



Criteria for identification and selection of Industrial Plants to host on-site training session of the Steam System Optimization (SSO) Expert Training and to receive Steam System Assessments

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Explanatory note:

These criteria are meant to guide the identification and selection of the industrial plants and enterprises that will directly participate in the SSO Expert Program.

The Program needs are the following:

- A. Two industrial plants needed to host on-site training sessions of the Steam System Optimization Expert Program. The 16-18 Expert trainees will split in two groups, each one led by one of the International SSO Trainers.
 - Both these plants could have been selected as an be
- B. 6-8 additional industrial plants prepared to provide access to the UNIDO Expert trainees and receive and collaborate to the conduction of a steam system assessment.

Industrial Plant Characteristics

The following criteria should be used by the Project Management Unit or other national project personnel to prepare a short list of suitable candidate plants to be visited by the international team of Experts on Steam System Optimization.

1. Industrial sector is a steam energy-intensive sector (i.e. food and beverage, chemicals, refining, pulp and paper, manufacturing assembly plant, textiles, etc.) and of priority interest to the UNIDO project (in reason of its share of energy consumption, population of enterprises and replicability potential) and to the country
2. The following **minimum requirements** are expected of the Plant:
 - a. Plant management would support implementation of cost-effective energy efficiency improvements (steam system optimization) identified as the result of a steam system assessment;
 - b. Plant does NOT have very heavy security constraints and will allow the UNIDO Expert group (10-11 people) to bring in their portable instrumentation such as infra-red cameras, combustion analyzers, pitot tubes, etc, and carry out measurements with no interference in the production process.
 - c. The plant produces steam for process (or product) heating and NOT just for heating space or just for power generation

- d. At least one steam system (and process) knowledgeable plant personnel is available all the time to accompany the UNIDO expert on their walk through the plant and respond to technical questions
 - e. The plant should have some level of minimum onsite instrumentation – steam flow meter, fuel flow meter, pressures, temperatures, etc.
 - f. The plant has the ability to take water samples and test them for conductivity, etc.
 - g. The plant has a condensate return system
 - h. A steam generation or demand of a minimum of 5 Tons/hr
 - i. At least 3 boilers with a minimum of 2 boilers operating under normal conditions
 - j. Minimum boiler operating pressure of 10 bars
 - k. Minimum two pressure levels (or headers) for plant-wide steam distribution and end-use
 - l. Has adequate training room (conference room) area for some onsite training and discussions
3. The following “good to have” requirements could also be expected at the Plant:
- a. Boilers with dual-fuel fire capability or different fuel boilers operating under normal conditions
 - b. The plant has condensing turbines used for power generation and/or driving mechanical equipment
 - c. The plant produces superheated steam
 - d. The plant has a Data Acquisition System with historical trends and data storage capability
 - e. The plant has detailed P&ID’s of the steam system and process areas
 - f. The plant will allow for camera and/or video recording, if required, after proper permissions are obtained
 - g. An Energy Team exists at the Plant that is comprised of plant and/or corporate personnel.

Objective of International SSO Expert plant visits during 1st Mission to Moldova:

1. Preview candidate plants to host on-site training to ensure that it has all the major sub-systems and areas of an industrial steam plant – generation, distribution, end-use and recovery
2. Ensure that holding an onsite hands-on experts training at the plants will be possible



3. Ensure that the plants are a good candidate for conducting an expert's training including, but not limited to:
 - a. Plant management would support implementation of cost-effective energy efficiency improvements identified as the result of a steam system assessment;
 - b. Has sufficient metering in place to provide the basic energy data needed for an assessment;
 - c. It is a plant that is not a state-of-the-art, but rather it is a plant in which trainees can get a hands-on field experience on systems that are representative of similar plants in the region;
4. Meet with plant personnel and understand the plant's process
5. Ensure that there is adequate training room (conference room) area for some onsite training and discussions