Description
The system is developed for automatic noncontact inspection of geometrical parameters of fuel elements (TVEL) in power-generating systems. The system provides:
- automatic measurement of geometric parameters, including indication of measured values and storage of the measured parameters in a database;
- measurement of geometric parameters in manual mode in the cross-sections chosen by the operator;
- processing of measurement results (e.g., within the limits of inspected lot, shift or monthly output, etc.) with read-out of inspection and statistic data;
- metrological inspection of the system by a number of standard company measurers with protocol issuing;
- system self-testing.

Technical specifications

<table>
<thead>
<tr>
<th></th>
<th>Measurement range, mm</th>
<th>Admissible error, µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside diameter</td>
<td>34 … 41</td>
<td>± 10</td>
</tr>
<tr>
<td>Length</td>
<td>100 … 110</td>
<td>± 30</td>
</tr>
<tr>
<td>Protrusion height</td>
<td>+ 0.6 … − 0.4</td>
<td>± 10</td>
</tr>
<tr>
<td>and welded joint hollow depth</td>
<td>0.5</td>
<td>± 20</td>
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<tr>
<td>Straightness deviation</td>
<td></td>
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</tbody>
</table>

The inspection efficiency is 200 items per hour. Similar systems with different specifications can be manufactured upon agreement with the customer.

Technical appraisal and economic benefits
The system is designed as an independent quality inspector workplace. It contains, apart from the measuring unit, shoots for loading of inspected articles and unloading of quality and rejected products, as well as a transportation mechanism for product displacement inside the system.
Explicit information on the inspected product parameters makes the system an indispensable tool of a production engineer in adjusting and inspecting production technologies. The ergonomically designed system and its modern, user-friendly software interface reduce operator’s tiredness and increase inspection efficiency.

**Application area**
Nuclear industry enterprises.

**Development stage**
Since 2000, the system has been under trial operation at the joint-stock company “Novosibirsk Chemical Concentrates Plant”

**Patent situation**
Not available.

**Commercial offers**
Investment agreement for commercialization; license agreement; production and procurement contract; sales agreement; etc.

**Estimated cost**
The cost of the system depends on the set of equipment.

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