



**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION**

**TERMS OF REFERENCE FOR PERSONNEL UNDER INDIVIDUAL SERVICE AGREEMENT  
(ISA)**

**PROJECT ID: 103056**

**Market Transformation Programme on Energy Efficiency in Carbon  
Intensive Industries in the Russian Federation**

**WBS: 103056-1-02-05**

<b>Title:</b>	<b>National Pump Systems Optimization Expert</b>
<b>Main Duty Station and Location:</b>	Home based
<b>Mission/s to:</b>	Russia for PSO training and assessment
<b>Start of Contract (EOD):</b>	01 July 2016
<b>End of Contract (COB):</b>	20 December 2016, with possibility of extension
<b>Number of Working Days:</b>	37 working days

**ORGANIZATIONAL CONTEXT**

The United Nations Industrial Development Organization (UNIDO) is a specialized agency of the United Nations. Its mandate is to promote and accelerate sustainable industrial development in developing countries and economies in transition, and work towards improving living conditions in the world's poorest countries by drawing on its combined global resources and expertise.

**Energy Department (PTC/ENE)**

The responsibility of the Department is to assist member countries in the transition to a sustainable energy future under the overarching mandate of inclusive and sustainable industrial development, through the application of renewable energy for productive uses, adoption of the efficient use of energy by industry and the introduction of low carbon technologies and processes. In transitioning to a sustainable energy future, the challenges of addressing energy poverty and climate change become an integral part of the Department activities. The main strategic focus areas of the Department's activities are: first, to provide integrated energy solutions to industry by promoting energy efficiency; secondly, to deliver renewable energy technologies as well as enhancing access to energy to promote productive activities as a major

contribution to reducing rural poverty; and thirdly, championing industrial energy perspectives in the global debates about sustainable industrial development and climate change mitigation and adaptation. In addition, the Department acts as the focal point within UNIDO for all strategic energy and climate change partnerships, networks and conventions including UN-Energy, Sustainable Energy for All (SE4All), and United Nations Framework Convention on Climate Change (UNFCCC). In discharging its responsibility, the Department cooperates with other relevant Departments within UNIDO, in particular with the Environmental Department on resource efficiency, clean technologies, chemicals and Montreal Protocol; with the Trade Capacity Building Department on standards; Agri-Business Development Department and the Business, Investment and Technology Services Department for productive uses; and with the GEF Coordination Division on GEF related issues and the Partnership Group on strengthening strategic partnerships.

### **Industrial Energy Efficiency Division (PTC/ENE/IEE)**

The Division is responsible for promoting the efficient use of energy by industry and the dissemination of industrial energy efficiency best-available practices and technologies in order to accelerate economic growth and enhance competitiveness and job creation, while addressing climate change. The Division's focus on the promotion of industry cross-cutting solutions, such as the implementation of energy management systems and standards (i.e. ISO 50001 series and minimum energy performance standards (MEPS)) and energy systems optimization is complemented with substantial and growing work to support the deployment of process or sector specific low carbon technologies that use energy more efficiently and productively. In discharging its responsibility, in line with the overall strategy of the Department, the Division cooperates closely with the RRE and CPN Divisions, as well as other relevant organizational Divisions within UNIDO, in particular with the Environment Department and Trade Capacity Building Department.

## **PROJECT CONTEXT**

The project aims to reduce greenhouse gas emissions in the Russian Federation by transforming the market for industrial energy efficiency in GHG-intensive industries. Project activities are grouped under four main components:

1. Enhancing knowledge asset

Under this component activities are being carried out to promote industrial energy efficiency (IEE) knowledge dissemination, develop training programs and material on energy management system, system optimization (steam, pumps, compressed-air, Pumps and motors) and process heat.

2. Capacity building in large industries

Under this component extensive capacity building and technical assistance is being provided to large enterprises to implement energy management systems and system optimization projects. Technical assistance will be also provided for developing process technology innovation plans and prepare sizeable IEE investment proposals for submission to commercial banks.

3. Capacity building and Energy Management Systems in SMEs

Under this component capacity building and technical assistance is being provided to Russian SMEs to implement energy management systems, energy system assessment and optimization projects. Technical assistance is also provided for preparing IEE investments plans for submission to financial institutions.

4. Policy support

Under this component, the project is working with federal and regional governments and other IEE relevant institutions to strengthen IEE policy-making and program-implementation capacity and reinforce the existing policy, legal and regulatory framework for IEE. The goal of this component is to ensure the establishment of an environment supporting long-term sustainability of project outputs and outcomes.

The Consultant is expected to provide the technical expertise and experience required to support and ensure sound and timely preparation and delivery of the UNIDO Pumps System Optimization (PSO) Expert Training Programme in Russia. The Consultant shall also work with UNIDO’s international PSO expert to finalize and customize the UNIDO PSO Training program to the Russian industrial context.

The Consultant will be expected to perform the following duties:

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<b>Main Duties</b>	<b>Measurable outputs to be achieved</b>	<b>Expected duration</b>	<b>Location</b>
<p><b>1. Training Material Review</b></p> <p>The Consultant shall provide expert review of the latest UNIDO PSO training material (Power Point presentations) and in coordination with the UNIDO international PSO experts fine tuning it to the Russian context. This will include: translating new/modified slides; checking correct translation in Russian of technical terminology; adjusting and adding few numerical case studies to complement or replace existing ones; suggest, discuss and make other changes as agreed with the Int. PSO expert. The Consultant shall prepare also a short (3 pages max) note with a technical and quality evaluation of the UNIDO training material vis-à-vis similar material or programmes available in Russia.</p>	<p>1. Training material translation checked, finalized, adapted</p> <p>2. Short technical &amp; quality evaluation note prepared</p>	7 days	Home based
<p><b>2. PSO EXPERT Programme Preparation Support</b></p> <p>In collaboration with the Project Management Unit (PMU) and under the technical supervision of the international PSO experts, the Consultant shall provide technical support to the preparation and execution of the PSO Capacity Building Programme. This will require the Consultant to:</p>	<p>3. Suitable trainees for the PSO EXPERT programme selected through due diligent process</p> <p>4. Suitable host-plant for the on-site</p>	10 days	Home based

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Main Duties	Measurable outputs to be achieved	Expected duration	Location
<p>a. Liaise and communicate with the international PSO expert and the national project management team (PMT).</p> <p>b. Provide inputs for and assist in the outreach, identification and selection of the national trainees for the PSO EXPERT training program.</p> <p>c. Under the guidance of the international PSO experts and in collaboration with the Russia project team, the Consultant shall assist in evaluating CVs of candidates for the PSO Expert program to assure compliance with minimum qualification requirements and selection of the best target audience.</p> <p>d. Provide inputs for and support the identification of the host-plant for the PSO EXPERT training. Tasks to be performed by the Consultant will include:</p> <ul style="list-style-type: none"> <li>• To assist the PMT in liaising with potential partner enterprises (host-plant candidates) and collecting technical and other data related to their pumps systems.</li> <li>• To visit few short-listed host-plant candidates (3-4) to verify data, layout, accessibility for measurements, safety and other aspects related to the on-site training session.</li> <li>• During all visits the Consultant will also have to assess (i.e. get an expert feeling of) the potential for pumps systems energy savings, both through operation control improvements and more substantial measures; and the level of expertise and skills on pumps systems optimization of the plant personnel responsible for pumps systems design, procurement and operations.</li> </ul> <p>e. Learn to use the measuring equipment used by the International PSO Experts, in case such instruments should not be normally used by the Consultant.</p>	<p>Pump system energy assessment practice of the PSO EXPERT training selected</p> <p>5. Timely and technically sound preparation of the on-site PSO training session</p>		

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Main Duties	Measurable outputs to be achieved	Expected duration	Location
<p><b>3. PSO USER and EXPERT Trainings Delivery Support</b></p> <p>The Consultant shall attend and contribute to the delivery of the PSO USER and EXPERT trainings. Tasks to be carried out by the Consultant will include:</p> <ul style="list-style-type: none"> <li>i. Provide translation support during the trainings if simultaneous interpretation should be wrong</li> <li>ii. Contribute to the delivery of some presentations during the USER and EXPERT trainings, if and where deemed appropriate by the international PSO experts and the Consultant.</li> <li>iii. Accompany and support the international PSO experts during the on-site training session (i.e. host-plant pump system energy assessment)</li> <li>iv. Accompany and support the international PSO experts during 1-2 additional 1-day pumps system energy assessment.</li> <li>v. Prepare a pump system energy assessment report and sit the PSO EXPERT Exam like all trainees in order to formally become a UNIDO qualified PSO Expert<sup>1</sup>.</li> <li>vi. Provide direct expert advice and inputs in the preparation of the international PSO experts' pump system energy assessment reports for the host-plant, especially with regard to costs of pumps systems related measures in the Russian market</li> </ul>	<ul style="list-style-type: none"> <li>6. PSO USER training attended and delivery supported</li> <li>7. PSO EXPERT training attended and delivery supported</li> <li>8. Mission of international PSO experts supported</li> <li>9. Inputs to pump system energy assessment report provided</li> <li>10. Successful completion of the UNIDO PSO Expert programme</li> </ul>	15 days	10-12 days Ekaterinburg TBC  +  3-5 days Home based
<b>4. Final reporting</b>	11. Final report	2 days	Home based
<b>5. Contingencies</b>		3 days	Home based
<b>Total number of working days</b>		<b>37</b>	

<sup>1</sup> It is envisaged that upon successful support and completion of the PSO EXPERT programme the National Lead PSO Consultant will be recruited for delivering a PSO USER training and conducting 1-2 additional pump system energy assessments.

## **REQUIRED COMPETENCIES**

### ***Core values:***

1. Integrity
2. Professionalism
3. Respect for diversity

### ***Core competencies:***

1. Results orientation and accountability
2. Planning and organizing
3. Communication and trust
4. Team orientation
5. Client orientation
6. Organizational development and innovation

### ***Managerial competencies:***

1. Strategy and direction
2. Managing people and performance
3. Judgement and decision making
4. Conflict resolution

## **MINIMUM ORGANIZATIONAL/QUALIFICATION REQUIREMENTS**

**Education:** Master or higher degree in engineering or related specific discipline

### **Technical and Functional Experience:**

1. The consultant is a national leading expert with at least 10 years combined working experience in the areas of Pumps systems design and/or development and implementation of Pumps systems energy performance improvements in industry and/or utilities
2. The consultant has demonstrated experience in the development and implementation of Pumps system energy efficiency improvement projects in industry, execution of Pumps system performance assessment and development of energy efficiency monitoring and tracking/ verification systems.
3. The consultant has demonstrated significant understanding of industrial motor systems and modelling them using commercially available software.
4. The consultant has both good knowledge of methodologies for and direct experience in developing and implementing training program on Pumps system targeted to industry engineers.
5. He/she has ability to write on the subject of Pumps system energy efficiency, deliver training and provide technical guidance and leadership.

6. Ability to provide interpretation from English to Russian and backwards of technical material related to the course topics.
7. Proficient with computers, especially using spreadsheet type programs such as Microsoft Excel.
8. The consultant has the Certified Energy Manager or Energy Auditor certificate from a chartered or government organization.

**Languages:** Fluent Russian and English

### **REPORTING**

At the conclusion of the assignment the consultant shall submit a short final report comprising of a summary of activities carried out with attached all deliverables prepared within the scope of his/her assignment.

Final report must be in English and related documents must be in Russian and presented in electronic format.

## ANNEX 1: The UNIDO Capacity Building Program on Pumps Systems Optimization

UNIDO Pump Systems Optimization (PSO) projects build technical capacity at three levels: **Consultants**, **Users** and **Vendors**. Fig. 1 below shows the elements of the UNIDO Pumps Systems Optimization (PSO) capacity building program.



Fig. 1 Elements of UNIDO Pumps Systems Optimization capacity building program

The **Two-Day PSO End Users training** is targeted at facility engineers, operators and maintenance staff of enterprises and energy service providers. It is designed to teach the end users how to qualitatively assess systems, determine energy performance, identify potential improvement opportunities and achieve cost savings through proper operation and controls, system maintenance, and appropriate uses of the service. This training also introduces basic principles for energy efficient design of systems, how to successfully sell PSO projects to management. It is also designed to teach end users how to use software tools to quantitatively assess systems, identify potential improvement opportunities and achieve cost savings.

The **Half-Day Equipment Vendor training** is targeted to local equipment vendors, suppliers and manufacturers. The training is designed to be supplementary to the User training. Its purpose is to introduce those key market players to PSO techniques and service offerings. The objectives are to:

- a. Prepare manufacturers, vendors and suppliers to participate in reinforcing the system optimization message of the UNIDO project with their industrial customers, and
- b. Assist manufacturers, vendors and suppliers in identifying what will be required to reshape their market offerings to reflect a system services approach.

The **PSO Consultants training** is an intensive training delivered by leading international Pump Systems Optimization (SO) experts to national energy efficiency experts, service providers, equipment vendors and industry engineers. This training provides more in-depth technical information so that the participants can evaluate, troubleshoot and make improvements to industrial Pump systems. They will also learn how to create new systems when necessary.

National EE consultants and experts are trained through classroom, on-the-job and coaching by international PSO experts, and are equipped with the expertise, skills and tools required for providing the following services:

- a. Conducting Pump Systems energy assessments
- b. Technically assisting enterprises and coaching facility personnel on Pump system optimization project development and implementation, and
- c. Conducting PSO Users training on energy performance assessment, identification of optimization measures and implementation of simple operational improvements.