

Program	NUCLEU PN 06-12.03.09
Project title (ENG):	SHARON ANNAMOX integrated process for advanced treatment of ammonium rich wastewaters in order to reach the limits imposed by GD 352/2005 –NTPA 001
Project title (RO):	Aplicarea unui procedeu integrat SHARON – ANAMMOX pentru epurarea avansata a apelor uzate cu continut ridicat de azot in vederea atingerii limitei normate la deversare de H.G.352 – NTPA 001
Duration	2006-2008
Team Leader	Costel Bumbac
Summary (short description) ENG	<p>Biological treatment technology of high ammonia wastewater resulting from sludge dewatering.</p> <p>Scope: Waste water from fermented sludge dewatering of WWTPs equipped with biogas plants are directed back to the treatment plant, thus increasing effluent load in terms of organic and ammonium content. In the waste-stream coming from sludge dewatering, ammonium concentrations are hundreds or thousands of mg /L, thus increasing the treatment effort of WWTPs required to treat in compliance with the standards stipulated for discharged into natural receivers of the treated effluent. Therefore, an initial nitrification of this waste stream is required.</p> <p>Overview: The technology developed for the removal of NH₄⁺ ions from water from sludge dewatering was developed in several stages involving:</p> <p>Experiments in a lab scale biological treatment installation accommodating two-stage-aerobic- anaerobic treatment: -partial nitrification and anaerobic ammonium oxidation. Continuous flow system equipped with settlers and recirculation system for each step.</p> <p>Experiments for biological anaerobic ammonium oxidation in sequential system;</p> <p>The technology for ammonium rich wastewater treatment involves a two-stage aerobic- anaerobic process performed in a hybrid aerobic bioreactor (fluidized bed) (step Sharon) in series with the anaerobic bioreactor (step Anammox).</p>
Summary (short description) RO	<p>Tehnologie de epurare biologica a apelor uzate cu continut ridicat de amoniu rezultate de la deshidratarea namolurilor.</p> <p>Domeniu de aplicabilitate : Apele uzate provenite de la deshidratarea namolurilor fermentate din statii de epurare mecano-biologice prevazute cu instalatii de biogaz si facilitati de deshidratare a namolurilor fermentate sunt dirijate in statia de epurare, marind incarcarea efluentului in ceea ce priveste continutul in substante organice si amoniu. In apele provenite de la deshidratarea namolului, concentratiile de amoniu sunt de ordinul sutelor sau miilor de mg/l, in acest fel incarcand mult efortul de epurare necesar pentru conformarea efluentilor epurati cu normativele impuse la deversare in emisar. De aceea este necesara o nitrificare initiala a apelor de deshidratare namol. Prezentare generala: Tehnologia elaborata pentru indepartarea ionilor NH₄⁺ din apele rezultate de la deshidratarea namolurilor a fost elaborata in mai multe faze care au implicat:</p> <ul style="list-style-type: none"> □ Experimente de epurare biologica intr-o instalatie in doua trepte aerob-anaeroba -nitrificare partiala- oxidare anaeroba a amoniului-, in sistem continuu, prevazuta cu decantor si sistem de recirculare pentru fiecare treapta. □ Experimente de epurare biologica pentru oxidarea anaeroba a amoniului in sistem secvential; <p>Tehnologia de epurare a apelor cu incarcare mare in ion amoniu presupune tratarea apelor uzate in doua trepte aerob-anaeroba in bioreactor aerob hibrid (pat fluidizat), (treapta Sharon) in serie cu bioreactorul anaerob (treapta Anammox).</p>

Dissemination of results	
Conferences (platform, poster, abstract / full-paper)	Costel Bumbac, Elisabeta Pena Leonte, Ion Sorin Florescu, Indepartarea ionului NH ₄ ⁺ din apele uzate prin procesul integrat SHARON-ANAMMOX , A XXX-a Conferinta Nationala de Chimie, 2008