The image features a solid blue background. In the corners, there are decorative geometric patterns composed of overlapping chevron shapes. The colors used in these patterns are yellow, magenta, cyan, and grey. The patterns are arranged in a way that they appear to be part of a larger, repeating design.

**Як правильно
оформити постер?**

Підготовка

- По-перше, **ОЗНАЙОМТЕСЯ З ІНСТРУКЦІЯМИ**, які надають організатори зустрічі!
- Знаючи всі деталі перед початком роботи, вам буде легше успішно закінчити весь процес.
- Більшість з тих, хто прийде до постеру, хоче не читати, а скоріше інспектувати його.
- Тому ключем до створення ефективного постера є візуальна простота, що досягнута без втрати інформаційного наповнення

Основні вимоги

- **Читабельність** — ознака того, як легко сприймаються ідеї при переході від одної частини до іншої. Складні речення, перевантажені граматичними помилками важко читати.
- **Чіткість** — якість та величина шрифту така, що з відстані 1-1,5 метра текст можна прочитати і зрозуміти.
- **Просторова організація** - Просторова організація робить різницю між досягненням 95% а не лише 5% вашої аудиторії: час витрачений на пошук наступної ідеї або частини даних – це час, забраний від обдумування наукової цінності роботи.
- **Стислість** - дослідження показують, що ви маєте лише 11 секунд, аби привернути і утримати увагу вашої аудиторії, тому робіть найважливіші заголовки видимими і короткими. Більшість з вашої аудиторії збирається запам'ятати лише ці заголовки. Той, хто безпосередньо має інтерес до галузі дослідження, знайде вас так чи інакше і поговорить з вами про деталі.
- **Стиль** — витримання певного стилю справляє враження продуманості і

Наповнення

- Зробіть заголовок коротким і інформативним.
- Додайте короткий абстракт для орієнтації оглядача.
- Сплануйте історію, яку ви розкажете слухачу:
 - зміст: що, чому, як ?
 - результати і аналіз
 - важливість результатів
- Використовуйте “мову телеграм” і виділяйте основні положення
- Побудуйте прості графіки і таблиці
- Додайте візуальні матеріали для ілюстрації проекту і результатів
- Облегшіть слухачам можливість слідувати логіці інформації, що пояснює роботу

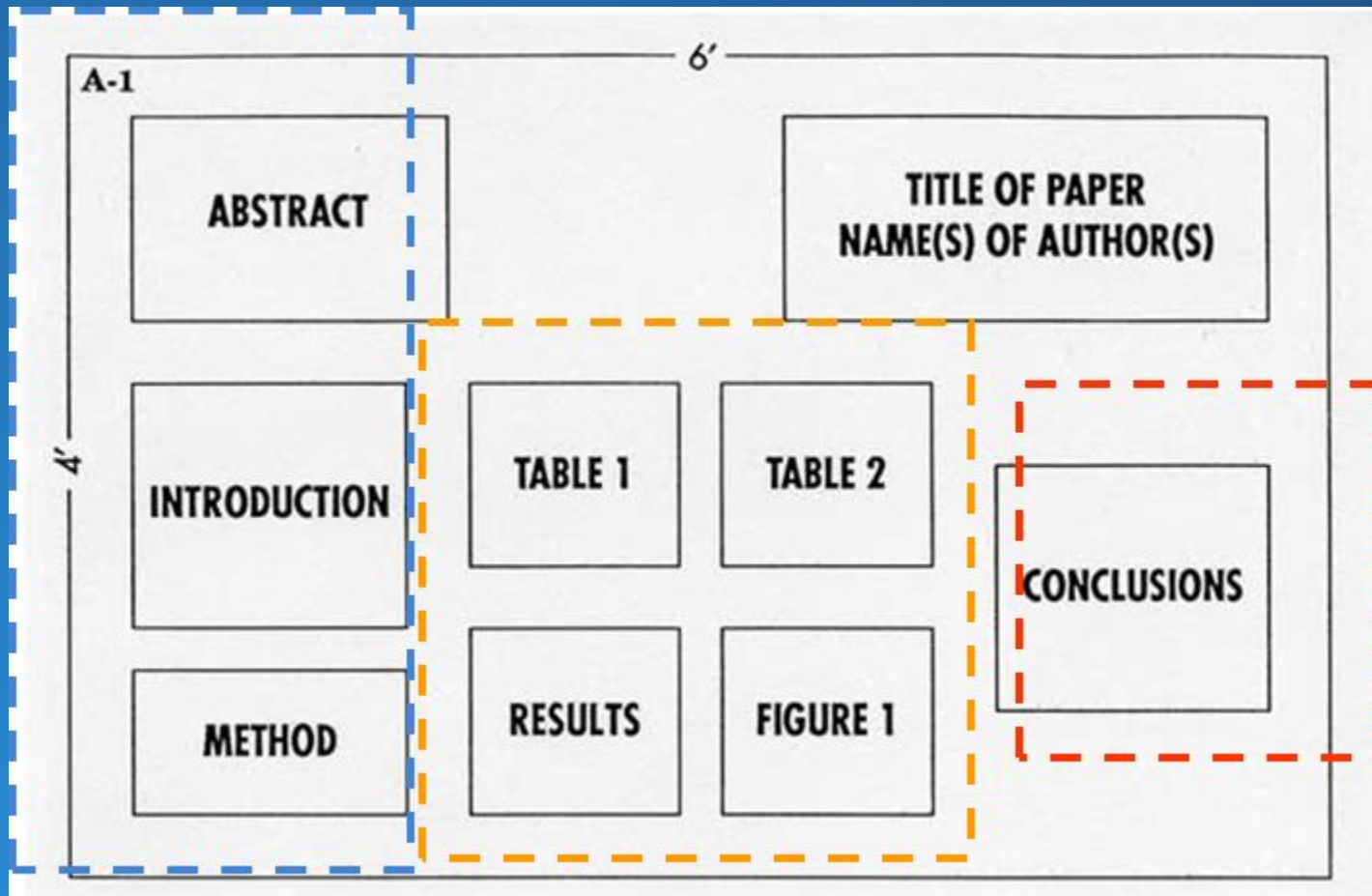
Робота над постером

- Плануйте час
- Підготуйте весь матеріал для наповнення
- Виберіть схему постера
- Зробіть ескіз
- Вирішіть питання друку
- Виберіть стиль і колір
- Випробуйте презентацію на друзях, колегах
- Завершіть роботу над постером
- Збережіть елементи і кінцевий варіант постера

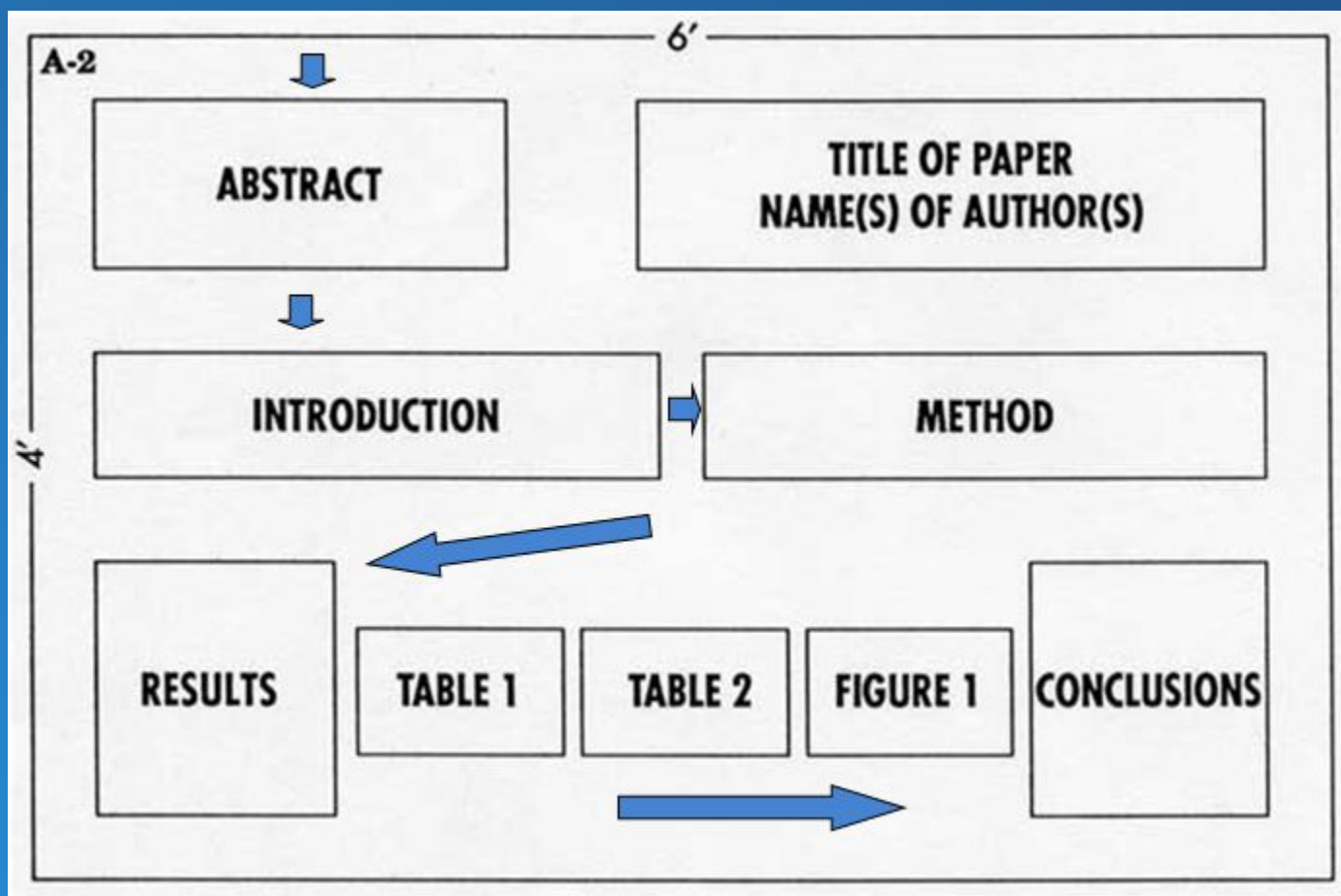
Структура

	Назва проекту	
Проблема	Квінтесенція роботи	Результати
Мета	Графіки та іллюстрації	Висновки
Гіпотеза		Практичне застосування
Хід роботи	Дані та їх аналіз	Інше

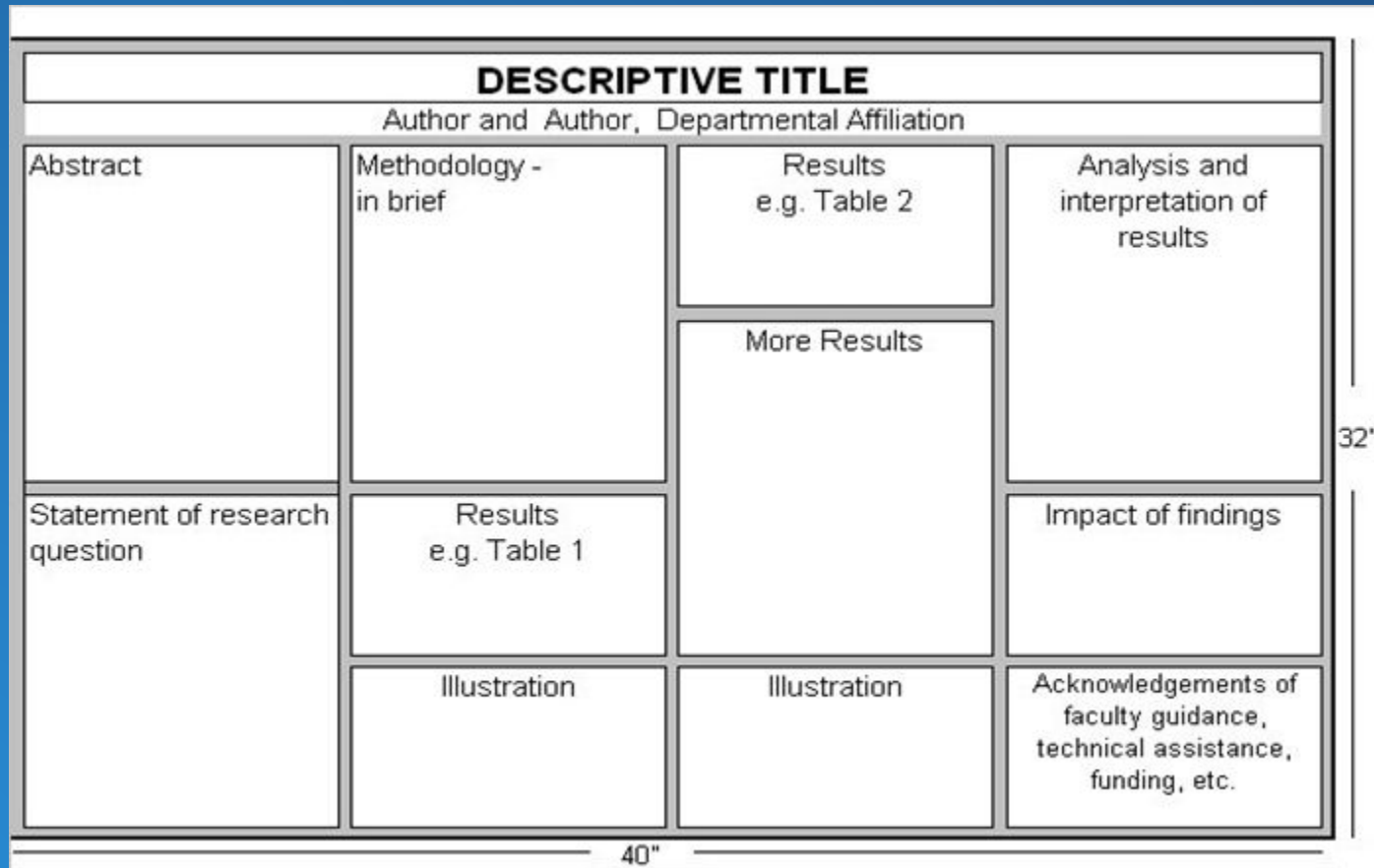
Кластерна схема



Логічна схема



Симетрична схема





Enhanced stabilizing system for wind-driven electric plants



Motivation

Energy savings is a global problem that has its roots in traditional energy sources are limited. Alternative energy sources are very cheap and they are unlimited. It is especially urgent for Ukraine – most of the energy sources are imported.

THE GOAL

- To develop a new wind velocity transducer that would have higher efficiency and precision.
- To increase the efficiency of the developed device.
- To create a prototype of such a transducer.
- To check working capacity and efficiency experimentally.
- To find alternative applications of this device.

Topical question

It is necessary to ensure environmental safety (pollution). The main technical problem is the necessity of stabilizing frequency of rotation of the generator. It is difficult to develop a control system and a wind velocity transducer that has low disadvantages compared to existing ones.

There are the disadvantages: low high response to wind force. Absence of an optical electric signal as the result of the measurements. Influence of external factors, such as temperature, pressure and humidity of the environment, density of the air, etc. Absence of flexible and rotating parts. Complexity of mounting elements. Big mass and dimensions. Unhigh and unrobust mechanical body. Possibility of the contamination or fluid penetration.



Advantages of the new transducer

Uses alternative sources of energy that are unlimited.
The reaction is very fast and accurate.
The electric signal as an output that can be measured (microamperes, mV, etc.).
The body protects the device from the mechanical damage and contamination.
Small size and mass, low cost.

The wind can be measured in any direction due to the elastic gasket ring.
Made out of improved materials that can be easily replaced.
The influence of external factors, such as temperature, pressure and humidity of the environment, density of the air, etc. is compensated by the bridge connection.

Developed transducer



- Structure:
1. A nail
 2. A spring
 3. Elastic and hermetic gasket ring
 4. Shock-protected cylindrical body
 5. Directed light source
 6. Core
 7. Recording unit
 8. Photodiode
 9. Microammeter



The mode of operation:
The wind strikes and pushes an elastic device, a nail.
The nail hits to a core which has the optical electric signal.
The spring gets deformed reaction - elastic force appears in the transducer.
The light beam passes on the recording and storage.
The photodiode effect produces and is recorded electric signal.
The current is measured in the apparatus of a bridge in the environment, and the wind velocity is calculated.

Future prospects

The most beautiful and precise is to use the optical method that has a lot of pros - it gives the opportunity to measure the position of the light from the light tube very precise and give the result to the PC.
The smaller and the lighter model for using LED (light emitting diode) and photodiode. These small devices give a more correct electric signal (microampere one or two) and it is easy to use the same device can be created but much easier. This could allow to create these devices almost everywhere (houses, cars, planes, ships, computers, cell phones, etc.).

Can be a part of the global meteorological network and a part of it to help to create weather maps, prevent nature disasters.
The most interesting would be to use the moving solar light and the reflection gallery. The depression of the beam would be measured and the result will be calculated.
The cheapest version can be just flat plate and instead of the light source, the sunlight should be used for lighting the detector.
The most economical and ecological version is to use solar batteries to supply the light source and to recharge the microammeter per that it can work at night.

Summary

The analysis of the wind velocity detectors used in POCIP and existing anemometers was made.
The new detector was developed that gives the opportunity to get more precise and efficient measurements results and send them to other units of the control system.
The prototype model of developed anemometer was made.

The working capacity and efficiency was checked experimentally.
The developed detector can be mounted on POCIP, and also can be used in meteorology after insignificant updates.
Other possible applications and updates were discussed.

Existing models



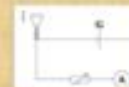
Another possibility of the device is addition to the microammeter with voltmeter. The voltmeter can be used to measure the voltage of the generator, and the microammeter can be used to measure the current of the generator. The device can be used for other measuring.



The device can be used for other measuring. The device can be used for other measuring.



The device can be used for other measuring. The device can be used for other measuring.



The device can be used for other measuring. The device can be used for other measuring.



The device can be used for other measuring. The device can be used for other measuring.

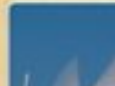
Prototype model



- Structure:
1. A nail
 2. A spring
 3. Elastic and hermetic gasket ring
 4. Shock-protected cylindrical body
 5. Directed light source
 6. Core
 7. Recording unit
 8. Photodiode
 9. Microammeter



The device can be used for other measuring. The device can be used for other measuring.



The device can be used for other measuring. The device can be used for other measuring.



Versatile Wind Velocity and Direction Transducer

Problem Statement

Due to constant wind direction and velocity change, the operation of the windmill generators is often sub optimal.

Such problems as the lack of precision, slow reaction time, inability to work in broad temperature ranges, influence of the environment, complexity of the moving parts and fragility take place in the existing patterns of anemometers.

Purpose

Develop a low cost, combined, reliable and accurate wind force and direction sensor, that has more advantages compared to existing ones.

Hypothesis

Photocells can be used to measure wind velocity and direction. Precision and effectiveness can be provided by electronic data processing.

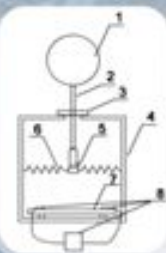
Research Procedure

- analyze the existing patterns of anemometers and find their disadvantages
- develop a new pattern that would have less disadvantages compared to the existing ones
- increase the efficiency and precision of the device
- build an experimental model
- check working capacity and efficiency experimentally
- find possible applications of the device

How it works



Structure



1. Sail
2. Spindle
3. Elastic Gasket ring
4. Shock-protected body
5. Directed light source
6. Springs
7. Recording unit support
8. Recording unit
9. Photocell array
10. Microammeters



Principle of operation

The working principle is based on the spring suspended light source and a photocell array below. Light source is connected with the aerodynamic sail via a spindle shaft assembly fixed to the sensor with a flexible elastic rubber gasket. Photocells detect the light position on the array from the source tilted by the wind and induce signal that is detected and digitized. Tilt angles are calibrated with known wind speeds and included in the software prior to operation.

Supporting Software



- Real-time measurements
- 2 modes of operation
- Check the flow info easily
- Calculate statistics
- Build the table
- Plot the graph
- Send the results to the Web
- Save the results

Application

Wind-driven electric plants
 Weather stations
 Predicting natural disasters
 Cranes' security system
 Airports
 Safer navigation
 Narrow water-ways
 Anywhere, where it is necessary to measure velocity and direction of gas or liquid flow

Advantages

2-in-1: velocity + direction
 High precision and effectiveness
 Long lifetime
 Few moving parts
 No influence of external factors (temperature, air humidity and pressure, etc.)
 Low reaction to wind flaws
 Low price
 Small size & mass
 Damage protection
 Possible for any gas or liquid flow
 Plug & Play interface
 Easy-to-use program
 Ability to save and analyze the results
 USB output gives an opportunity to transfer results in different ways:

