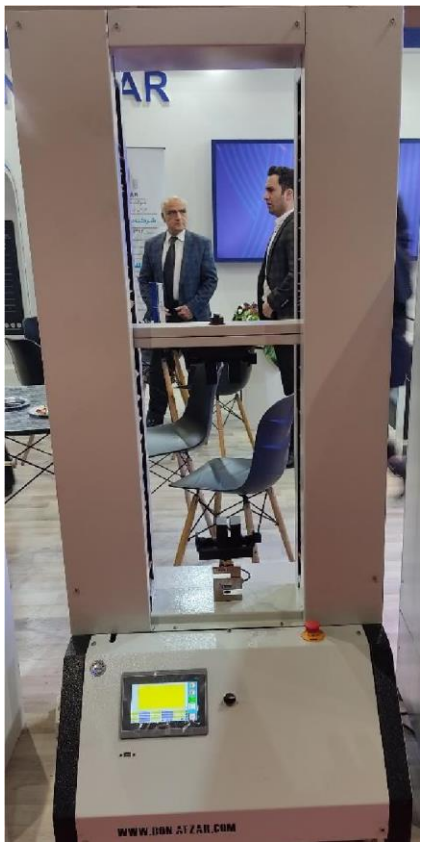
Chloride ion penetration test in concrete: This device is used to perform chloride ion penetration test in concrete to prevent corrosion of reinforced concrete rebars in environments such as ports where chloride ions are present in the sea under certain standards. One of the sensors used in this device **is the temperature sensor**.



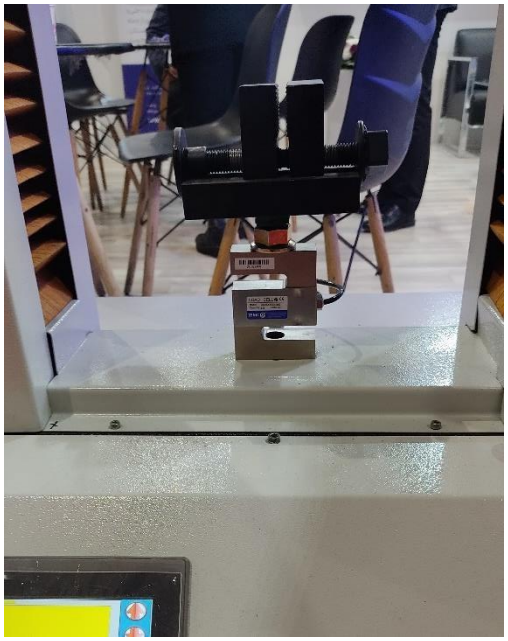
In the image below, you can see an example of a tensile test device in which **a hydraulic pressure sensor** is used to measure the force of the hydraulic jack and a **linear encoder** is used to measure the deformation of the sample.

The reason for using a pressure gauge is that the device is cheaper.



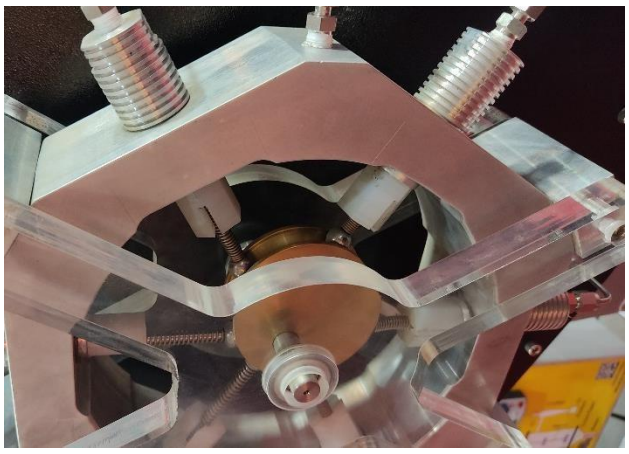


In the image below, you can see another example of a tensile test device in which an S-shaped load cell sensor was used.



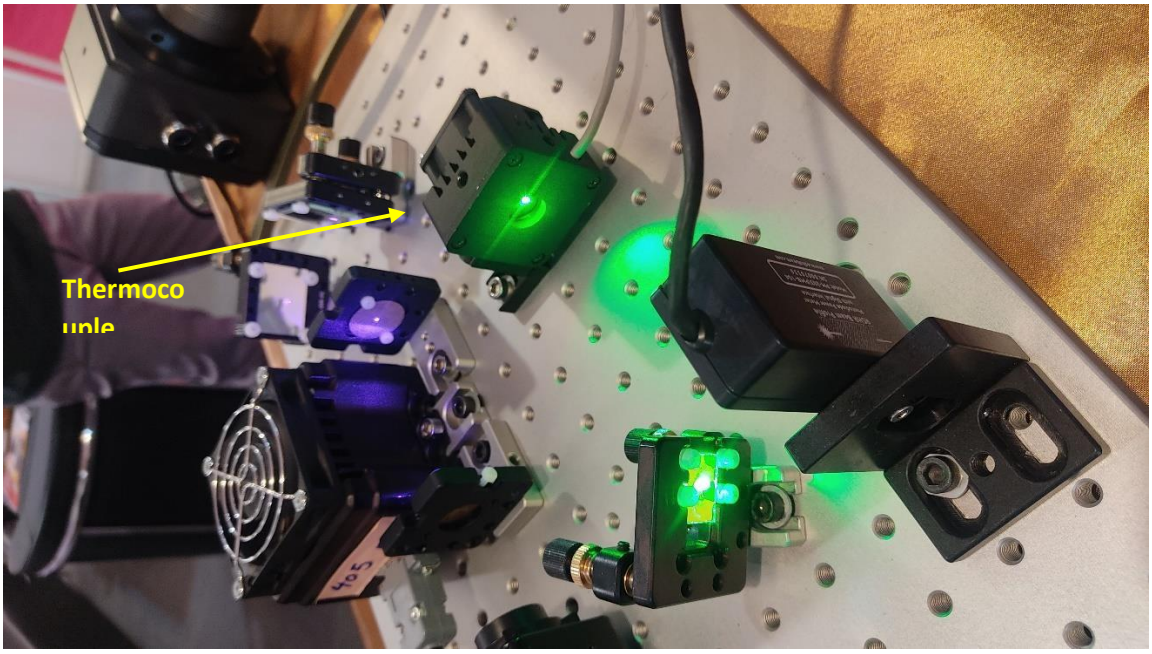
An example of a piston pump that is used in the pharmaceutical industry to create a type of material that is a plasma phase.

The system that drives the pistons in this machine is designed instead of the conventional crank_rocker mechanism of the cam and follower type.

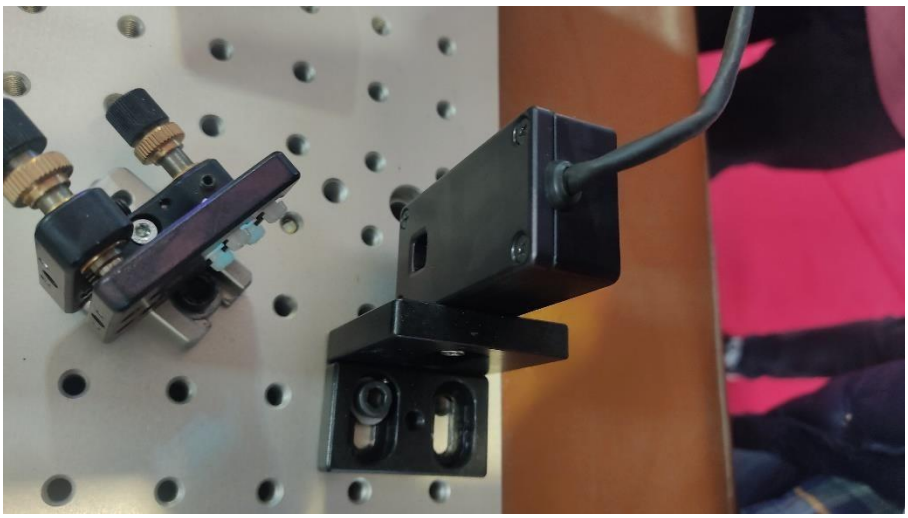


-In the figures below, you can see a device that is used to measure the power of the laser.

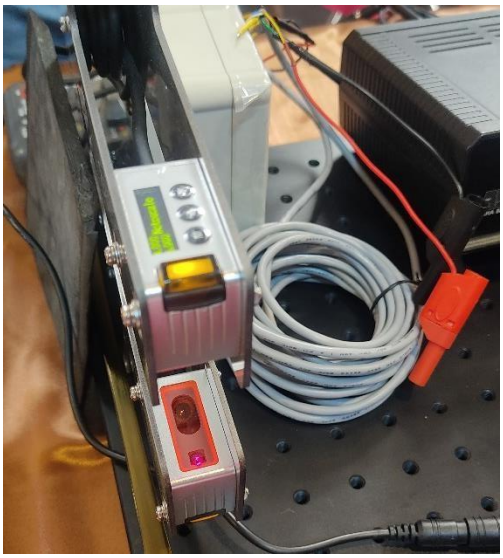
The first type was a device used to measure the power of high-power lasers, in which an **L thermocouple was** used, which was induced by irradiating the laser to it and generating heat in the thermocouple, and by this means and by calibrating the power measurement.

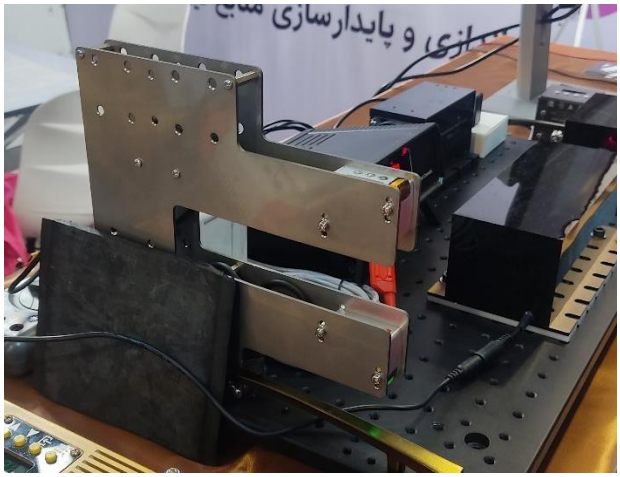


Another example was a device used for low-power lasers, and the sensor used in it is a semiconductor type that measures power by means of heat generated by the laser.



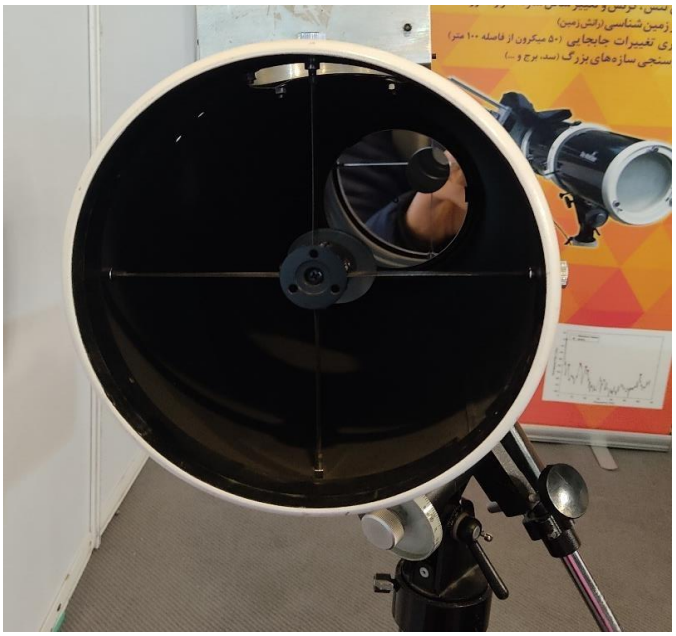
Another device of this company was a type of laser thickness meter that used two laser sensors, and its method of work was that by calculating the time of return of the beam of each laser and having a distance between the two lasers, the thickness of the object placed between the two lasers is measured.

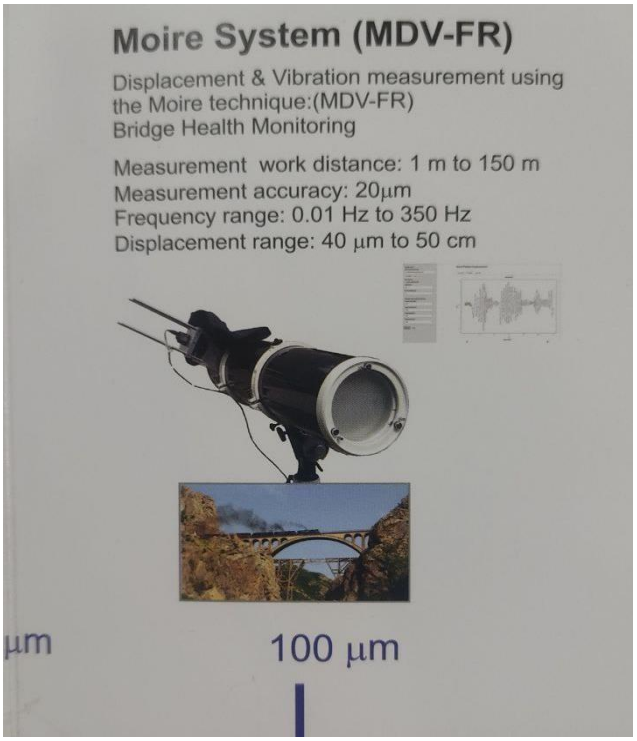




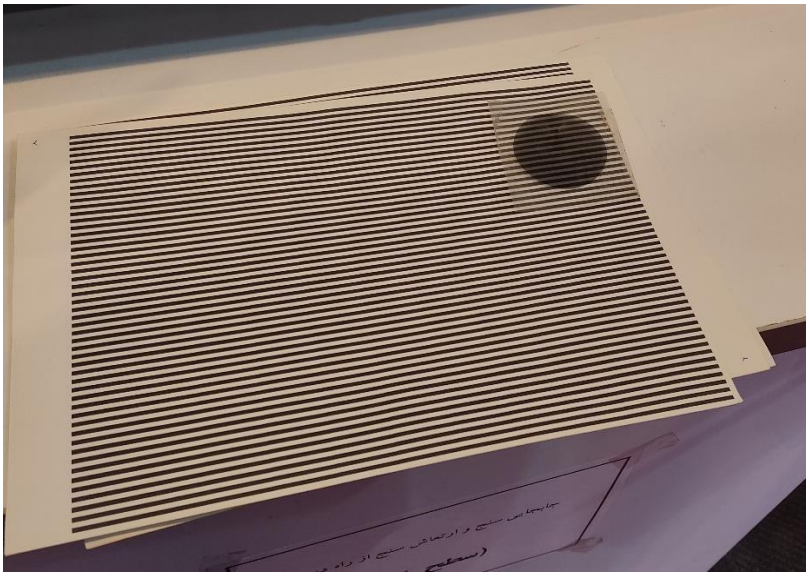
The next company was a company that produced products that were used to measure the vibration of structures.

Their first product was a camera used to measure the vibration of large structures such as bridge structures.



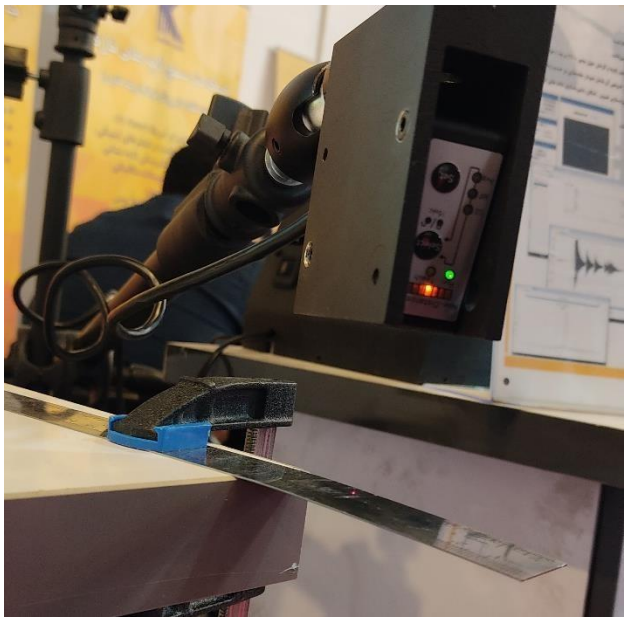


This device uses the Moire technique to measure the vibration. In this way, a Moire paper is installed on the bridge structure and the camera is placed in front of this paper, and in front of the aperture of the camera, the image of the Moire designs is installed, and the vibrations are measured by the interference of these designs with each other.



Another device of this set is the laser vibration meter, which is used to measure the vibrations of smaller systems such as motors.

The way this device works is that the sensor of this device emits a laser beam and the amount of vibration amplitude is determined from the angle of reflection of the laser beam.



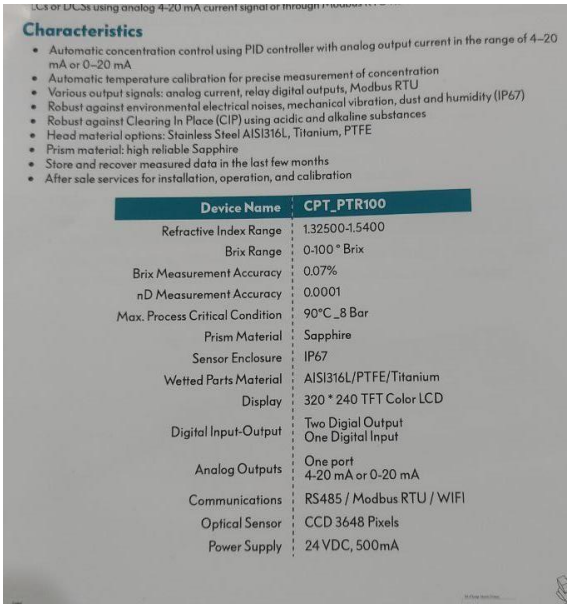
Another product of this company is the LiDAR scanner, which is capable of preparing a 3D map of the environment using a LiDAR sensor.

Another product that was presented in this exhibition is the refractometer.

A device is used in the food industry to measure the concentration of substances in a solution.

The features and specifications of this device are as follows:

This device uses the **refraction rate of light rays** in the fluid to measure it . A temperature sensor is also used in this device.



PLCs or DCSs using analog 4-20 mA current signal or through Modbus RTU

Characteristics

- Automatic concentration control using PID controller with analog output current in the range of 4–20 mA or 0–20 mA
- Automatic temperature calibration for precise measurement of concentration
- Various output signals: analog current, relay digital outputs, Modbus RTU
- Robust against environmental electrical noises, mechanical vibration, dust and humidity (IP67)
- Robust against Clearing In Place (CIP) using acidic and alkaline substances
- Head material options: Stainless Steel AISI316L, Titanium, PTFE
- Prism material: high reliable Sapphire
- Store and recover measured data in the last few months
- After sale services for installation, operation, and calibration

Device Name	CPT_PTR100
Refractive Index Range	1.32500-1.5400
Brix Range	0-100 ° Brix
Brix Measurement Accuracy	0.07%
nD Measurement Accuracy	0.0001
Max. Process Critical Condition	90°C _8 Bar
Prism Material	Sapphire
Sensor Enclosure	IP67
Wetted Parts Material	AISI316L/PTFE/Titanium
Display	320 * 240 TFT Color LCD
Digital Input-Output	Two Digial Output One Digital Input
Analog Outputs	One port 4-20 mA or 0-20 mA
Communications	RS485 / Modbus RTU / WIFI
Optical Sensor	CCD 3648 Pixels
Power Supply	24 VDC, 500mA

The other company present at the exhibition was CENTAM Company, a manufacturer of tensile testing devices.

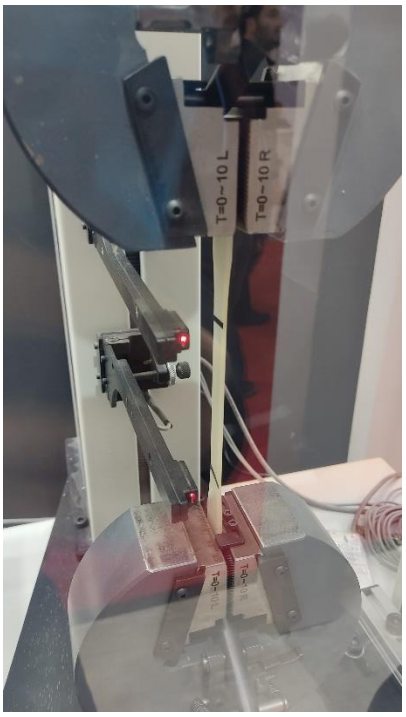
In the machines of this company, instead of using a hydraulic jack system to apply a tensile force on the part, a servo motor **is encoded** and a ball screw mechanism was used. A variety of load cells were also used to measure the force .

One of the main components and sensors used in these tensile testing devices is the extensometer, which is used to measure the strain and displacement of the part.

Extensometers are available in two types: contact and non-contact, with the non-contact type having more features. For example, with this type of sensor, the error caused by the stress concentration in the sensor does not affect the test result.

In the images below , you can see a contact-type extensometer, the basis of which is **the Sen C strain**.

Images of non-contact extensometers are given below, which make measurements by laser.



Address of site exhibition: https://iranlabexpo.ir/