

Project title: IRN AP14869386 «Research, development, manufacture of constructures set and experimental sample of automatically controlled sailing wind power plant with swinging working body»

Relevance:Results of the project are significant contribution to renewable energy and represent a new direction in wind energy, since autonomous SWPPs of small capacity are offered for individual consumers. In case of lack of power energy, consumers can purchase an additional required amount of SWPPs. The economic efficiency of the project lies in affordability, reliability and ease of operation. The readiness of the experimental sample of the SWPP creates the necessary conditions for further successful commercialization of the project results.

Purpose:Research, development of constructions set and manufacture of an experimental sample of automated small 5 kW SWPP with swinging working body using technology, technical means for efficient conversion of wind energy into electrical energy under conditions of large range wind speed (from 2.5 m/s), regardless of wind direction and speed.

Expected and achieved results:As a result of solving the scientific and technical tasks set out in the project, the scientific foundations will be developed and an experimental sample of an automated SWPP with swinging working body manufactured using technology, technical and hardware means for efficient conversion of wind energy into electrical energy when wind speed changes in a large range, starting from 2.5 m/s, regardless of the wind change in direction and speed. The results of the project in the form of SWPP can be used on the vast territory of Kazakhstan, where there is an average annual wind speed of about 3 m/s and higher.

As a result of the project, it is planned to publish: at least 2 (two) articles and (or) reviews in peer-reviewed scientific publications included in the Science Citation Index Expanded of the Web of Science database and (or) having a CiteScore percentile in the Scopus database of at least 50 (fifty), and at least 1 (one) patent included in the Derwent Innovations Index (Web of Science, Clarivate Analytics); at least 1 (one) article or review in a peer-reviewed foreign or national publication recommended by CQAES; at least 1 (one) monograph.

Research team members:

Head of the project – d.t.s., professor **Sholanov Korganbay Sagnaevich**

Researcher ID: N-8999-2017 <https://www.webofscience.com/wos/author/record/92310>

Scopus Author ID

56258478400 <https://www.scopus.com/authid/detail.uri?authorId=56258478400>

ORCID 0000-0002-2077-7883 <https://orcid.org/0000-0002-2077-7883>

Research team:

Chief researcher – d.t.s., professor **Ceccarelli Marco**, Researcher ID AAK-9020-2020, ORCID

0000-0001-9388-4391, <https://orcid.org/0000-0001-9388-4391>, Scopus Author ID:

7102783688, <https://www.scopus.com/authid/detail.uri?authorId=7102783688>

Leading researcher – d.t.s., professor **Yeskhozhin Djadiger Zarlykovich** Researcher ID: ABE-

6999-2021, ORCID: example@email.com or 0000-0001-2345-6789 (0000-0001-9606-3900), h-

index (Web of Science) - 1, h-index (Scopus) – 2, Scopus Author ID: 56009476200

Senior researcher – m.t.s., **Omarov Anuar Serikovich**, ORCID 0000-0001-9602-

2770 <https://orcid.org/0000-0001-9602-2770>

Senior researcher – d.t.s., associate professor **Tatkeyeva Galiya Galymzhanovna** - index 2,

Researcher ID ABF-9385-2021, ORCID – 0000-0001-9518-4567, Scopus Author ID

56669761400

Senior researcher – c.t.s., associate professor **Ahmetov Erzhan Sovetovich** Scopus Author ID:

57194243870

Researcher – c.t.s., associate professor **Gorbunov Boris Nikolayevich**,

Researcher – m.t.s **Tleumbetov Kaldybek Mirambekovich**,

Junior researcher–PhD, senior lecturer **Issaeva Jazira Rahatdinovna** Researcher ID ABE-1719-2021, ORCID 0000-0001-8146-8366, <https://orcid.org/0000-0001-8146-8366>

Junior researcher–PhD, senior lecturer **Abzhaparov Kuanysh Almabekovich** Researcher ID AAY-6133-2020, Scopus Author ID 57189640775

<https://www.scopus.com/authid/detail.uri?authorId=57189640775>

Junior researcher–PhD, senior lecturer **Mirzabayev Berik Islambekovich** ORCID 0000-0003-1430-741X <https://orcid.org/0000-0003-1430-741X>

Engineer– PhD student **Kabibulatov Almas Aidosovich**

Information for potential consumers: Consumers of the proposed SWPP are industrial facilities, private buildings and the population of small farms located in places remote from power lines, thereby solving social problems.

Additional information: results of the project in the form of scientific and technical solutions, engineering documentation can be used by project and manufacturing organizations for the organization of industrial production of SWPPs.