HIGH EFFICIENCY IN NITROGEN REMOVAL AND ENERGY SAVING BY SMALL WWTPS UPGRADE FROM EXTENDED TO ALTERNATED AERATION PROCESS

P. T. Martín de la Vega[1*], E. Martínez de Salazar [1], M. A. Jaramillo[1], J. A. Fernández[1]

[1] University of Extremadura, Badajoz (SPAIN). {pedromm, dsalazar, miguel, jalvarof }@unex.es

INTRODUCTION: The region of Extremadura presents an atypical situation compared with other areas of Spain. Small villages are far away one from the others, what generates a diffused contamination which arrives to large reservoirs. This implies a lot of very small wastewater plants with a low level of automation. These plants are the targets of this work, presenting the results obtained in two existing small plants **(WWTP1 and WWTP2**), in terms of nitrogen removal and energy saving, when alternating cycles of aeration/non-aeration

METHODS: The study was carried out in two WWTPs with a configuration shown in Fig. 1.The variations in the influent were characterizaed in three phase: **LOW, MEDIUM and HIGH LOAD**, establishing three control strategies to aeration process.

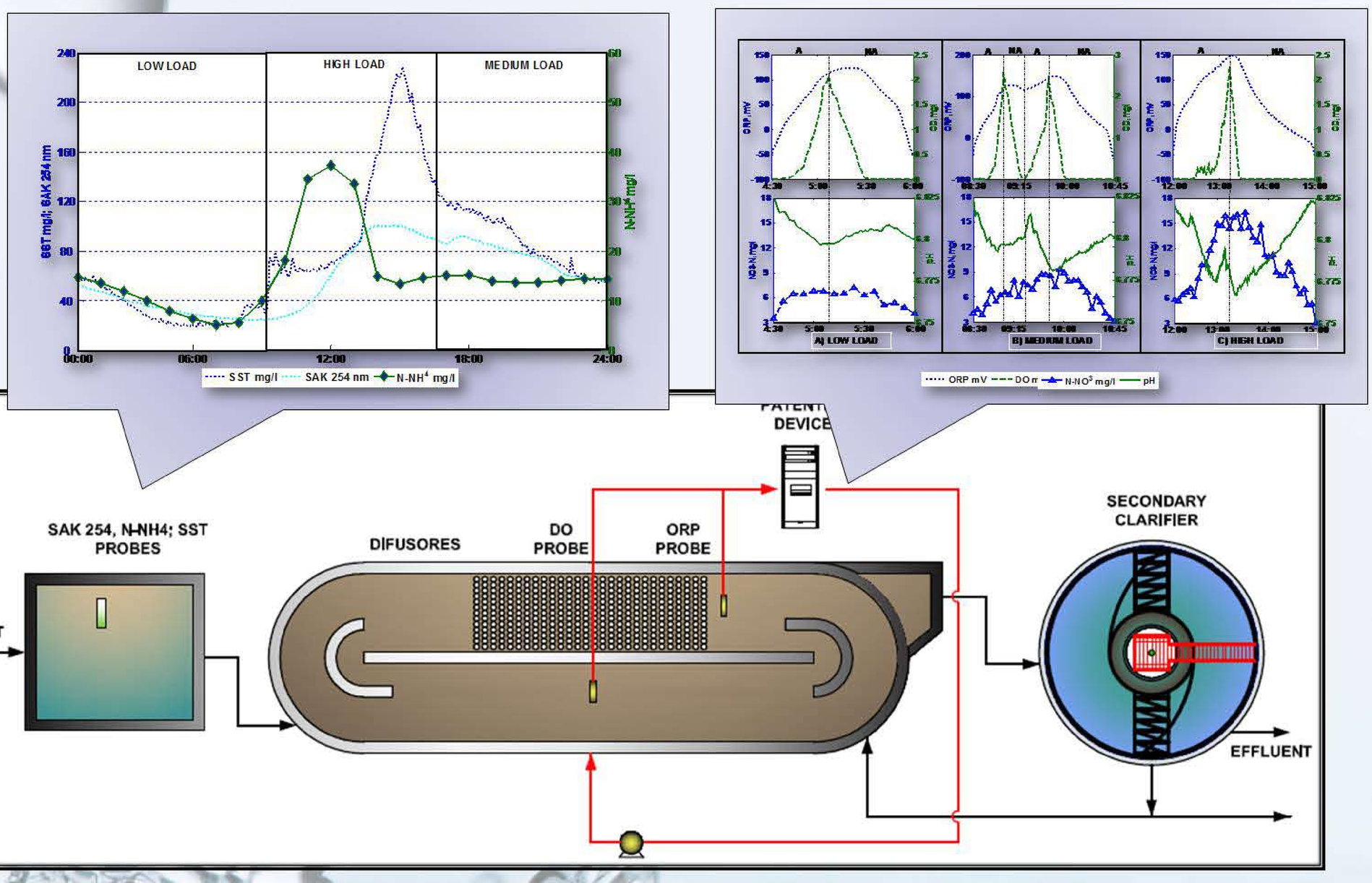

Fig. 1. Upgrade WWTP configuration based on a patended device and influent characterization

RESULT S AND DISCUSSCION

	WWTP1		WWTP2	
	PRE-ALTERNATIG CYCLE PROCESS (AC)	AC	PRE-AC	AC
E_{NT} (%)	35	85	41	90
E_{COD} (%)	87	90	92	95
E_{PT} (%)	13	55	10	60
Energy saving (%)	26		47	

CONCLUSIONS: A test study with two full-scale small WWTPs was carried out to test a new control strategy based on alternating phases of aeration and non-aeration to get high performance on nitrogen compound removal. The plants studied were representative of the whole small WWTPs in southern Spain. In parallel with the increase in the nitrogen removal performance a proportional energy saving, in the range 30-50%, was achieved.

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