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MODIFICATION OF CHARACTERICS OF DREDGING PUMPS BY REDUCTION OF IMPELLER DIAMETER

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Correction of pump characteristics by means of impeller reduction is often used in pump production and exploitation. This correction is usually small, because most often it is required that guaranteed performance curves should pass through he operating point lying under it in discharge-head diagram. In exploitation, pump characteristics can be altered to a greater extent as well, by the means this procedure. Impeller diameter reduction can be used as a method of regulation, as in the case of dredging pumps used for the transport of solid materials, e.g. sand, coal, ashes etc., in mixture with water. The need for variable head of these pumps is an outcome of a change of distance to the location where material is to be transported to. It turns out that the performance of these expensive and big pumps can be changed most economically by impeller diameter reduction, performed in site by gas cutting.

The bibliography concerning this correction is very sparing, even in the case of impellers with usual number of blades (5-9). The number of blades of dredging pumps impellers is most often 2 to 4, and the authors of this paper considered that it is important to investigate the applicability of recommendations given in the references upon dredging pump models with 2 and three blades [4]. *The models were thoroughly investigated; performance curves obtained by diameter reduction were compared to recommendations given in references.*

Key words: dredging pumps, impeller, diameter corection.

PROMENA KARAKTERISTIKA REFULERNIH PUMPI SMANJENJEM PREČNIKA KOLA

U proizvodnji i eksploataciji pumpi često se koristi korigovanje njihovih karakteristika smanjenjem prečnika obrtnog kola. Te su korekcije obično relativno male, jer je najčešće potrebno garantovanu karakteristiku potrebno provesti kroz zadatu radnu tačku koja leži nešto ispod nje u dijagramu protok-napor. U praksi se, međutim, po potrebi karakteristike pumpi mogu smanjenjem prečnika i značajnije menjati. Smanjenje prečnika obrtnog kola može da se koristi i kao način regulisanja, kao što je slučaj kod refulernih pumpi koje služe za transport čvrstih materijala, kao što su pesak, ugalj, pepeo i dr., u mešavini sa vodom. Potreba za različitim naporima ovih pumpi proizilazi iz promenljive udaljenosti do mesta do kojih treba transportovati pomenuti materijal. Iskustvo je pokazalo da se karakteristike ovih, inače skupih i velikih, pumpi najekonomičnije mogu menjati smanjenjem prečnika radnog kola, koje se vrši sečenjem gasom na licu mesta.

U literaturi postoje oskudni podaci o ovim korekcijama, čak i kada se radi o radnim kolima sa uobičajenim brojem lopatica (5-9). Kod radnih kola refulernih pumpi broj lopatica je najčešće od 2 do 4, pa su autori smatrali da je značajno istražiti kako se te preporuke iz literature mogu koristiti kada su u pitanju modeli refulernih pumpi sa 2 i 3 lopatice [4]. *U tu svrhu detaljno su ispitani napravljeni modeli; smanjivanjem prečnika modela dobijene su njihove karakteristike i zatim upoređene sa preporukama iz literature.*

Ključne reči: refulerne pumpe, radno kolo, korekcija prečnika.