

The 2nd Regional Forum on Sustainable Agricultural Mechanization
-Enabling Environment for Custom Hiring of Agricultural Machinery
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CUSTOM HIRING OF AGRICULTURAL MACHINERY IN VIETNAM

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An Overview

Agency Introduction

- I. General Information on Agriculture and Mechanization**
- II. Status of Custom Hiring**
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Agency Introduction

- ❑ **VIAEP is established base upon the mergence of the 2 research institutes (in 2003):**
 - **Vietnam Institute of Agricultural Engineering (established since 1968)**
 - **Post-Harvest Technology Institute Vietnam Institute of Agricultural (established since 1980).**

- ❑ **Staff amount: 350, in which**
 - **03 Associate Professor;**
 - **23 PhD;**
 - **61 Masters;**
 - **139 Bachelors.**



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Agency Introduction

Functional Tasks of the VIAEP :

□ 02 main areas of activities:

- Rural agricultural engineering
- Post-harvest technology

□ 07 main tasks:

- Fundamental research
- Research of strategy and policy for public benefit
- Applied research
- Technological transfer
- Business, manufacture and services
- Postgraduate training
- International Cooperation

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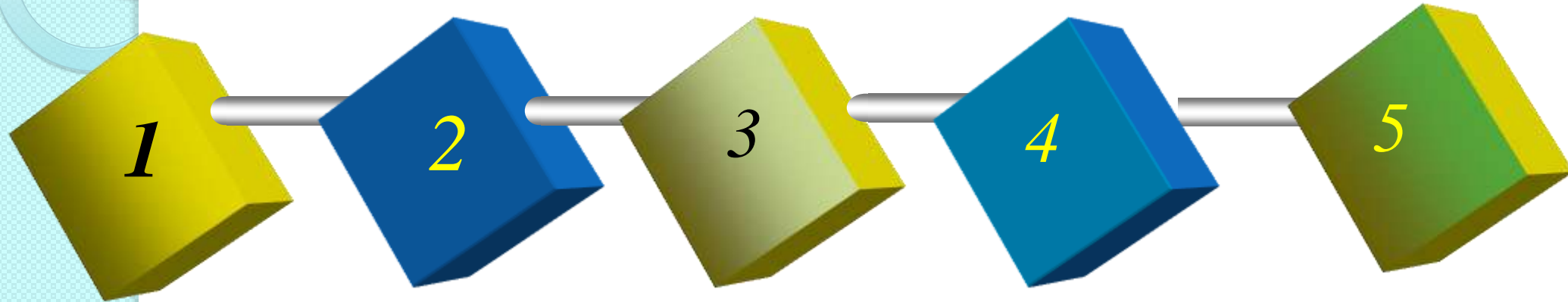
- Rural agricultural engineering
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Agency Introduction

Groups products in science and technology



**Mechaniza-
tion of
cultivation
and harvest**

**Mechaniza-
tion of
husbandry
feed
processing**

**Preliminary
processing,
storage and
processing of
agricultural
products**

**Biological
technology in
postharvest**

**Utilization
of
biomass
and
agricultural
residues**



I. General Information on Agriculture and Mechanization

I. General Information on Agriculture and Mechanization (1)

- Mechanization in agriculture has significantly developed.
- However, according to 2013-statistical data, the level of agricultural mechanization in Viet Nam in terms of available mechanical power is still low with only 1.16 hp/ha of cultivated land, including the Mekong River Delta (the region has highest rate) with 1.85 hp/ha

I. General Information on Agriculture and Mechanization (2)

Level of mechanization of some main crops

a) On rice production (stat. data 2013)

Agricultural production activities	Mechanization Rate (%)
Soil preparation for rice cultivation (mainly used two-wheel tractors of 8÷15 hp and four-wheel tractors of 20÷50 hp)	90
Transplanting	≤ 1
Active irrigation for rice	94
Rice harvesting (combine harvesters, windrow-reapers and threshers)	35
- in Mekong River Delta (MRD)	65
- in Red River Delta (RRD)	60
Rice drying in summer-autumn season in MRD	45
Rice milling	95

I. General Information on Agriculture and Mechanization (3)

Level of mechanization of some main crops

b) On sugar cane production (stat. data 2013)

Agricultural production activities	Mechanization Rate (%)
Soil preparation for sugar cane cultivation (at flat terrains (about 60% of the total sugarcane growing areas))	80÷90
Crop care, weed tilling, fertilizing	10
Transportation	100
Planting, collecting, handling and harvesting	Mostly by hand

I. General Information on Agriculture and Mechanization (3)

Level of mechanization of some main crops

c) On maize cultivation

- **Land preparation and crop-care in flat areas are mechanized at about 70%.**
- **Grain shelling and grading are mechanized but harvest is still manually done.**



II. Status of Custom Hiring

II. Status of Custom Hiring (I)

- Former owners of agricultural machines and equipment (before 1986) were mainly state-owned enterprises, they are now moving to private ownership and households.**

- Providers of mechanization services include:**
 - Agricultural Cooperatives**
 - Private Enterprises**

II. Status of Custom Hiring (2)

- ❑ These both providers buy agricultural machines to provide services.
- ❑ Households owns 94% of four-wheel tractors (with capacity ≥ 35 hp) and 98.5% of 12÷35 hp tractors, 99.7% of two-wheel tractors (≤ 12 hp), the rest belongs to enterprises, cooperatives, and farms (as of 2007-stat. data).
- ❑ Organizations doing service for hiring of machinery efficiently in tillage, harvesting, threshing, drying, storage of grain and transportation were initially formed in rural areas, especially in the Mekong River Delta and Red River Delta.

II. Status of Custom Hiring (3)

- ❑ "Land consolidation" policy was initially achieved positive results
- ❑ Average number of plots from 6.8 plots/household dropped to 4÷5 plots/household.
- ❑ On average, 100 agricultural households own 1.05 four-wheel tractors (with capacity ≥ 20 hp) and 2.4 two-wheel tractors (with capacity 8÷18 hp).

II. Status of Custom Hiring (4)

- Engine and agri- machinery markets in Vietnam are being developed rapidly, of which domestically manufactured machinery shares approximately 40%, providing diversified categories, relevant to the needs of regions.**
- System of agri-machinery services through stores and selling agents and logistics is growing very fast. These services are largely operated by private cooperatives, accounting for about 80% of the service providers.**



III. Supporting Policies

III. Supporting Policies (I)

a) For manufacture of tractors and agricultural machinery

- ❑ Decision No. 186/2002/QD-TTg (Dec. 26, 2002) approving development strategy for mechanics sector in Vietnam till 2010 with a vision to 2020.
- ❑ Decision No. 10/2009/QD-TTg (Jan. 16, 2009) referred to Mechanism to support the development of key mechanical products and the list of projects for key mechanical products in the period from 2009 to 2015.

However, so far, Vietnamese mechanical products met only 32.6% of demand.

Quality of some types of machines such as 30 hp tractors, transplanters, sugarcane or corn harvester are not stable, and low capacity, compared with imported machines.

III. Supporting Policies (2)

b) For users of agricultural machinery (1)

- ❑ From 2010 to 12/2013: Implementation of Decision No. 63/2010/QD-TTg and Decision No. 65/2011/QD-TTg to support policies aiming at reducing post-harvest losses of farm produce and seafood. By 12/2013, the total amount of loans according to the two Decision 63 and 65 to reach 1,978 billion to 9,055 customers.**
- ❑ After more than 2 years of implementation, the Govt's policy had preliminarily met urgent requirements of farmers throughout the country.**
- ❑ The policy also provided support and encourage the mechanical manufacturers in Vietnam in intensive investment, technology innovation, quality improvement .**

III. Supporting Policies (3)

b) For users of agricultural machinery (2)

- Decision No. 68/2013/QĐ-TTg (Nov. 13, 2013) on support policies to reduce losses in agriculture. The Decision took effect from the date Jan. 01, 2014.**

In addition to the support policy of the Central government, many provinces also issued provincial policies to encourage farmers to buy machinery



IV. Social and Economic Benefits

IV. Social and Economic Benefits (I)

- ❑ Agricultural machinery helps to solve the shortage of seasonal workers, in line with the policy of economic and labor restructuring.**
- ❑ Currently, along with facilitation of advanced rural and development of agricultural production in the model of large fields, demand for investment in agricultural machinery is increasingly high across the nation.**

IV. Social and Economic Benefits (2)

- **In Mekong River Delta (for example):**
 - **≥ 10,000 combine harvesters for about 60% of rice area;**
 - **Harvest losses reduced from 5÷6% to 2% due to not collecting, transporting, threshing separately.**

In addition to harvesting step, farmers are more interested in applying comprehensive mechanization of the entire process from land preparation, sowing to drying, storage, and preservation with advanced technologies.



V. Challenges and Constraints faced

V. Challenges and Constraints faced (I)

- ❑ Climate change, causing flooding and drought.**
- ❑ Dispersed agricultural production at small scale, and low efficiency**
- ❑ Land for agricultural production is fragmented and dispersed**
- ❑ Agricultural infrastructure and rural development in many regions are poor**
- ❑ In many areas, labor force in agriculture still accounts for a large proportion, while the labor quality there is below standard, labor restructuring is slow and income from agricultural production is low,**

V. Challenges and Constraints faced (2)

- ❑ The quality of machines, equipment for agricultural production manufactured by Vietnam manufacturers is still low.**
- ❑ The rapid development of science and technology in the world strongly impacts on productivity, quality and prices of agricultural products**
- ❑ Issues on nutrition and food safety for consumers are paid more attention.**



VI. Solutions and Suggestions

VI. Solutions and Suggestions (I)

- a) Organizing production towards centralization and intensification to form large-size fields for promoting efficient use of the agricultural machinery and equipment**
 - ❑ Pursuant to the Master plan to develop agriculture until the year 2020 (Decision No. 124 / QD-TTg 02/02/2012) and based on the specific conditions of each region the plan and directions are reviewed to enlarge in the line of concentrating and intensive agriculture, forming large fields. Also, farmers, businesses, organizations producing agriculture, forestry, fisheries, salt are given better conditions for rapid mechanization in stages of production**
 - ❑ Forming households, cooperative groups, agricultural enterprises specializing in agricultural engineering services**

VI. Solutions and Suggestions (2)

b) Improvement of infrastructure in agriculture and rural areas

- ❑ Improvement of facilities and infrastructure in agriculture and rural areas includes: planning, renovation, leveling the field, strengthening systems of irrigation and drainage; internal traffic.**
- ❑ Facilitation of land consolidation and land accumulation; application of laser-leveled technology in fields, and investment in irrigation and drainage systems, inland and rural transport.**

VI. Solutions and Suggestions (3)

c) Strengthening capacity in research and application of science and technology in agricultural engineering

- ❑ Forming close linkages between**
 - Projects-Demand of production and market;**
 - Research-Technology transfer in enterprises**
- ❑ Developing models for demonstration of comprehensive mechanization, initiated with intensive rice and sugarcane production**
- ❑ Forming groups of Research-Training-Production with high-tech according to ecozone**
- ❑ Strengthen transfer of advanced technologies in agricultural engineering through models of agricultural and industrial extension.**

VI. Solutions and Suggestions (4)

d) Encourage of development of machinery manufacturing industry to support agriculture sector

- ❑ Making favorable conditions for agricultural machinery manufacturing projects.**
- ❑ Recommend to National Program of Mechanics on some key projects serving agricultural engineering and reduction of post-harvest losses such as manufacture of combine harvesters for rice and sugar cane, high capacity diesel engines (over 100 hp), tractors and modern dryers for rice and agro-products.**
- ❑ Develop policies to encourage the supporting industry for engineering projects at small and medium scales.**

VI. Solutions and Suggestions (5)

e) Strengthening capacity of human resources in agricultural mechanics

- ❑ Training and education towards linking training with transfer of machines and technology would be socialized. The Government provides funds to the training institutions (including public and private) to build infrastructure, pay to teachers, purchase teaching and learning tools, training documents, etc.**
- ❑ Support directly to learners in the use of agricultural machinery and equipment such as vocational training**
- ❑ Strengthening training in mechanics, operating agricultural machinery and equipment for farmers in various forms, especially short-term training courses, on-site through the extension activities, performance.**

VI. Solutions and Suggestions (6)

f) Strengthening the management role of the State regulatory role of the Government (1)

- ❑ Increase the effectiveness of government's management for agricultural engineering from the central to local levels; appoint experts of the Department of Agriculture and Rural Development to help direct this area.**
- ❑ Develop and complete technical standards, regulations for agricultural machines, warehouses, storage technology and quality of agricultural products; promulgate regulations on quality management, monitoring, testing and inspection of agricultural machines (both the new and the second-hand imported machines) to minimize the risk of damage for farmers.**

VI. Solutions and Suggestions (7)

f) Strengthening the management role of the State regulatory role of the Government (2)

- ❑ Revise, supplement, and complete mechanisms and policies to promote mechanization.**
- ❑ Deliver information, dissemination and transfer of science and technology, machinery, mechanical and electrical equipment for agriculture and post-harvest storage.**

VI. Solutions and Suggestions (7)

g) The policy (1)

- Land use

- To develop mechanisms and policies to encourage farmers to contribute their shares equal to the value of rights in land use to participate in the business and projects.

- Financial and Credit

- To encourage all economic sectors, both independent or joint venture sectors, to build facilities for production and trading of machinery, equipment and spare parts, maintenance and repair services in regions through incentives for land, income tax, import tax.

- Taxation

- Review tax policies and make recommendations to the Government to reduce import duty for some types of agricultural machines and equipment that are unable to be produced in Vietnam. For example, seeders, planters and transplanters; combine harvester, collectors of the tubers or roots, which are currently charged of 5% import tax, expected to reduced to 0%.

VI. Solutions and Suggestions (7)

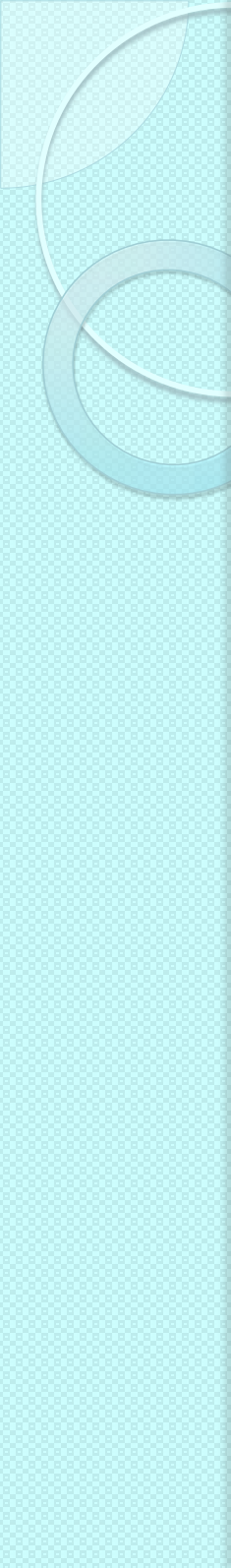
g) The policy (2)

- **Science and technology policy and international cooperation**
- **Encourage research and transfer of science and technology through the promotion of ordering delivery method directly in the field of science and technology with Decision No. 846/QD-TTg 2/6/2011 Prime Minister on Orders on some key technological products by the Ministry of Agriculture and Rural Development.**
- **Encouraging, mobilizing capital of investment from countries with advanced agricultural engineering and their cooperation to domestic firms in projects of motorized machinery manufacture in Vietnam, serving Vietnam market and export to third countries.**

VI. Solutions and Suggestions (8)

h) Enabling the environment for leasing agricultural machinery

- ❑ Under which model are the Vietnam agricultural cooperatives operated? They should work as a business organization, this means that they do not apply the Cooperatives Law, but apply business rules. Cooperatives will lease machinery or provide any services as any enterprises.**
- ❑ Investment in facilities (preferential loans) of serve agricultural machinery for specialized business services including agricultural cooperatives.**
- ❑ Develop models at pilot scale, accumulate experience, make additions and extension of the models.**



SOME PICTURES ABOUT MECHANIZATION IN VIETNAM

Cultivation for rice, maize, sugar cane and industrial crops



Cultivation



- **Improved 4-wheel tractor for water field operation.**



Hand - propelled sowing tool and sowing machine combined with tractor

C u l t i v a t i o n



Tray rice seedlings brought to transplant



Cultivation

**Transplant machine
MC-6-250**



Crops-care and Irrigation

All kinds of pumps like hand pump, high pressure spiral pump, axial-flow pump, centrifugal pump

and systems of sprinkling, drop-type, absorbing irrigation have been widely applied for different areas of lowland, highland, mountains, etc.



Harvest

Some kinds of reapers



Productivity: 0.25 ha/h

Harvest

Rice combine harvesters with capacity of 2-3 ha/day.



Harvest



Axial-flow thresher DLH-1.5



Harvest



Hand maize Sheller



Maize Sheller TN 4



Axial-flow thresher DLH-1.5



**Maize ocrea peeler and sheller
BBTH 2,5**

Dryers



Simple dryer SH 1-200



Bananas Dryer



Infra-red dryer



Dryers



Dryers



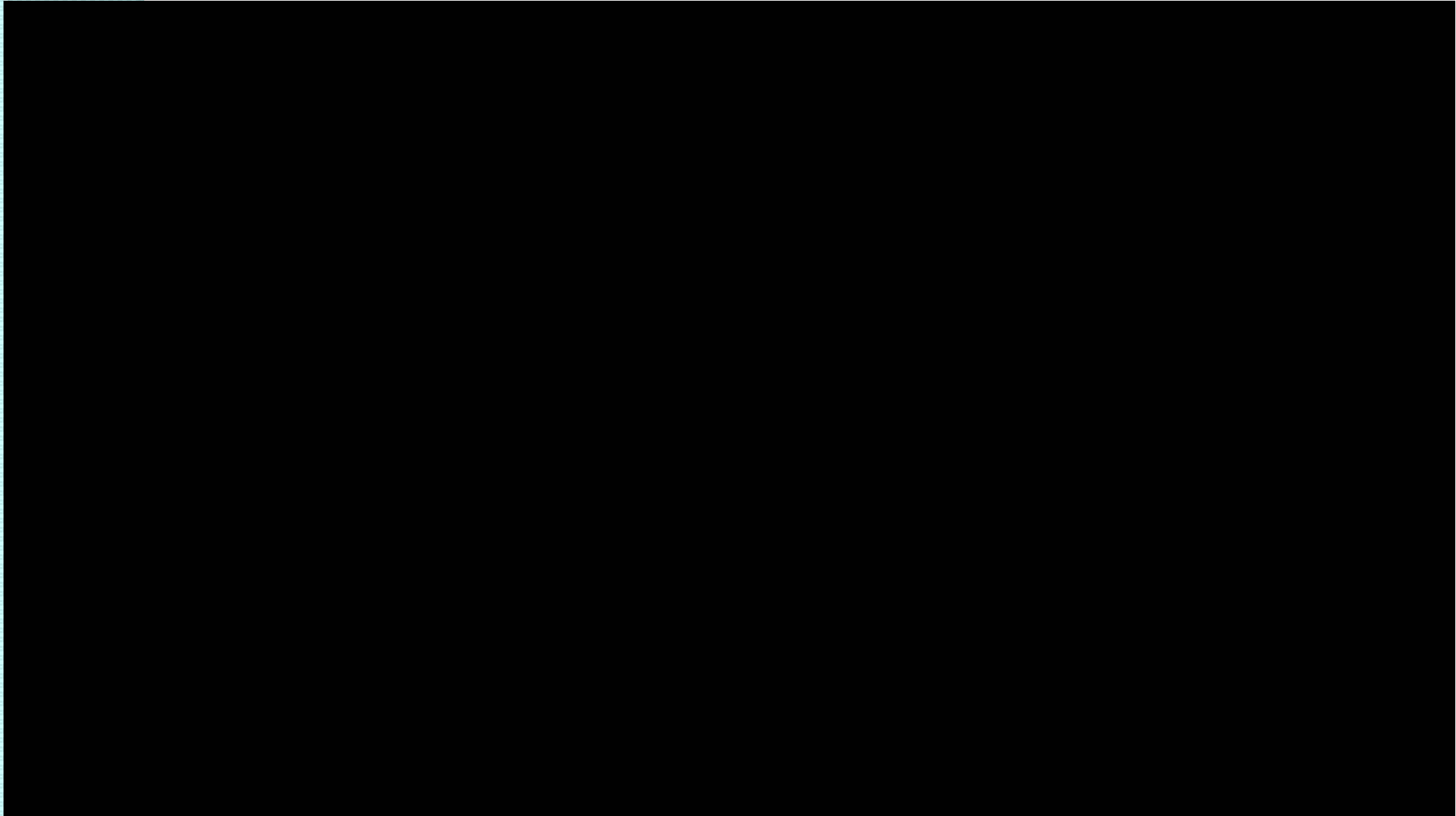
Automatic tower-type dryer



Flat bed dryer SH- 4



Flat bed dryer SV-500





Thank you for your kind listening